2019 Federal Low Income Housing Tax Credit Program

Application For Reservation

Deadline for Submission

9% Competitive Credits
Applications Must Be Received At VHDA No Later Than 2:00 PM
Richmond, VA Time On March 14, 2019

Tax Exempt Bonds
Applications should be received at VHDA at least one month before the bonds are *priced* (if bonds issued by VHDA), or 75 days before the bonds are *issued* (if bonds are not issued by VHDA)

Virginia Housing Development Authority
601 South Belvidere Street
Richmond, Virginia 23220-6500

INSTRUCTIONS FOR THE
VIRGINIA 2019 LIHTC APPLICATION FOR RESERVATION

This application was prepared using Excel, Microsoft Office 2016. Please note that using the active Excel workbook does not eliminate the need to submit the required PDF of the signed hardcopy of the application and related documentation. A more detailed explanation of application submission requirements is provided below and in the Application Manual.

An electronic copy of your completed application is a mandatory submission item.

Applications For 9% Competitive Credits

Applicants should submit an electronic copy of the application package prior to the application deadline, which is 2:00 PM Richmond Virginia time on March 14, 2019. Failure to submit an electronic copy of the application by the deadline will cause the application to be disqualified.

Please Note:

Applicants should submit all application materials in electronic format only.

There should be distinct files which should include the following:

1. **Application For Reservation – the active Microsoft Excel workbook**
2. **A PDF file which includes the following:**
   - **Application For Reservation – Signed version of hardcopy**
   - **All application attachments (i.e. tab documents, excluding market study and plans & specs)**
3. **Market Study – PDF or Microsoft Word format**
4. **Plans - PDF or other readable electronic format**
5. **Specifications - PDF or other readable electronic format (may be combined into the same file as the plans if necessary)**
6. **Unit-By-Unit work write up (rehab only) - PDF or other readable electronic format**

IMPORTANT:

VHDA can accept files via our work center site Procorem or on flash/thumb drives. Contact Hope Rutter for access to Procorem.

Do not submit any application materials to any email address unless specifically requested by the VHDA LIHTC Allocation Department staff.

Disclaimer:

VHDA assumes no responsibility for any problems incurred in using this spreadsheet or for the accuracy of calculations. Check your application for correctness and completeness before submitting the application to VHDA.

Entering Data:

Enter numbers or text as appropriate in the blank spaces highlighted in yellow. Cells have been formatted as appropriate for the data expected. All other cells are protected and will not allow changes.

Please Note:

► **VERY IMPORTANT! : Do not** use the copy/cut/paste functions within this document. Pasting fields will corrupt the application and may result in penalties. You may use links to other cells or other documents but do not paste data from one document or field to another.

► Some fields provide a dropdown of options to select from, indicated by a down arrow that appears when the cell is selected. Click on the arrow to select a value within the dropdown for these fields.

► The spreadsheet contains multiple error checks to assist in identifying potential mistakes in the application. These may appear as data is entered but are dependent on values entered later in the application. Do not be concerned with these messages until all data within the application has been entered.

► Also note that some cells contain error messages such as "#DIV/0!" as you begin. These warnings will disappear as the numbers necessary for the calculation are entered.

Assistance:

If you have any questions, please contact the VHDA LIHTC Allocation Department. Please note that we cannot release the copy protection password.

VHDA LIHTC Allocation Staff Contact Information

Name	Email	Phone Number
JD Bondurant	johndavid.bondurant@vhda.com	(804) 343-5725
Hope Coleman Rutter	hope.rutter@vhda.com	(804) 343-5574
Sheila Stone	sheila.stone@vhda.com	(804) 343-5582
Stephanie Flanders	stephanie.flanders@vhda.com	(804) 343-5939
Pamela Freeth	pamela.freeth@vhda.com	(804) 343-5563
Jovan Burton	Jovan.burton@vhda.com	(804) 343-5518

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Click on any tab label to be directed to that tab within the application.

2019 Low-Income Housing Tax Credit Application For Reservation

Please indicate if the following items are included with your application by putting an '**X**' in the appropriate boxes. Your assistance in organizing the submission in the following order, and actually using tabs to mark them as shown, will facilitate review of your application. Please note that all mandatory items must be included for the application to be processed. The inclusion of other items may increase the number of points for which you are eligible under VHDA's point system of ranking applications, and may assist VHDA in its determination of the appropriate amount of credits that may be reserved for the development.

X		$1,000 Application Fee **(MANDATORY)**
X		Electronic Copy of the Microsoft Excel Based Application **(MANDATORY)**
X		Scanned Copy of the **Signed** Tax Credit Application with Attachments (excluding market study and plans & specifications) **(MANDATORY)**
X		Electronic Copy of the Market Study **(MANDATORY - Application will be disqualified if study is not submitted with application)**
X		Electronic Copy of the Plans **(MANDATORY)**
X		Electronic Copy of the Specifications **(MANDATORY)**
X		Electronic Copy of the Physical Needs Assessment (**MANDATORY** if rehab)
X		Electronic Copy of Appraisal (**MANDATORY** if acquisition credits requested)
X		Electronic Copy of Environmental Site Assessment (Phase I) (**MANDATORY if 4% credits requested**)
X	Tab A:	Partnership or Operating Agreement, including chart of ownership structure with percentage of interests **(MANDATORY)**
X	Tab B:	Virginia State Corporation Commission Certification **(MANDATORY)**
X	Tab C:	Principal's Previous Participation Certification **(MANDATORY)**
X	Tab D:	List of LIHTC Developments (Schedule A) **(MANDATORY)**
X	Tab E:	Site Control Documentation & Most Recent Real Estate Tax Assessment **(MANDATORY)**
X	Tab F:	Architect's Certification and RESNET Rater Certification **(MANDATORY)**
X	Tab G:	Zoning Certification Letter **(MANDATORY)**
X	Tab H:	Attorney's Opinion **(MANDATORY)**
	Tab I:	Nonprofit Questionnaire **(MANDATORY for points or pool)**
		The following documents need not be submitted unless requested by VHDA:
		-Nonprofit Articles of Incorporation -IRS Documentation of Nonprofit Status
		-Joint Venture Agreement (if applicable) -For-profit Consulting Agreement (if applicable)
X	Tab J:	Relocation Plan **(MANDATORY,** if tenants are displaced**)**
	Tab K:	Documentation of Development Location:
	K.1	Revitalization Area Certification
X	K.2	Location Map
	K.3	Surveyor's Certification of Proximity To Public Transportation
	Tab L:	PHA / Section 8 Notification Letter
	Tab M:	Locality CEO Response Letter
	Tab N:	Homeownership Plan
	Tab O:	Plan of Development Certification Letter
	Tab P:	Developer Experience documentation and Partnership agreements
	Tab Q:	Documentation of Rental Assistance, Tax Abatement and/or existing RD or HUD Property
	Tab R:	Documentation of Operating Budget and Utility Allowances
	Tab S:	Supportive Housing Certification
	Tab T:	Funding Documentation
	Tab U:	Documentation to Request Exception to Restriction-Pools With Little/No Increase in Rent Burdened Population
	Tab V:	Nonprofit or LHA Purchase Option or Right of First Refusal
	Tab W:	(Reserved)
	Tab X:	Marketing Plan for units meeting accessibility requirements of HUD section 504

2019 Low-Income Housing Tax Credit Application For Reservation

VHDA TRACKING NUMBER 2019-TEB-122

A. GENERAL INFORMATION ABOUT PROPOSED DEVELOPMENT

Application Date: 8/28/2019

1. Development Name: Derby Run Apartments I

2. Address (line 1): 6 Derby Drive
   Address (line 2):
   City: Hampton State: VA Zip: 23666

3. If complete address is not available, provide longitude and latitude coordinates (x,y) from a location on site that your surveyor deems appropriate. Longitude: 00.00000 Latitude: 00.00000
   (Only necessary if street address or street intersections are not available.)

4. The Circuit Court Clerk's office in which the deed to the development is or will be recorded:
   City/County of Hampton City

5. The site overlaps one or more jurisdictional boundaries..... FALSE
   If true, what other City/County is the site located in besides response to #4?.....

6. Development is located in the census tract of: 103.04

7. Development is located in a **Qualified Census Tract**..... FALSE

8. Development is located in a **Difficult Development Area**..... FALSE

9. Development is located in a **Revitalization Area based on QCT** ..... FALSE

10. Development is located in a **Revitalization Area designated by resolution** ..... FALSE

11. Development is located in an **Opportunity Zone** (with a binding commitment for funding)..... FALSE

(If 9, 10 or 11 are True, **Action**: Provide required form in **TAB K1**)

12. Development is located in a census tract with a poverty rate of.....

3%	10%	12%
FALSE	FALSE	FALSE

Enter only Numeric Values below:

13. Congressional District: 3
    Planning District: 23
    State Senate District: 2
    State House District: 91

Click on the following link for assistance in determining the districts related to this development:

Link to VHDA's HOME - Select Virginia LIHTC Reference Map

14. **ACTION:** Provide Location Map (**TAB K2**)

15. Development Description: In the space provided below, give a brief description of the proposed development

Derby Run I Apartments is an existing 160-unit LIHTC development built in 1994 using 9% LIHTC's. The development consists of 16 buildings including 12 three story and 2 two story residential multi-family, low-rise garden style apartment buildings, a leasing center and a maintenance building. The applicant is proposing acquisition/rehab of the property utilizing tax exempt bonds issued by the Hampton Redevelopment and Housing Authority. The bonds issued will be secured through a HUD 223f mortgage. Equity will be provided by the sale of 4% federal housing tax credits.

16. **Local Needs and Support**

a. Provide the name and the address of the chief executive officer (City Manager, Town Manager, or County Administrator of the political jurisdiction in which the development will be located:

Chief Executive Officer's Name:	Mrs. Mary Bunton		
Chief Executive Officer's Title:	City Manager	Phone:	757-727-6392
Street Address:	22 Lincoln Street 8th Floor, City Hall		
City:	Hampton	State: VA	Zip: 23669

Name and title of local official you have discussed this project with who could answer questions for the local CEO:

b. If the development overlaps another jurisdiction, please fill in the following:

Chief Executive Officer's Name:			
Chief Executive Officer's Title:		Phone:	
Street Address:			
City:		State:	Zip:

Name and title of local official you have discussed this project with who could answer questions for the local CEO:

ACTION: Provide Locality Notification Letter at **Tab M** if applicable.

B. RESERVATION REQUEST INFORMATION

1. **Requesting Credits From:**

   a. If requesting 9% Credits, select credit pool: [ ]

   or

   b. If requesting Tax Exempt Bonds, select development type: [Acquisition/Rehab]

   For Tax Exempt Bonds, Skip Numbers 2

2. **Type(s) of Allocation/Allocation Year** [ ]

   Definitions of types:

   a. **Regular Allocation** means all of the buildings in the development are expected to be placed in service this calendar year, 2019.

   b. **Carryforward Allocation** means all of the buildings in the development are expected to be placed in service within two years after the end of this calendar year, 2019, but the owner will have more than 10% basis in development before the end of twelve months following allocation of credits. For those buildings, the owner requests a carryforward allocation of 2019 credits pursuant to Section 42(h)(1)(E).

3. **Select Building Allocation type:** [Acquisition/Rehab]

   Note regarding Type = Acquisition and Rehabilitation: Even if you acquired a building this year and "placed it in service" for the purpose of the acquisition credit, you cannot receive its acquisition 8609 form until the rehab 8609 is issued for that building.

4. Is this an additional allocation for a development that has buildings not yet placed in service? [FALSE]

5. **Planned Combined 9% and 4% Developments** [FALSE]

   A site plan has been submitted with this application indicating two developments on the same or contiguous site. One development relates to this 9% allocation request and the remaining development will be a 4% tax exempt bond application. (25, 35 or 45 pts)

   a. Has the developer met with VHDA regarding the 4% tax exempt bond deal? [FALSE]

   b. List below the number of units planned for each allocation request. This stated count cannot be changed or 9% Credits will be cancelled.

Total Units within 9% allocation request?	0
Total Units within 4% Tax Exempt allocation Request?	0
Total Units:	**0**
% of units in 4% Tax Exempt Allocation Request:	0.00%

6. **Extended Use Restriction**

   Note: Each recipient of an allocation of credits will be required to record an **Extended Use Agreement** as required by the IRC governing the use of the development for low-income housing for at least 30 years. Applicant waives the right to pursue a Qualified Contract.

   Must Select One: [50]

   Definition of selection:

   Development will be subject to an extended use agreement of 35 additional years after the 15-year compliance period for a total of 50 years.

C. OWNERSHIP INFORMATION

NOTE: VHDA may allocate credits only to the tax-paying entity which owns the development at the time of the allocation. The term "Owner" herein refers to that entity. Please fill in the legal name of the owner. The ownership entity must be formed prior to submitting this application. Any transfer, direct or indirect, of partnership interests (except those involving the admission of limited partners) prior to the placed-in-service date of the proposed development shall be prohibited, unless the transfer is consented to by VHDA in its sole discretion. **IMPORTANT: The Owner name listed on this page must exactly match the owner name listed on the Virginia State Corporation Commission Certification.**

1. Owner Information: *Must be an individual or legally formed entity.*

Owner Name: LRC - Derby Run 1, LP

Developer Name: LEDIC Realty Management, LLC

Contact: M/M ▶ Mr. First: Wade MI: A Last: Wood

Address: 105 Tallapoosa Street Suite 300

City: Montgomery St. ▶ AL Zip: 36104

Phone: (205) 405-1486 Ext. Fax: (334) 954-4496

Email address: wade.wood@ledic.com

Federal I.D. No. (If not available, obtain prior to Carryover Allocation.)

Select type of entity: ▶ Limited Partnership Formation State: ▶ VA

Additional Contact: Please Provide Name, Email and Phone number.
Ty Tyson, ty.tyson@ledic.com, (205) 871-9408

ACTION: a. Provide Owner's organizational documents (e.g. Partnership agreements) **(Mandatory TAB A)**
b. Provide Certification from Virginia State Corporation Commission **(Mandatory TAB B)**

2. Principal(s) of the General Partner: List names of individuals and ownership interest.

Names **	Phone	Type Ownership	% Ownership	
LRC - Derby Run 1 GP, LLC	334-954-4458	General Partner	0.000%	*needs*
LRC GP, LLC	334-954-4458	Special Limited Partı	100.000%	
LEDIC Realty Company, LLC	334-954-4458	Special Limited Partı	0.000%	*needs*
W. Daniel Hughes, Jr., Chairman	334-954-4458	Special Limited Partı	0.000%	*needs*
			0.000%	
			0.000%	
			0.000%	

The above should include 100% of the GP or LLC member interest.

** These should be the names of individuals who make up the General Partnership, not simply the names of entities which may comprise those components.

C. OWNERSHIP INFORMATION

ACTION: a. Provide Principals' Previous Participation Certification **(Mandatory TAB C)**

b. Provide a chart of ownership structure (Org Chart) and a list of all LIHTC Developments within the last 15 years. **(Mandatory at TABS A/D)**

3. Developer Experience: Provide evidence that the principal or principals of the controlling general partner or managing member for the proposed development have developed:

a. as a controlling general partner or managing member, (i) at least three tax credit developments that contain at least three times the number of housing units in the proposed development or (ii) at least six tax credit developments. ..... TRUE

Action: Must be included on VHDA Experienced LIHTC Developer List or provide copies of 8609s, partnership agreements and organizational charts **(Tab P)**

b. at least three deals as principal and have at $500,000 in liquid assets..... FALSE

Action: Must be included on the VHDA Experienced LIHTC Developer List or provide Audited Financial Statements and copies of 8609s **(Tab P)**

c. The development's principal(s), as a group or individually, have developed as controlling general partner or managing member, at least one tax credit development that contains at least the same number of units of this proposed development (can include Market units). ..... FALSE

Action: Must provide copies of 8609s and partnership agreements **(Tab P)**

D. SITE CONTROL

NOTE: Site control by the Owner identified herein is a mandatory precondition of review of this application. Documentary evidence in the form of either a deed, option, purchase contract or lease for a term longer than the period of time the property will be subject to occupancy restrictions must be included herewith. (For 9% Competitive Credits - An option or contract must extend beyond the application deadline by a minimum of four months.)

Warning: Site control by an entity other than the Owner, even if it is a closely related party, is not sufficient. Anticipated future transfers to the Owner are not sufficient. The Owner, as identified previously, must have site control at the time this Application is submitted.

NOTE: If the Owner receives a reservation of credits, the property must be titled in the name of or leased by (pursuant to a long-term lease) the Owner before the allocation of credits is made.

Contact VHDA before submitting this application if there are any questions about this requirement.

1. Type of Site Control by Owner:

Applicant controls site by (select one and provide documentation - **Mandatory TAB E**)

Select Type: Option

Expiration Date: 11/26/2019

In the Option or Purchase contract - Any contract for the acquisition of a site with an existing residential property may not require an empty building as a condition of such contract, unless relocation assistance is provided to displaced households, if any, at such level required by VHDA. See QAP for further details.

FALSE ..... There is more than one site for development and more than one form of site control.

(If **True**, provide documentation for each site specifying number of existing buildings on the site (if any), type of control of each site, and applicable expiration date of stated site control. A site control document is required for each site **(Tab E)**.)

2. Timing of Acquisition by Owner:

Only one of the following statement should be True.

a. FALSE ..... Owner already controls site by either deed or long-term lease.

b. TRUE ..... Owner is to acquire property by deed (or lease for period no shorter than period property will be subject to occupancy restrictions) no later than..... 11/26/2019 .

c. FALSE ..... There is more than one site for development and more than one expected date of acquisition by Owner.

(If c is **True**, provide documentation for each site specifying number of existing buildings on the site, if any, and expected date of acquisition of each site by Owner **(Tab E).**)

D. SITE CONTROL

3. Seller Information:

Name: Ripley Heatwole Company, Inc.

Address: 808 Newtown Road

City: Virginia Beach St.: VA Zip: 23462

Contact Person: Phone:

There is an identity of interest between the seller and the owner/applicant…… FALSE

If above statement is **TRUE**, complete the following:

Principal(s) involved (e.g. general partners, controlling shareholders, etc.)

Names	Phone	Type Ownership	% Ownership
			0.00%
			0.00%
			0.00%
			0.00%
			0.00%
			0.00%
			0.00%

E. DEVELOPMENT TEAM INFORMATION

Complete the following as applicable to your development team. Provide Contact and Firm Name.

1. Tax Attorney:	Allison Domson	This is a Related Entity.	FALSE
Firm Name:	Williams Mullen		
Address:	200 South 10th Street, Suite 1600 Richmond, VA 23219		
Email:	adomson@williamsmullen.com	Phone:	804.420.6915
2. Tax Accountant:	Barry Tidwell	This is a Related Entity.	FALSE
Firm Name:	Tidwell Group		
Address:	2001 Park Place #900 Birmingham, AL 35203		
Email:	barry.tidwell@tidwellgroup.com	Phone:	205.822.1010
3. Consultant:	N/A	This is a Related Entity.	FALSE
Firm Name:	N/A	Role:	
Address:	N/A		
Email:	N/A	Phone:	
4. Management Entity:	Debbie Workman	This is a Related Entity.	FALSE
Firm Name:	LEDIC Realty Management, LLC		
Address:	105 Tallapoosa Street, Suite 300 Montgomery, AL 36104		
Email:	debbie.workman@ledic.com	Phone:	334.954.4458
5. Contractor:	Ben Tullis	This is a Related Entity.	FALSE
Firm Name:	Empire Construction		
Address:	3600 Henson Road Knoxville, TN 37921		
Email:	btullis@empireinctn.com	Phone:	856.251.4800
6. Architect:	Dyke Nelson	This is a Related Entity.	FALSE
Firm Name:	DNA Workshop		
Address:	235 South 14th Street Baton Rouge, LA 70802		
Email:	dyke@dna-workshop.com	Phone:	225.224.3363
7. Real Estate Attorney:	Allison Domson	This is a Related Entity.	FALSE
Firm Name:	Williams Mullen		
Address:	200 South 10th Street, Suite 1600 Richmond, VA 23219		
Email:	adomson@williamsmullen.com	Phone:	804.420.6915
8. Mortgage Banker:	Jon Killough	This is a Related Entity.	FALSE
Firm Name:	Bellwether Enterprise		
Address:	7020 Fain Park Drive Suite 4 Montgomery, AL 36117		
Email:	jkillough@bwecap.com	Phone:	205.588.6053
9. Other:		This is a Related Entity.	FALSE
Firm Name:		Role:	
Address:			
Email:		Phone:	

F. REHAB INFORMATION

1. **Acquisition Credit Information**

a. Credits are being requested for existing buildings being acquired for development…… TRUE

b. This development has received a previous allocation of credits…… TRUE
If so, in what year did this development receive credits? …… 1995

c. The development is listed on the RD 515 Rehabilitation Priority List?..... FALSE

d. This development is an existing RD or HUD S8/236 development…… FALSE
Action: (If True, provide required form in **TAB Q**)

Note: If there is an identity of interest between the applicant and the seller in this proposal, and the applicant is seeking points in this category, then the applicant must either waive their rights to the developer's fee or other fees associated with acquisition, or obtain a waiver of this requirement from VHDA prior to application submission to receive these points.

i. Applicant agrees to waive all rights to any developer's fee or other fees associated with acquisition…… FALSE

ii. Applicant has obtained a waiver of this requirement from VHDA prior to the application submission deadline…… FALSE

2. **Ten-Year Rule For Acquisition Credits**

a. All buildings satisfy the 10-year look-back rule of IRC Section 42 (d)(2)(B), including the 10% basis/ $15,000 rehab costs ($10,000 for Tax Exempt Bonds) per unit requirement…… TRUE

b. All buildings qualify for an exception to the 10-year rule under IRC Section 42(d)(2)(D)(i),…… FALSE

i Subsection (I)…… FALSE

ii. Subsection (II)…… FALSE

iii. Subsection (III)…… FALSE

iv. Subsection (IV)…… FALSE

v. Subsection (V)…… FALSE

c. The 10-year rule in IRC Section 42 (d)(2)(B) for all buildings does not apply pursuant to IRC Section 42(d)(6)…… FALSE

d. There are different circumstances for different buildings…… FALSE
Action: (If True, provide an explanation for each building in Tab K)

F. REHAB INFORMATION

3. **Rehabilitation Credit Information**

   a. Credits are being requested for rehabilitation expenditures…… TRUE

   b. **Minimum Expenditure Requirements**

      i. All buildings in the development satisfy the rehab costs per unit requirement of IRS Section 42(e)(3)(A)(ii)…… TRUE

      ii. All buildings in the development qualify for the IRC Section 42(e)(3)(B) exception to the 10% basis requirement (4% credit only)…… FALSE

      iii. All buildings in the development qualify for the IRC Section 42(f)(5)(B)(ii)(II) exception…… FALSE

      iv. There are different circumstances for different buildings…… FALSE
      Action: (If True, provide an explanation for each building in Tab K)

4. **Request For Exception**

   a. The proposed new construction development (including adaptive reuse and rehabilitation that creates additional rental space) is subject to an assessment of up to minus 20 points for being located in a pool identified by the Authority as a pool with little or no increase in rent burdened population…… FALSE

   b. Applicant seeks an exception to this restriction in accordance with one of the following provisions under 13VAC10-180-60:

      i. Proposed development is specialized housing designed to meet special needs that cannot readily be addressed utilizing existing residential structures…… FALSE

      ii. Proposed development is designed to serve as a replacement for housing being demolished through redevelopment…… FALSE

      iii. Proposed development is housing that is an integral part of a neighborhood revitalization project sponsored by a local housing authority…… FALSE

   Action: If any of 4(b) responses are true, provide documentation at Tab U.

G. NONPROFIT INVOLVEMENT

Applications for 9% Credits - Section must be completed in order to compete in the Non Profit tax credit pool.
All Applicants - Section must be completed to obtain points for nonprofit involvement.

1. **Tax Credit Nonprofit Pool Applicants:** To qualify for the nonprofit pool, an organization (described in IRC Section 501(c)(3) or 501(c)(4) and exempt from taxation under IRC Section 501(a)) should answer the following questions as TRUE:

FALSE	a.	Be authorized to do business in Virginia.
FALSE	b.	Be substantially based or active in the community of the development.
FALSE	c.	Materially participate in the development and operation of the development throughout the compliance period (i.e., regular, continuous and substantial involvement) in the operation of the development throughout the Compliance Period.
FALSE	d.	Own, either directly or through a partnership or limited liability company, 100% of the general partnership or managing member interest.
FALSE	e.	Not be affiliated with or controlled by a for-profit organization.
FALSE	f.	Not have been formed for the principal purpose of competition in the Non Profit Pool.
FALSE	g.	Not have any staff member, officer or member of the board of directors materially participate, directly or indirectly, in the proposed development as a for profit entity.

2. **All Applicants:** To qualify for points under the ranking system, the nonprofit's involvement need not necessarily satisfy all of the requirements for participation in the nonprofit tax credit pool.

A. Nonprofit Involvement (All Applicants)

There is nonprofit involvement in this development..... FALSE (If false, go on to part III.)

Action: If there is nonprofit involvement, provide completed Non Profit Questionnaire **(Mandatory TAB I).**

B. Type of involvement:

Nonprofit meets eligibility requirement for points only, not pool..... FALSE

or

Nonprofit meets eligibility requirements for nonprofit pool and points..... FALSE

C. Identity of Nonprofit (All nonprofit applicants):

The nonprofit organization involved in this development is: ▶

Name: (Please fit NP name within available space)

Contact Person:

Street Address:

City: State: ▶ Zip:

Phone: Extension: Contact Email:

G. NONPROFIT INVOLVEMENT

D. Percentage of Nonprofit Ownership (All nonprofit applicants):
Specify the nonprofit entity's percentage ownership of the general partnership interest: 0.0%

3. Nonprofit/Local Housing Authority Purchase Option/Right of First Refusal

A. FALSE

After the mandatory 15-year compliance period, a qualified nonprofit or local housing authority will have the option to purchase or the right of first refusal to acquire the development for a price not to exceed the outstanding debt and exit taxes. Such debt must be limited to the original mortgage(s) unless any refinancing is approved by the nonprofit.

Action: Provide Option or Right of First Refusal in Recordable Form **(TAB V)**
Provide Nonprofit Questionnaire (if applicable) **(TAB I)**

Name of qualified nonprofit:

or indicate true if Local Housing Authority FALSE
Name of Local Housing Authority

2. FALSE

A qualified nonprofit or local housing authority submits a homeownership plan committing to sell the units in the development after the mandatory 15-year compliance period to tenants whose incomes shall not exceed the applicable income limit at the time of their initial occupancy.
Do not select if extended compliance is selected on Request Info Tab
Action: Provide Homeownership Plan **(TAB N)**

NOTE: Applicant waives the right to pursue a Qualified Contract.

H. STRUCTURE AND UNITS INFORMATION

1. General Information

a. Total number of **all** units in development	160	bedrooms	376	
Total number of **rental** units in development	160	bedrooms	376	
Number of low-income rental units	128	bedrooms	305	
Percentage of rental units designated low-income	80.00%			

b. Number of new units:……..	0	bedrooms	0	
Number of adaptive reuse units: ……	0	bedrooms	0	
Number of rehab units:……	160	bedrooms	376	

c. If any, indicate number of planned exempt units (included in total of all units in development)…….. 0

d. Total Floor Area For The Entire Development……. 187,048.66 (Sq. ft.)

e. Unheated Floor Area (i.e. Breezeways, Balconies, Storage)…… 30,590.87 (Sq. ft.)

f. Nonresidential Commercial Floor Area (Not eligible for funding)…… 3,207.95

g. Total Usable Residential Heated Area…….. 153,249.84 (Sq. ft.)

h. Percentage of Net Rentable Square Feet Deemed To Be **New Rental Space**…… 0.00%

i. Exact area of site in acres …….. 8.730

j. Locality has approved a final site plan or plan of development…….. FALSE
If **True**, Provide required documentation (**TAB O**).

k. Requirement as of 2016: Site must be properly zoned for proposed development.
ACTION: Provide required zoning documentation **(MANDATORY TAB G)**

l. Development is eligible for Historic Rehab credits…….. FALSE

Definition:

The structure is historic, by virtue of being listed individually in the National Register of Historic Places, or due to its location in a registered historic district and certified by the Secretary of the Interior as being of historical significance to the district, and the rehabilitation will be completed in such a manner as to be eligible for historic rehabilitation tax credits.

H. STRUCTURE AND UNITS INFORMATION

2. UNIT MIX

a. Specify the **average size and number per unit type (as indicated in the Architect's Certification):**

Note: Average sq foot should include the prorata of common space.

Unit Type	Average Sq Foot		# of LIHTC Units	Total Rental Units
Supportive Housing	0.00	SF	0	0
1 Story Eff - Elderly	0.00	SF	0	0
1 Story 1BR - Elderly	0.00	SF	0	0
1 Story 2BR - Elderly	0.00	SF	0	0
Eff - Elderly	0.00	SF	0	0
1BR Elderly	0.00	SF	0	0
2BR Elderly	0.00	SF	0	0
Eff - Garden	0.00	SF	0	0
1BR Garden	0.00	SF	0	0
2BR Garden	878.19	SF	79	104
3BR Garden	1105.68	SF	49	56
4BR Garden	0.00	SF	0	0
2+ Story 2BR Townhouse	0.00	SF	0	0
2+ Story 3BR Townhouse	0.00	SF	0	0
2+ Story 4BR Townhouse	0.00	SF	0	0
			128	160

Note: Please be sure to enter the values in the appropriate unit category. If not, errors will occur on the self scoresheet.

3. Structures

a. Number of Buildings (containing rental units)..... 14

b. Age of Structure:..... 25 years

c. Number of stories:..... 3

d. The development is a scattered site development..... FALSE

e. Commercial Area Intended Use: 0

f. Development consists primarily of : (Only One Option Below Can Be True)

i. Low Rise Building(s) - (1-5 stories with any structural elements made of wood)..... TRUE

ii. Mid Rise Building(s) - (5-7 stories with no structural elements made of wood)..... FALSE

iii. High Rise Building(s) - (8 or more stories with no structural elements made of wood)..... FALSE

H. STRUCTURE AND UNITS INFORMATION

g. Indicate **True** for all development's structural features that apply:

i. Row House/Townhouse	FALSE	v. Detached Single-family	FALSE
ii. Garden Apartments	TRUE	vi. Detached Two-family	FALSE
iii. Slab on Grade	FALSE	vii. Basement	FALSE
iv. Crawl space	FALSE		

h. Development contains an elevator(s). FALSE
If true, # of Elevators. 0
Elevator Type (if known)

i. Roof Type ► Pitched
j. Construction Type ► Frame
k. Primary Exterior Finish ► Vinyl

4. Site Amenities (indicate all proposed)

a. Business Center.....	FALSE	f. Limited Access.....	FALSE
b. Covered Parking.....	FALSE	g. Playground.....	TRUE
c. Exercise Room.....	FALSE	h. Pool.....	TRUE
d. Gated access to Site.....	FALSE	i. Rental Office.....	TRUE
e. Laundry facilities.....	TRUE	j. Sports Activity Court..	FALSE
		k. Other:	

l. Describe Community Facilities: Monitored and cleaned. Accessible.

m. Number of Proposed Parking Spaces..... 343
Parking is shared with another entity ..... FALSE

n. Development located within 1/2 mile of an existing commuter rail, light rail or subway station or 1/4 mile from existing public bus stop. ..... FALSE
If **True**, Provide required documentation (**TAB K3**).

H. STRUCTURE AND UNITS INFORMATION

5. Plans and Specifications

a. **Minimum submission requirements for all properties (new construction, rehabilitation and adaptive reuse):**

i. A location map with development clearly defined.

ii. Sketch plan of the site showing overall dimensions of all building(s), major site elements (e.g., parking lots and location of existing utilities, and water, sewer, electric, gas in the streets adjacent to the site). Contour lines and elevations are not required.

iii. Sketch plans of all building(s) reflecting overall dimensions of:

a. Typical floor plan(s) showing apartment types and placement

b. Ground floor plan(s) showing common areas

c. Sketch floor plan(s) of typical dwelling unit(s)

d. Typical wall section(s) showing footing, foundation, wall and floor structure
Notes must indicate basic materials in structure, floor and exterior finish.

b. The following are due at reservation for Tax Exempt 4% Applications and at allocation for 9% Applications.

i. Phase I environmental assessment.

ii. Physical needs assessment for any rehab only development.

NOTE: All developments must meet VHDA's **Minimum Design and Construction Requirements**. By signing and submitting the Application for Reservation of LIHTC, the applicant certifies that the proposed project budget, plans & specifications and work write-ups incorporate all necessary elements to fulfill these requirements.

6. Market Study Data:

Obtain the following information from the **Market Study** conducted in connection with this tax credit application:

Project Wide Capture Rate - LIHTC Units	6.10%
Project Wide Capture Rate - Market Units	30.00%
Project Wide Capture Rate - All Units	2.70%
Project Wide Absorption Period (Months)	6

J. ENHANCEMENTS

Each development must meet the following baseline energy performance standard applicable to the development's construction category.

a. **New Construction:** must meet all criteria for EPA EnergyStar certification.
b. **Rehabilitation:** renovation must result in at least a 30% performance increase or score an 80 or lower on the HERS Index.
c. **Adaptive Reuse:** must score a 95 or lower on the HERS Index.

Certification and HERS Index score must be verified by a third-party, independent, non-affiliated, certified RESNET home energy rater.

Indicate **True** for the following items that apply to the proposed development:

ACTION: Provide Architect Certification **(Mandatory)** and documents related to following items if applicable **(TAB F)**

1. **For any development, upon completion of construction/rehabilitation:**

TRUE a. A community/meeting room with a minimum of 749 square feet is provided.

14.00% b. Percentage of brick or other similar low-maintenance material approved by the Authority covering the exterior walls. Community buildings are to be included in percentage calculations.

TRUE c. Water expense is sub-metered (the tenant will pay monthly or bi-monthly bill).

TRUE d. Each bathroom contains only of WaterSense labeled faucets, toilets and showerheads.

FALSE e. Each unit is provided with the necessary infrastructure for high-speed internet/broadband service.

FALSE f. Free WiFi access will be provided in community room for resident only usage.

FALSE g. Each unit is provided free individual high speed internet access.

or

FALSE h. Each unit is provided free individual WiFi access.

FALSE i. Full bath fans are wired to primary light with delayed timer or has continuous exhaust by ERV/DOAS.

or

FALSE j. Full bath fans are equipped with a humidistat.

TRUE k. Cooking surfaces are equipped with fire prevention features

or

FALSE l. Cooking surfaces are equipped with fire suppression features.

FALSE m. Rehab only: Each unit has dedicated space, drain and electrical hook-ups to accept a permanently installed dehumidification system.

or

FALSE n. All Construction types: each unit is equipped with a permanent dehumidification system.

FALSE o. All interior doors within units are solid core.

FALSE p. At minimum, one USB charging port in each kitchen, living room and all bedrooms.

TRUE q. All kitchen light fixtures are LED and meet MDCR lighting guidelines.

FALSE r. Each unit has a shelf or ledge outside the primary entry door located in an interior hallway.

FALSE s. New construction only: Each unit to have balcony or patio with a minimum depth of 5 feet clear from face of building and a minimum size of 30 square feet.

For all developments exclusively serving elderly tenants upon completion of construction/rehabilitation:

FALSE a. All cooking ranges have front controls.

J. ENHANCEMENTS

FALSE b. Bathrooms have an independent or supplemental heat source.

FALSE c. All entrance doors have two eye viewers, one at 42" inches and the other at standard height.

2. **Green Certification**

a. Applicant agrees to meet the base line energy performance standard applicable to the development's construction category as listed above.

The applicant will also obtain one of the following:

FALSE Earthcraft Gold or higher certification

FALSE National Green Building Standard (NGBS) certification of Silver or higher.

FALSE U.S. Green Building Council LEED certification

FALSE Enterprise Green Communities (EGC) Certification

Action: If seeking any points associated Green certification, provide appropriate documentation at **TAB F.**

b. Applicant will pursue one of the following certifications to be awarded points on a future development application. (Failure to reach this goal will not result in a penalty.)

FALSE Zero Energy Ready Home Requirements

FALSE Passive House Standards

3. **Universal Design** - Units Meeting Universal Design Standards (units must be shown on Plans)

FALSE a. Architect of record certifies that units will be constructed to meet VHDA's Universal Design standards.

0 b. Number of Rental Units constructed to meet VHDA's Universal Design standards:

0% % of Total Rental Units

4. TRUE Market-rate units' amenities are substantially equivalent to those of the low income units.

If not, please explain:

I. UTILITIES

1. Describe the Heating/AC System: Individual heat pumps and central air conditioning units

2. Services Included:

Utilities	Type of Utility (Gas, Electric, Oil, etc.)	Utilities Paid by:	Enter Allowances by Bedroom Size 0-bdr	1-bdr	2-bdr	3-bdr	4-br
Heating	Electric	Tenant	0	0	109	157	0
Air Conditioning	Electric	Tenant	0	0	0	0	0
Cooking	Electric	Tenant	0	0	0	0	0
Lighting	Electric	Tenant	0	0	0	0	0
Hot Water	Electric	Tenant	0	0	0	0	0
Water	Hampton	Tenant	0	0	0	0	0
Sewer	Hampton	Tenant	0	0	0	0	0
Trash	Hampton	Owner	0	0	0	0	0
Total utility allowance for costs paid by tenant			$0	$0	$109	$157	$0

3. The following sources were used for Utility Allowance Calculation (Provide documentation **TAB R).**

a. FALSE HUD

b. TRUE Utility Company (Estimate)

c. FALSE Utility Company (Actual Survey)

d. FALSE Local PHA

e. FALSE Other:

Warning: The VHDA housing choice voucher program utility schedule shown on VHDA.com should not be used unless directed to do so by the local housing authority.

K. SPECIAL HOUSING NEEDS

NOTE: Any Applicant commits to providing first preference to members of targeted populations having state rental assistance and will not impose any eligibility requirements or lease terms for such individuals that are more restrictive than its standard requirements and terms, the terms of the MOU establishing the target population, or the eligibility requirements for the state rental assistance.

1. **Accessibility:** Indicate **True** for the following point categories, as appropriate.
   Action: Provide appropriate documentation (**Tab X**)

FALSE a. Any development in which (i) the greater of 5 units or 10% of units will be assisted by HUD project-based vouchers (as evidenced by the submission of a letter satisfactory to the Authority from an authorized public housing authority (PHA) that the development meets all prerequisites for such assistance), or another form of documented and binding federal project-based rent subsidies in order to ensure occupancy by extremely low-income persons. Locality project based rental subsidy meets the definition of state project based rental subsidy;

(ii) will conform to HUD regulations interpreting the accessibility requirements of section 504 of the Rehabilitation Act; and be actively marketed to persons with disabilities as defined in the Fair Housing Act in accordance with a plan submitted as part of the application for credits.
(iii) above must include roll-in showers, roll under sinks and front control ranges, unless agreed to by the Authority prior to the applicant's submission of its application.

Documentation from source of assistance must be provided with the application.
Note: Subsidies may apply to any units, not only those built to satisfy Section 504.
(60 points)

FALSE b. Any development in which the greater of 5 units or 10% of the units (i) have rents within HUD's Housing Choice Voucher ("HCV") payment standard; (ii) conform to HUD regulations interpreting the accessibility requirements of section 504 of the Rehabilitation Act; and (iii) are actively marketed to persons with disabilities as defined in the Fair Housing Act in accordance with a plan submitted as part of the application for credits (30 points)

TRUE c. Any development in which 5% of the units (i) conform to HUD regulations interpreting the accessibility requirements of section 504 of the Rehabilitation Act and (ii) are actively marketed to persons with disabilities as defined in the Fair Housing Act in accordance with a plan submitted as part of this application for credits. (15 points)

For items a,b or c, all common space must also conform to HUD regulations interpreting the accessibility Rehabilitation Act.

K. SPECIAL HOUSING NEEDS

2. **Special Housing Needs/Leasing Preference:**

a. If not general population, select applicable special population:

FALSE — Elderly (as defined by the United States Fair Housing Act.)

FALSE — Persons with Disabilities (must meet the requirements of the Federal Americans with Disabilities Act) - Accessible Supportive Housing Pool only

FALSE — Supportive Housing (as described in the Tax Credit Manual)

Action: Provide Permanent Supportive Housing Certification (**Tab S**)

b. The development has existing tenants and a relocation plan has been developed……. TRUE

(If **True**, VHDA policy requires that the impact of economic and/or physical displacement on those tenants be minimized, in which Owners agree to abide by the Authority's Relocation Guidelines for LIHTC properties.)

Action: Provide Relocation Plan **(Mandatory if tenants are displaced - Tab J)**

3. **Leasing Preferences**

a. Will leasing preference be given to applicants on a public housing waiting list and/or Section 8 waiting list? select: No

Organization which holds such waiting list:

Contact person:

Title:

Phone Number

Action: Provide required notification documentation **(TAB L)**

b. Leasing preference will be given to individuals and families with children……. FALSE

(Less than or equal to 20% of the units must have of 1 or less bedrooms).

c. Specify the number of low-income units that will serve individuals and families with children by providing three or more bedrooms: 0

% of total Low Income Units 0%

NOTE: Development must utilize a **VHDA Certified Management Agent**. Proof of management certification must be provided before 8609s are issued.

K. SPECIAL HOUSING NEEDS

4. **Rental Assistance**

a. Some of the low-income units do or will receive rental assistance……. TRUE

b. Indicate True if rental assistance will be available from the following

FALSE	Rental Assistance Demonstration (RAD) or other PHA conversion to based rental assistance.
FALSE	Section 8 New Construction Substantial Rehabilitation
FALSE	Section 8 Moderate Rehabilitation
FALSE	Section 8 Certificates
FALSE	Section 8 Project Based Assistance
FALSE	RD 515 Rental Assistance
FALSE	Section 8 Vouchers
FALSE	State Assistance
TRUE	Other: Housing Choice Vouchers

c. The Project Based vouchers above are applicable to the 30% units seeking points. FALSE

i. If True above, how many of the 30% units will not have project based vouchers?

d. Number of units receiving assistance: 0
How many years in rental assistance contract? 0.00
Expiration date of contract:
There is an Option to Renew…… FALSE

Action: Contract or other agreement provided **(TAB Q).**

L. UNIT DETAILS

1. Set-Aside Election: UNITS SELECTED IN INCOME AND RENT DETERMINE POINTS FOR THE BONUS POINT CATEGORY

Note: In order to qualify for any tax credits, a development must meet one of two minimum threshold occupancy tests. Either (i) at least 20% of the units must be rent-restricted and occupied by persons whose incomes are 50% or less of the area median income adjusted for family size (this is called the 20/50 test) or (ii) at least 40% of the units must be rent-restricted and occupied by persons whose incomes are 60% or less of the area median income adjusted for family size (this is called the 40/60 test), all as described in Section 42 of the IRC. Rent-and income-restricted units are known as low-income units. If you have more low-income units than required, you qualify for more credits. If you serve lower incomes than required, you receive more points under the ranking system.

a. Units Provided Per Household Type:

Income Levels		
# of Units	% of Units	
0	0.00%	20% Area Median
0	0.00%	30% Area Median
0	0.00%	40% Area Median
0	0.00%	50% Area Median
128	80.00%	60% Area Median
0	0.00%	70% Area Median
0	0.00%	80% Area Median
32	20.00%	Market Units
160	100.00%	**Total**

Rent Levels		
# of Units	% of Units	
0	0.00%	20% Area Median
0	0.00%	30% Area Median
0	0.00%	40% Area Median
0	0.00%	50% Area Median
128	80.00%	60% Area Median
0	0.00%	70% Area Median
0	0.00%	80% Area Median
32	20.00%	Market Units
160	100.00%	**Total**

b. The development plans to utilize income averaging..... FALSE

If above is true, should the points based on the units assigned to the levels above **be waived** and therefore not required for compliance?

20-30% Levels: FALSE | 40% Levels: FALSE | 50% levels: FALSE

2. Unit Detail FOR YOUR CONVENIENCE, COPY AND PASTE IS ALLOWED WITHIN UNIT MIX GRID

In the following grid, add a row for each unique unit type planned within the development. Enter the appropriate data for both tax credit and market rate units.

	Unit Type (Select One)	Rent Target (Select One)	Number of Units	Number of Units 504 compliant	Net Rentable Square Feet	Monthly Rent Per Unit	Total Monthly Rent
Mix 1	2 BR - 2 Bath	60% AMI	29	0	878.19	$962.00	$27,898
Mix 2	2 BR - 2 Bath	60% AMI	29	0	878.19	$921.00	$26,709
Mix 3	2 BR - 2 Bath	60% AMI	21	0	878.19	$896.00	$18,816
Mix 4	3 BR - 2 Bath	60% AMI	49	0	1105.68	$1,080.00	$52,920
Mix 5	2 BR - 2 Bath	Market 100%	7	0	878.19	$978.00	$6,846
Mix 6	2 BR - 2 Bath	Market 100%	7	0	878.19	$975.00	$6,825
Mix 7	2 BR - 2 Bath	Market 100%	11	0	878.19	$979.00	$10,769
Mix 8	3 BR - 2 Bath	Market 100%	4	0	1105.68	$1,116.00	$4,464
Mix 9	3 BR - 2 Bath	Market 100%	3	0	1105.68	$1,102.00	$3,306
Mix 10							$0
Mix 11							$0
Mix 12							$0
Mix 13							$0
Mix 14							$0
Mix 15							$0
Mix 16							$0
Mix 17							$0
Mix 18							$0
Mix 19							$0
Mix 20							$0
Mix 21							$0
Mix 22							$0
Mix 23							$0

L. UNIT DETAILS

Mix 24							$0
Mix 25							$0
Mix 26							$0
Mix 27							$0
Mix 28							$0
Mix 29							$0
Mix 30							$0
Mix 31							$0
Mix 32							$0
Mix 33							$0
Mix 34							$0
Mix 35							$0
Mix 36							$0
Mix 37							$0
Mix 38							$0
Mix 39							$0
Mix 40							$0
Mix 41							$0
Mix 42							$0
Mix 43							$0
Mix 44							$0
Mix 45							$0
Mix 46							$0
Mix 47							$0
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Mix 74							$0
Mix 75							$0
Mix 76							$0
Mix 77							$0
Mix 78							$0
Mix 79							$0
Mix 80							$0
Mix 81							$0
Mix 82							$0
Mix 83							$0
Mix 84							$0

L. UNIT DETAILS

Mix 85							$0
Mix 86							$0
Mix 87							$0
Mix 88							$0
Mix 89							$0
Mix 90							$0
Mix 91							$0
Mix 92							$0
Mix 93							$0
Mix 94							$0
Mix 95							$0
Mix 96							$0
Mix 97							$0
Mix 98							$0
Mix 99							$0
Mix 100							$0
TOTALS			160	0	8,586.18	$9,009	$158,553

Verify # of 504 Units based on previous tab.

Total Units	**160**	**Net Rentable SF:**	**TC Units**	**123,555.33**
			MKT Units	**29,694.51**
			Total NR SF:	**153,249.84**

Floor Space Fraction (to 7 decimals)	**80.62346%**

M. OPERATING EXPENSES

Administrative:				Use Whole Numbers Only!
1. Advertising/Marketing				$24,000
2. Office Salaries				$107,982
3. Office Supplies				$0
4. Office/Model Apartment		(type	)	$0
5. Management Fee				$79,398
4.01% of EGI	$496.24	Per Unit		
6. Manager Salaries				$0
7. Staff Unit (s)		(type	)	$0
8. Legal				$21,500
9. Auditing				$0
10. Bookkeeping/Accounting Fees				$8,000
11. Telephone & Answering Service				$2,365
12. Tax Credit Monitoring Fee				$0
13. Miscellaneous Administrative				$0
Total Administrative				$243,245
Utilities				
14. Fuel Oil				$0
15. Electricity				$23,049
16. Water				$117,009
17. Gas				$29
18. Sewer				$0
Total Utility				$140,087
Operating:				
19. Janitor/Cleaning Payroll				$13,000
20. Janitor/Cleaning Supplies				$2,000
21. Janitor/Cleaning Contract				$0
22. Exterminating				$7,965
23. Trash Removal				$18,434
24. Security Payroll/Contract				$22,609
25. Grounds Payroll				$21,530
26. Grounds Supplies				$0
27. Grounds Contract				$29,786
28. Maintenance/Repairs Payroll				$83,000
29. Repairs/Material				$93,550
30. Repairs Contract				$0
31. Elevator Maintenance/Contract				$0
32. Heating/Cooling Repairs & Maintenance				$3,000
33. Pool Maintenance/Contract/Staff				$1,000
34. Snow Removal				$500
35. Decorating/Payroll/Contract				$0
36. Decorating Supplies				$0
37. Miscellaneous				$79,802
Totals Operating & Maintenance				$376,176

M. OPERATING EXPENSES

Taxes & Insurance

38.	Real Estate Taxes	$131,885
39.	Payroll Taxes	$0
40.	Miscellaneous Taxes/Licenses/Permits	$250
41.	Property & Liability Insurance	$40,000
42.	Fidelity Bond	$0
43.	Workman's Compensation	$42,000
44.	Health Insurance & Employee Benefits	$0
45.	Other Insurance	$56,000
	Total Taxes & Insurance	$270,135
	Total Operating Expense	$1,029,643

Total Operating Expenses Per Unit $6,435 **C.** **Total Operating Expenses as % of EGI** 51.95%

Replacement Reserves (Total # Units X $300 or $250 New Const. Elderly Minimum) $56,000

Total Expenses $1,085,643

ACTION: Provide Documentation of Operating Budget at **Tab R** if applicable.

N. PROJECT SCHEDULE

ACTIVITY	ACTUAL OR ANTICIPATED DATE	NAME OF RESPONSIBLE PERSON
1. SITE		
a. Option/Contract		
b. Site Acquisition	11/26/2019	Wade Wood
c. Zoning Approval	8/1/2019	Allison Domson
d. Site Plan Approval	NA	NA
2. Financing		
a. Construction Loan		
i. Loan Application	8/27/2019	Wade Wood
ii. Conditional Commitment	10/27/2019	Wade Wood
iii. Firm Commitment	10/27/2019	Wade Wood
b. Permanent Loan - First Lien		
i. Loan Application	8/27/2019	Wade Wood
ii. Conditional Commitment	10/27/2019	Wade Wood
iii. Firm Commitment	10/27/2019	Wade Wood
c. Permanent Loan-Second Lien		
i. Loan Application		
ii. Conditional Commitment		
iii. Firm Commitment		
d. Other Loans & Grants		
i. Type & Source, List		
ii. Application		
iii. Award/Commitment		
2. Formation of Owner	6/15/2019	Allison Domson
3. IRS Approval of Nonprofit Status		
4. Closing and Transfer of Property to Owner	11/26/2019	Wade Wood
5. Plans and Specifications, Working Drawings	8/27/2019	Dyke Nelson
6. Building Permit Issued by Local Government	10/30/2019	Dyle Nelson
7. Start Construction	12/1/2019	Ben Tullis
8. Begin Lease-up	12/15/2019	Debbie Workman
9. Complete Construction	11/1/2020	Ben Tullis
10. Complete Lease-Up	11/15/2020	Debbie Workman
11. Credit Placed in Service Date	11/30/2020	Wade Wood

O. PROJECT BUDGET - HARD COSTS

Cost/Basis/Maximum Allowable Credit

Complete cost column and basis column(s) as appropriate

Note: Attorney must opine, among other things, as to correctness of the inclusion of each cost item in eligible basis, type of credit and numerical calculations included in Project Budget.

Must Use Whole Numbers Only! Item	(A) Cost	Amount of Cost up to 100% Includable in Eligible Basis--Use Applicable Column(s): "30% Present Value Credit" (B) Acquisition	"30% Present Value Credit" (C) Rehab/ New Construction	(D) "70 % Present Value Credit"
1. Contractor Cost				
a. Unit Structures (New)	0	0	0	0
b. Unit Structures (Rehab)	5,375,263	0	5,375,263	0
c. Non Residential Structures	0	0	0	0
d. Commercial Space Costs	0	0	0	0
e. Structured Parking Garage	0	0	0	0
Total Structure	5,375,263	0	5,375,263	0
f. Earthwork	0	0	0	0
g. Site Utilities	0	0	0	0
h. Roads & Walks	0	0	0	0
i. Site Improvements	0	0	0	0
j. Lawns & Planting	0	0	0	0
k. Engineering	0	0	0	0
l. Off-Site Improvements	0	0	0	0
m. Site Environmental Mitigation	0	0	0	0
n. Demolition	0	0	0	0
o. Site Work	0	0	0	0
p. Other Site work	0	0	0	0
Total Land Improvements	0	0	0	0
Total Structure and Land	5,375,263	0	5,375,263	0
q. General Requirements	322,516	0	322,516	0
r. Builder's Overhead (2.0% Contract)	107,505	0	107,505	0
s. Builder's Profit (6.0% Contract)	322,516	0	322,516	0
t. Bonds	61,897	0	61,897	0
u. Building Permits	50,000	0	50,000	0
v. Special Construction	0	0	0	0
w. Special Equipment	0	0	0	0
x. Other 1:	0	0	0	0
y. Other 2:	0	0	0	0
z. Other 3:	0	0	0	0
Contractor Costs	$6,239,697	$0	$6,239,697	$0

O. PROJECT BUDGET - OWNER COSTS

MUST USE WHOLE NUMBERS ONLY!

Item	(A) Cost	Amount of Cost up to 100% Includable in Eligible Basis--Use Applicable Column(s): "30% Present Value Credit" (B) Acquisition	"30% Present Value Credit" (C) Rehab/ New Construction	(D) "70 % Present Value Credit"
2. Owner Costs				
a. Building Permit	0	0	0	0
b. Architecture/Engineering Design Fee ($1,665 /Unit)	266,411	0	266,411	0
c. Architecture Supervision Fee ($0 /Unit)	0	0	0	0
d. Tap Fees	0	0	0	0
e. Environmental	5,000	5,000	0	0
f. Soil Borings	0	0	0	0
g. EarthCraft/LEED	0	0	0	0
h. Appraisal	7,500	0	5,000	0
i. Market Study	10,000	0	5,000	0
j. Site Engineering / Survey	10,000	9,014	0	0
k. Construction/Development Mgt	15,000	0	15,000	0
l. Structural/Mechanical Study	5,000	0	5,000	0
m. Construction Loan Origination Fee	0	0	0	0
n. Construction Interest (0.0% for 0 months)	0	0	0	0
o. Taxes During Construction	0	0	0	0
p. Insurance During Construction	0	0	0	0
q. Permanent Loan Fee (1.0%)	160,000	0	0	0
r. Other Permanent Loan Fees	40,000	0	0	0
s. Letter of Credit	0	0	0	0
t. Cost Certification Fee	0	0	0	0
u. Accounting	10,000	0	0	0
v. Title and Recording	126,450	113,986	0	0
w. Legal Fees for Closing	45,000	0	22,500	0
x. Mortgage Banker	0	0	0	0
y. Tax Credit Fee	53,353			
z. Tenant Relocation	0	0	0	0
aa. Fixtures, Furnitures and Equipment	10,000	0	0	0
ab. Organization Costs	0	0	0	0
ac. Operating Reserve	928,537	0	0	0
ad. Contingency	623,970	0	623,970	0
ae. Security	0	0	0	0
af. Utilities	0	0	0	0
(1) Other* specify: FHA Exam/Inspection/MIP	160,000	0	160,000	0
(2) Other* specify: Travel	10,000	0	10,000	0
(3) Other* specify: Bond Issuer, Counsel, Unde	242,000	0	0	0
(4) Other* specify: Compliance Monitoring Fee	5,075	0	0	0
(5) Other * specify: Soft Cost Contingency	25,000	0	0	0
(6) Other* specify: Tower Report	6,500	0	6,500	0
(7) Other* specify: Termite	3,000	0	0	0

O. PROJECT BUDGET - OWNER COSTS

(8) Other* specify: Property & Liability Insuran	40,000	0	0	0
(9) Other* specify: Tax Escrow	131,885	0		0
(10) Other* specify: IDRR	52,000	0		0
Owner Costs Subtotal (Sum 2A..2(10))	$2,991,681	$128,000	$1,119,381	$0
Subtotal 1 + 2 (Owner + Contractor Costs)	$9,231,378	$128,000	$7,359,078	$0
3. Developer's Fees	1,980,110	752,039	1,228,072	0
4. Owner's Acquisition Costs				
Land	1,000,000			
Existing Improvements	9,145,000	9,145,000		
Subtotal 4:	$10,145,000	$9,145,000		
5. Total Development Costs				
Subtotal 1+2+3+4:	$21,356,488	$10,025,039	$8,587,150	$0

If this application seeks rehab credits only, in which there is no acquisition and no change in ownership, enter the greater of appraised value or tax assessment value here:

	$0	**Land**
(Provide documentation at **Tab E**)	$0	**Building**

Maximum Developer Fee: **$1,980,110**

Proposed Development's Cost per Unit:	$133,478	**Meets Limits**
per Sq Foot	$60	**Meets Limits**
Applicable Cost Limit per unit:	$199,972	

P. ELIGIBLE BASIS CALCULATION

Item	(A) Cost	Amount of Cost up to 100% Includable in Eligible Basis--Use Applicable Column(s): "30 % Present Value Credit" (B) Acquisition	(C) Rehab/ New Construction	(D) "70 % Present Value Credit"
1. Total Development Costs	21,356,488	10,025,039	8,587,150	0
2. Reductions in Eligible Basis				
a. Amount of federal grant(s) used to finance qualifying development costs		0	0	0
b. Amount of nonqualified, nonrecourse financing		0	0	0
c. Costs of nonqualifying units of higher quality (or excess portion thereof)		0	0	0
d. Historic Tax Credit (residential portion)		0	0	0
3. Total Eligible Basis (1 - 2 above)		10,025,039	8,587,150	0
4. Adjustment(s) to Eligible Basis (For non-acquisition costs in eligible basis)				
a. For QCT or DDA (Eligible Basis x 30%)			0	0
State Designated Basis Boosts:				
b. For Revitalization or Supportive Housing (Eligible Basis x 30%)			0	0
c. For Green Certification (Eligible Basis x 10%)				0
Total Adjusted Eligible basis			8,587,150	0
5. Applicable Fraction		80.00000%	80.00000%	80.00000%
6. Total Qualified Basis (Eligible Basis x Applicable Fraction)		8,020,031	6,869,720	0
7. Applicable Percentage		3.20%	3.20%	0.00%
(Beginning with 2016 Allocations, use the standard 9% rate.) (For tax exempt bonds, use the most recently published rates.)				
8. Maximum Allowable Credit under IRC §42 (Qualified Basis x Applicable Percentage)		$256,641	$219,831	$0
(Must be same as BIN total and equal to or less than credit amount allowed)		$476,472 Combined 30% & 70% P. V. Credit		

Q. SOURCES OF FUNDS

Action: Provide Documentation for all Funding Sources at **Tab T**

1. **Construction Financing:** List individually the sources of construction financing, including any such loans financed through grant sources:

	Source of Funds	Date of Application	Date of Commitment	Amount of Funds	Name of Contact Person
1.	First Mortgage	08/27/19	10/27/19	$16,000,000	Jon Killough
2.					
3.					
	Total Construction Funding:			$16,000,000	

2. **Permanent Financing:** List individually the sources of all permanent financing in order of lien position:

	Source of Funds	Date of Application	Date of Commitment	*(Whole Numbers only)* Amount of Funds	Annual Debt Service Cost	Interest Rate of Loan	Amortization Period IN YEARS	Term of Loan (years)
1.	First Mortgage	08/27/19	10/27/19	$16,000,000	$771,431	3.30%	35.00	35.00
2.								
3.								
4.								
5.								
6.								
7.								
8.								
9.								
10.								
	Total Permanent Funding:			$16,000,000	$771,431			

3. **Grants**: List all grants provided for the development:

	Source of Funds	Date of Application	Date of Commitment	Amount of Funds	Name of Contact Person
1.					
2.					
3.					
4.					
5.					
6.					
	Total Permanent Grants:			$0	

Q. SOURCES OF FUNDS

4. Subsidized Funding

	Source of Funds	Date of Commitment	Amount of Funds
1.			
2.			
3.			$0
4.			
5.			
	Total Subsidized Funding		$0

5. Recap of Federal, State, and Local Funds

Portions of the sources of funds described above for the development are financed directly or indirectly with Federal, State, or Local Government Funds…….. FALSE

If above is **True**, then list the amount of money involved by all appropriate types.

Below-Market Loans

TE: See Below For 50% Test Status

a.	Tax Exempt Bonds	$11,500,000
b.	RD 515	$0
c.	Section 221(d)(3)	$0
d.	Section 312	$0
e.	Section 236	$0
f.	VHDA SPARC/REACH	$0
g.	HOME Funds	$0
h.	Other:	$0
i.	Other:	$0

Market-Rate Loans

a.	Taxable Bonds	$0
b.	Section 220	$0
c.	Section 221(d)(3)	$0
d.	Section 221(d)(4)	$0
e.	Section 236	$0
f.	Section 223(f)	$0
g.	Other:	$0

Grants*

a.	CDBG	$0
b.	UDAG	$0

Grants

c.	State	
d.	Local	
e.	Other:	

*This means grants to the partnership. If you received a loan financed by a locality which received one of the listed grants, please list it in the appropriate loan column as "other" and describe the applicable grant program which funded it.

Q. SOURCES OF FUNDS

6. For Transactions Using Tax-Exempt Bonds Seeking 4% Credits:

For purposes of the 50% Test, and based only on the data entered to this application, the portion of the aggregate basis of buildings and land financed with tax-exempt funds is: **58.64%**

7. Some of the development's financing has credit enhancements…….. TRUE

If **True**, list which financing and describe the credit enhancement:

HUD 223f mortgage loan

8. Other Subsidies **Action:** Provide documentation **(Tab Q)**

a. FALSE Real Estate Tax Abatement on the increase in the value of the development.

b. FALSE **New** project based subsidy from HUD or Rural Development for the greater of 5 or 10% of the units in the development.

c. FALSE Other

9. A HUD approval for transfer of physical asset is required…….. FALSE

R. EQUITY

1. Equity

a. Portion of Syndication Proceeds Attributable to Historic Tax Credit

Amount of Federal historic credits	$0	x Equity $	$0.000	=	$0
Amount of Virginia historic credits	$0	x Equity $	$0.000	=	$0

b. Equity that Sponsor will Fund:

i.	Cash Investment	$0	
ii.	Contributed Land/Building	$0	
iii.	Deferred Developer Fee	$1,092,490	(Note: Deferred Developer Fee cannot be negative.)
iv.	Other:	$0	
	Equity Total	$1,092,490	

2. Equity Gap Calculation

a.	Total Development Cost		$21,356,488
b.	Total of Permanent Funding, Grants and Equity	-	$17,092,490
c.	Equity Gap		$4,263,998
d.	Developer Equity	-	$853
e.	Equity gap to be funded with low-income tax credit proceeds		$4,263,145

3. Syndication Information (If Applicable)

a. Actual or Anticipated Name of Syndicator: Boston Capital

Contact Person: Scott Arrighi Phone: 617.624.8584

Street Address: One Boston Place, 21st Floor

City: Boston State: MA Zip: 2108

b. Syndication Equity

i.	Anticipated Annual Credits	$476,424.00
ii.	Equity Dollars Per Credit (e.g., $0.85 per dollar of credit)	$0.895
iii.	Percent of ownership entity (e.g., 99% or 99.9%)	99.98000%
iv.	Syndication costs not included in Total Development Costs (e.g., advisory fees)	$0
v.	Net credit amount anticipated by user of credits	$476,329
vi.	Total to be paid by anticipated users of credit (e.g., limited partners)	$4,263,145

c. Syndication: Private

d. Investors: Corporate

4. Net Syndication Amount $4,263,145

Which will be used to pay for Total Development Costs

5. Net Equity Factor 89.5000629599%

Must be equal to or greater than 85%

S. DETERMINATION OF RESERVATION AMOUNT NEEDED

The following calculation of the amount of credits needed is substantially the same as the calculation which will be made by VHDA to determine, as required by the IRC, the amount of credits which may be allocated for the development. However, VHDA at all times retains the right to substitute such information and assumptions as are determined by VHDA to be reasonable for the information and assumptions provided herein as to costs (including development fees, profits, etc.), sources for funding, expected equity, etc. Accordingly, if the development is selected by VHDA for a reservation of credits, the amount of such reservation may differ significantly from the amount you compute below.

1.	Total Development Costs		$21,356,488
2.	Less Total of Permanent Funding, Grants and Equity	-	$17,092,490
3.	Equals Equity Gap		$4,263,998
4.	Divided by Net Equity Factor (Percent of 10-year credit expected to be raised as equity investment)		89.5000629599%
5.	Equals Ten-Year Credit Amount Needed to Fund Gap		$4,764,240
	Divided by ten years		10
6.	Equals Annual Tax Credit Required to Fund the Equity Gap		$476,424
7.	Maximum Allowable Credit Amount (from Eligible Basis Calculation)		$476,472

8. Requested Credit Amount

		For 30% PV Credit:	$476,424
		For 70% PV Credit:	$0
Credit per LI Units	$3,722.0625		
Credit per LI Bedroom	$1,562.0459	**Combined 30% & 70% PV Credit Requested**	**$476,424**

9. **Action:** Provide Attorney's Opinion **(Mandatory Tab H)**

T. CASH FLOW

1. **Revenue**

Indicate the estimated monthly income for the **Low-Income Units** (based on Unit Details tab):

Total Monthly Rental Income for LIHTC Units		$140,014
Plus Other Income Source (list):		$15,295
Equals Total Monthly Income:		$155,309
Twelve Months		x12
Equals Annual Gross Potential Income		$1,863,708
Less Vacancy Allowance	7.0%	$131,188
Equals Annual Effective Gross Income (EGI) - Low Income Units		$1,732,520

2. Indicate the estimated monthly income for the **Market Rate Units** (based on Unit Details tab):

Total Monthly Income for Market Rate Units:		$18,539
Plus Other Income Source (list):		$3,827
Equals Total Monthly Income:		$22,366
Twelve Months		x12
Equals Annual Gross Potential Income		$268,392
Less Vacancy Allowance	7.0%	$18,787
Equals Annual Effective Gross Income (EGI) - Market Rate Units		$249,605

Action: Provide documentation in support of Operating Budget **(TAB R)**

3. **Cash Flow (First Year)**

a.	Annual EGI Low-Income Units	$1,732,520
b.	Annual EGI Market Units	$249,605
c.	Total Effective Gross Income	$1,982,124
d.	Total Expenses	$1,085,643
e.	Net Operating Income	$896,481
f.	Total Annual Debt Service	$771,431
g.	Cash Flow Available for Distribution	$125,050

T. CASH FLOW

4. **Projections for Financial Feasibility - 15 Year Projections of Cash Flow**

	Stabilized Year 1	Year 2	Year 3	Year 4	Year 5
Eff. Gross Income	1,982,124	2,021,767	2,062,202	2,103,446	2,145,515
Less Oper. Expenses	1,085,643	1,118,212	1,151,759	1,186,311	1,221,901
Net Income	896,481	903,554	910,443	917,135	923,614
Less Debt Service	771,431	771,431	771,431	771,431	771,431
Cash Flow	125,050	132,123	139,012	145,704	152,183
Debt Coverage Ratio	1.16	1.17	1.18	1.19	1.20

	Year 6	Year 7	Year 8	Year 9	Year 10
Eff. Gross Income	2,188,425	2,232,194	2,276,838	2,322,375	2,368,822
Less Oper. Expenses	1,258,558	1,296,315	1,335,204	1,375,260	1,416,518
Net Income	929,868	935,879	941,634	947,114	952,304
Less Debt Service	771,431	771,431	771,431	771,431	771,431
Cash Flow	158,437	164,448	170,203	175,683	180,873
Debt Coverage Ratio	1.21	1.21	1.22	1.23	1.23

	Year 11	Year 12	Year 13	Year 14	Year 15
Eff. Gross Income	2,416,198	2,464,522	2,513,813	2,564,089	2,615,371
Less Oper. Expenses	1,459,013	1,502,784	1,547,867	1,594,303	1,642,132
Net Income	957,185	961,739	965,946	969,786	973,238
Less Debt Service	771,431	771,431	771,431	771,431	771,431
Cash Flow	185,754	190,308	194,515	198,355	201,807
Debt Coverage Ratio	1.24	1.25	1.25	1.26	1.26

Estimated Annual Percentage Increase in Revenue	2.00%	(Must be < 2%)
Estimated Annual Percentage Increase in Expenses	3.00%	(Must be > 3%)

U. Building-by-Building Information

Must Complete

Qualified basis must be determined on a building-by building basis. Complete the section below. Building street addresses are required by the IRS (must have them by the time of allocation request).

Number of BINS: 14

Total Qualified Basis should equal total on Elig Basis Tab

FOR YOUR CONVENIENCE, COPY AND PASTE IS ALLOWED WITHIN BUILDING GRID

Bldg #	BIN if known	NUMBER OF TAX CREDIT UNITS	NUMBER OF MARKET RATE UNITS	DO NOT use the CUT feature Street Address 1	Street Address 2	City	State	Zip	30% Present Value Credit for Acquisition: Estimate Qualified Basis	Actual or Anticipated In-Service Date	Applicable Percentage	Credit Amount	30% Present Value Credit for Rehab / New Construction: Estimate Qualified Basis	Actual or Anticipated In-Service Date	Applicable Percentage	Credit Amount	70% Present Value Credit: Estimate Qualified Basis	Actual or Anticipated In-Service Date	Applicable Percentage	Credit Amount
1.		8		6 Derby Drive		Hampton	VA	23666	$501,251	11/30/20	3.20%	$16,040	$429,360	11/30/20	3.20%	$13,740				$0
2.		12		6 Derby Drive		Hampton	VA	23666	$751,878	11/30/20	3.20%	$24,060	$644,036	11/30/20	3.20%	$20,609				$0
3.		0	12	6 Derby Drive		Hampton	VA	23666	$0	11/30/20	0.00%	$0	$0	11/30/20	0.00%	$0				$0
4.		12		6 Derby Drive		Hampton	VA	23666	$751,878	11/30/20	3.20%	$24,060	$644,036	11/30/20	3.20%	$20,609				$0
5.		12		6 Derby Drive		Hampton	VA	23666	$751,878	11/30/20	3.20%	$24,060	$644,036	11/30/20	3.20%	$20,609				$0
6.		0	8	6 Derby Drive		Hampton	VA	23666	$0	11/30/20	0.00%	$0	$0	11/30/20	0.00%	$0				$0
7.		0	12	6 Derby Drive		Hampton	VA	23666	$0	11/30/20	0.00%	$0	$0	11/30/20	0.00%	$0				$0
8.		12		6 Derby Drive		Hampton	VA	23666	$751,878	11/30/20	3.20%	$24,060	$644,036	11/30/20	3.20%	$20,609				$0
9.		12		6 Derby Drive		Hampton	VA	23666	$751,878	11/30/20	3.20%	$24,060	$644,036	11/30/20	3.20%	$20,609				$0
10.		12		6 Derby Drive		Hampton	VA	23666	$751,878	11/30/20	3.20%	$24,060	$644,036	11/30/20	3.20%	$20,609				$0
11.		12		6 Derby Drive		Hampton	VA	23666	$751,878	11/30/20	3.20%	$24,060	$644,036	11/30/20	3.20%	$20,609				$0
12.		12		6 Derby Drive		Hampton	VA	23666	$751,878	11/30/20	3.20%	$24,060	$644,036	11/30/20	3.20%	$20,609				$0
13.		12		6 Derby Drive		Hampton	VA	23666	$751,878	11/30/20	3.20%	$24,060	$644,036	11/30/20	3.20%	$20,609				$0
14.		12		6 Derby Drive		Hampton	VA	23666	$751,878	11/30/20	3.20%	$24,060	$644,036	11/30/20	3.20%	$20,609				$0
15.												$0				$0				$0
16.												$0				$0				$0
17.												$0				$0				$0
18.												$0				$0				$0
19.												$0				$0				$0
20.												$0				$0				$0
21.												$0				$0				$0
22.												$0				$0				$0
23.												$0				$0				$0
24.												$0				$0				$0
25.												$0				$0				$0
26.												$0				$0				$0
27.												$0				$0				$0
28.												$0				$0				$0
29.												$0				$0				$0
30.												$0				$0				$0
31.												$0				$0				$0
32.												$0				$0				$0
33.												$0				$0				$0
34.												$0				$0				$0
35.												$0				$0				$0
		128	32																	
				Totals from all buildings					$8,020,031			$256,641	$6,869,720			$219,831	$0			$0

Qualified basis should equal values on Elig Basis.

Number of BINS: 14

V. STATEMENT OF OWNER

The undersigned hereby acknowledges the following:

1. that, to the best of its knowledge and belief, all factual information provided herein or in connection herewith is true and correct, and all estimates are reasonable.

2. that it will at all times indemnify and hold harmless VHDA and its assigns against all losses, costs, damages, VHDA's expenses, and liabilities of any nature directly or indirectly resulting from, arising out of, or relating to VHDA's acceptance, consideration, approval, or disapproval of this reservation request and the issuance or nonissuance of an allocation of credits, grants and/or loan funds in connection herewith.

3. that points will be assigned only for representations made herein for which satisfactory documentation is submitted herewith and that no revised representations may be made in connection with this application once the deadline for applications has passed.

4. that this application form, provided by VHDA to applicants for tax credits, including all sections herein relative to basis, credit calculations, and determination of the amount of the credit necessary to make the development financially feasible, is provided only for the convenience of VHDA in reviewing reservation requests; that completion hereof in no way guarantees eligibility for the credits or ensures that the amount of credits applied for has been computed in accordance with IRC requirements; and that any notations herein describing IRC requirements are offered only as general guides and not as legal authority.

5. that the undersigned is responsible for ensuring that the proposed development will be comprised of qualified low-income buildings and that it will in all respects satisfy all applicable requirements of federal tax law and any other requirements imposed upon it by VHDA prior to allocation, should one be issued.

6. that the undersigned commits to providing first preference to members of targeted populations having state rental assistance and will not impose any eligibility requirements or lease terms terms for such individuals that are more restrictive than its standard requirements and terms, the terms of the MOU establishing the target population, or the eligibility requirements for the state rental assistance.

7. that, for the purposes of reviewing this application, VHDA is entitled to rely upon representations of the undersigned as to the inclusion of costs in eligible basis and as to all of the figures and calculations relative to the determination of qualified basis for the development as a whole and/or each building therein individually as well as the amounts and types of credit applicable thereof, but that the issuance of a reservation based on such representation in no way warrants their correctness or compliance with IRC requirements.

8. that VHDA may request or require changes in the information submitted herewith, may substitute its own figures which it deems reasonable for any or all figures provided herein by the undersigned and may reserve credits, if any, in an amount significantly different from the amount requested.

9. that reservations of credits are not transferable without prior written approval by VHDA at its sole discretion.

V. STATEMENT OF OWNER

10. that the requirements for applying for the credits and the terms of any reservation or allocation thereof are subject to change at any time by federal or state law, federal, state or VHDA regulations, or other binding authority.

11. that reservations may be made subject to certain conditions to be satisfied prior to allocation and shall in all cases be contingent upon the receipt of a nonrefundable application fee of $1000 and a nonrefundable reservation fee equal to 7% of the annual credit amount reserved.

12. that a true, exact, and complete copy of this application, including all the supporting documentation enclosed herewith, has been provided to the tax attorney who has provided the required attorney's opinion accompanying this submission.

13. that the undersigned has provided a complete list of all residential real estate developments in which the general partner(s) has (have) or had a controlling ownership interest and, in the case of those projects allocated credits under Section 42 of the IRC, complete information on the status of compliance with Section 42 and an explanation of any noncompliance. The undersigned hereby authorizes the Housing Credit Agencies of states in which these projects are located to share compliance information with the Authority.

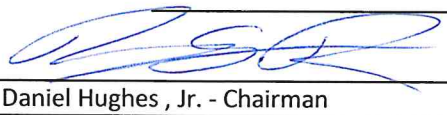
14. that any principal of undersigned has not participated in a planned foreclosure or Qualified Contract request in Virginia after January 1, 2019.

15. that undersigned waives the right to pursue a Qualified Contract on this development.

16. that the information in this application may be disseminated to others for purposes of verification or other purposes consistent with the Virginia Freedom of Information Act. However, all information will be maintained, used or disseminated in accordance with the Government Data Collection and Dissemination Practices Act. The undersigned may refuse to supply the information requested, however, such refusal will result in VHDA's inability to process the application. The original or copy of this application may be retained by VHDA, even if tax credits are not allocated to the undersigned.

In Witness Whereof, the undersigned, being authorized, has caused this document to be executed in its name on the date of this application set forth in DEV Info tab hereof.

Legal Name of Owner: LRC - Derby Run 1, LP

By: 

Its: W. Daniel Hughes , Jr. - Chairman

(Title)

w.

LIHTC SELF SCORE SHEET

Self Scoring Process

This Self Scoring Process is intended to provide you with an estimate of your application's score based on the information included within the reservation application. Other items, denoted below in the yellow shaded cells, are typically evaluated by VHDA's staff during the application review and feasibility process. For purposes of self scoring, we have made certain assumptions about your application. Edit the appropriate responses (Y or N) in the yellow shaded cells, if applicable. Item 5f requires a numeric value to be entered.

Please remember that this score is only an estimate. VHDA reserves the right to change application data and/or score sheet responses where appropriate, which may change the final score.

MANDATORY ITEMS:		Included		Score
a. Signed, completed application with attached tabs in PDF format		Y	Y or N	0
b. Active Excel copy of application		Y	Y or N	0
c. Partnership agreement		Y	Y or N	0
d. SCC Certification		Y	Y or N	0
e. Previous participation form		Y	Y or N	0
f. Site control document		Y	Y or N	0
g. Architect's Certification		Y	Y or N	0
h. Attorney's opinion		Y	Y or N	0
i. Nonprofit questionnaire (if applicable)		Y	Y, N, N/A	0
j. Appraisal		Y	Y or N	0
k. Zoning document		Y	Y or N	0
l. Universal Design Plans		Y	Y or N	0
m. List of LIHTC Developments (Schedule A)		Y	Y or N	0
	Total:			0.00

1. READINESS:				
a. VHDA notification letter to CEO (via Locality Notification Information Application)		Y	0 or -50	0.00
b. Local CEO Opposition Letter		N	0 or -25	0.00
c. Plan of development		N	0 or 40	0.00
d. Location in a revitalization area based on Qualified Census Tract		N	0 or 10	0.00
e. Location in a revitalization area with resolution		N	0 or 15	0.00
f. Location in a Opportunity Zone		N	0 or 15	0.00
	Total:			0.00

2. HOUSING NEEDS CHARACTERISTICS:				
a. Sec 8 or PHA waiting list preference		N	0 or up to 5	0.00
b. Existing RD, HUD Section 8 or 236 program		N	0 or 20	0.00
c. Subsidized funding commitments		0.00%	Up to 40	0.00
d. Tax abatement on increase of property's value		N	0 or 5	0.00
e. New project based rental subsidy (HUD or RD)		N	0 or 10	0.00
f. Census tract with <12% poverty rate		0%	0, 20, 25 or30	0.00
g. Development listed on the Rural Development Rehab Priority List		N	0 or 15	0.00
h. Dev. located in area with little or no increase in rent burdened population		N	Up to -20	0.00
i. Dev. located in area with increasing rent burdened population		N	Up to 20	0.00
	Total:			0.00

2019 Low-Income Housing Tax Credit Application For Reservation

3. DEVELOPMENT CHARACTERISTICS:				
a. Amenities (See calculations below)				19.00
b. Project subsidies/HUD 504 accessibility for 5 or 10% of units		N	0 or 60	0.00
or c. HCV Payment Standard/HUD 504 accessibility for 5 or 10% of units		N	0 or 30	0.00
or d. HUD 504 accessibility for 5% of units		Y	0 or 15	15.00
e. Proximity to public transportation (within Northern VA or Tidewater)		N	0, 10 or 20	0.00
f. Development will be Green Certified		N	0 or 10	0.00
g. Units constructed to meet VHDA's Universal Design standards		0%	Up to 15	0.00
h. Developments with less than 100 units		N	up to 20	0.00
i. Historic Structure		N	0 or 5	0.00
	Total:			34.00

4. TENANT POPULATION CHARACTERISTICS:	Locality AMI	State AMI
	$75,000	$55,900

a. Less than or equal to 20% of units having 1 or less bedrooms		N	0 or 15	0.00
b. <plus> Percent of Low Income units with 3 or more bedrooms		38.28%	Up to 15	0.00
c. Units with rent at or below 30% of AMI and are not subsidized (up to 10% of LI units)		0.00%	Up to 10	0.00
d. Units with rents at or below 40% of AMI (up to 10% of LI units)		0.00%	Up to 10	0.00
e. Units with rent and income at or below 50% of AMI		0.00%	Up to 50	0.00
f. Units with rents at or below 50% rented to tenants at or below 60% of AMI		0.00%	Up to 25	0.00
or g. Units in LI Jurisdictions with rents <= 50% rented to tenants with <= 60% of AMI		0.00%	Up to 50	0.00
	Total:			0.00

5. SPONSOR CHARACTERISTICS:				
a. Developer experience - 3 developments with 3 x units or 6 developments with 1 x units		Y	0 or 50	50.00
or b. Developer experience - 3 developments and at least 500,000 in liquid assets		N	0 or 50	0.00
or c. Developer experience - 1 development with 1 x units		N	0 or 10	0.00
d. Developer experience - life threatening hazard		N	0 or -50	0.00
e. Developer experience - noncompliance		N	0 or -15	0.00
f. Developer experience - did not build as represented		0	0 or -2x	0.00
g. Developer experience - failure to provide minimum building requirements		N	0 or -20	0.00
h. Developer experience - termination of credits by VHDA		N	0 or -10	0.00
i. Developer experience - exceeds cost limits at certification		N	0 or -50	0.00
j. Management company rated unsatisfactory		N	0 or -25	0.00
	Total:			50.00

6. EFFICIENT USE OF RESOURCES:				
a. Credit per unit			Up to 200	149.94
b. Cost per unit			Up to 100	41.42
	Total:			191.36

7. BONUS POINTS:				
a. Extended compliance	35	Years	40 or 50	50.00
or b. Nonprofit or LHA purchase option		N	0 or 60	0.00
or c. Nonprofit or LHA Home Ownership option		N	0 or 5	0.00
d. Combined 9% and 4% Tax Exempt Bond Site Plan		N	Up to 45	0.00
e. RAD or PHA Conversion participation and competing in Local Housing Authority pool		N	0 or 10	0.00
	Total:			50.00

425 Point Threshold - all 9% Tax Credits
325 Point Threshold - Tax Exempt Bonds

TOTAL SCORE: **325.36**

Amenities:

All units have:	Max Pts	Score
a. Community Room	5	5.00
b. Exterior walls constructed with brick and other low maintenance materials	25	0.00
c. Sub metered water expense	5	5.00
d. Watersense labeled faucets, toilets and showerheads	3	3.00
e. Infrastructure for high speed internet/broadband	1	0.00
f. Free WiFi Access in community room	4	0.00
g. Each unit provided free individual high speed internet access	6	0.00
h. Each unit provided free individual WiFi	8	0.00
i. Bath Fan - Delayed timer or continuous exhaust	3	0.00
j. Baths equipped with humidistat	3	0.00
k. Cooking Surfaces equipped with fire prevention features	4	4.00
l. Cooking surfaces equipped with fire suppression features	2	0.00
m. Rehab only: dedicated space to accept permanent dehumidification system	2	0.00
n. Provides Permanently installed dehumidification system	5	0.00
o. All interior doors within units are solid core	3	0.00
p. USB in kitchen, living room and all bedrooms	1	0.00
q. LED Kitchen Light Fixtures	2	2.00
r. Shelf or Ledge at entrance within interior hallway	2	0.00
s. New Construction: Balcony or patio	4	0.00
		19.00
All elderly units have:		
t. Front-control ranges	1	0.00
u. Independent/suppl. heat source	1	0.00
v. Two eye viewers	1	0.00
		0.00
	Total amenities:	**19.00**

X. Development Summary

Summary Information **2019 Low-Income Housing Tax Credit Application For Reservation**

Deal Name:	**Derby Run Apartments I**

Cycle Type:	4% Tax Exempt Bonds Credits		**Requested Credit Amount:**	$476,424	
Allocation Type:	Acquisition/Rehab		**Jurisdiction:**	Hampton City	
Total Units	160		**Population Target:**	General	**Total Score**
Total LI Units	128				**325.36**
Project Gross Sq Ft:	187,048.66		**Owner Contact:**	Wade	Wood
Green Certified?	FALSE				

Source of Funds	Amount	Per Unit	Per Sq Ft	Annual Debt Service
Permanent Financing	$16,000,000	$100,000	$86	$771,431

Uses of Funds - Actual Costs				
Type of Uses	**Amount**	**Per Unit**	**Sq Ft**	**% of TDC**
Improvements	$5,375,263	$33,595	$29	25.17%
General Req/Overhead/Profit	$752,537	$4,703	$4	3.52%
Other Contract Costs	$111,897	$699	$1	0.52%
Owner Costs	$2,991,681	$18,698	$16	14.01%
Acquisition	$10,145,000	$63,406	$54	47.50%
Developer Fee	$1,980,110	$12,376	$11	9.27%
Total Uses	**$21,356,488**	$133,478		

Total Development Costs	
Total Improvements	$9,231,378
Land Acquisition	$10,145,000
Developer Fee	$1,980,110
Total Development Costs	**$21,356,488**

Proposed Cost Limit/Unit:	$133,478
Applicable Cost Limit/Unit:	$199,972
Proposed Cost Limit/Sq Ft:	$60
Applicable Cost Limit/Sq Ft:	$140

Income		
Gross Potential Income - LI Units		$1,863,708
Gross Potential Income - Mkt Units		$268,392
	Subtotal	$2,132,100
Less Vacancy %	7.04%	$150,081
Effective Gross Income		$1,982,019

Rental Assistance? TRUE

Unit Breakdown	
Supp Hsg	0
# of Eff	0
# of 1BR	0
# of 2BR	104
# of 3BR	56
# of 4+ BR	0
Total Units	160

Expenses		
Category	**Total**	**Per Unit**
Administrative	$243,245	$1,520
Utilities	$140,087	$876
Operating & Maintenance	$376,176	$2,351
Taxes & Insurance	$270,135	$1,688
Total Operating Expenses	$1,029,643	$6,435
Replacement Reserves	$56,000	$350
Total Expenses	$1,085,643	$6,785

	Income Levels	Rent Levels
	# of Units	# of Units
<=30% AMI	0	0
40% AMI	0	0
50% AMI	0	0
60% AMI	128	128
>60% AMI	0	0
Market	32	32

Cash Flow	
EGI	$1,982,019
Total Expenses	$1,085,643
Net Income	$896,376
Debt Service	$771,431
Debt Coverage Ratio (YR1):	1.16

Income Averaging? FALSE

Extended Use Restriction? 50

2019 Low-Income Housing Tax Credit Application For Reservation

$/SF = $126.77 Credits/SF = 3.855957 Const $/unit = $38,998.1063

TYPE OF PROJECT	GENERAL = 11000; ELDERLY = 12000	11000
LOCATION	Inner-NVA=100; Outer-NV=200; NWNC=300; Rich=400; Tid=500; Balance=600	500
TYPE OF CONSTRUCTION	N C=1; ADPT=2;REHAB(35,000+)=3; REHAB*(15,000-35,000)=4	3

*REHABS LOCATED IN BELTWAY ($15,000-$50,000) See Below

	GENERAL	Elderly					
	Supportive Hsg	EFF-E	1 BR-E	2 BR-E	EFF-E-1 ST	1 BR-E-1 ST	2 BR-E-1 ST
AVG UNIT SIZE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NUMBER OF UNITS	0	0	0	0	0	0	0
PARAMETER-(COSTS=>35,000)	0	0	0	0	0	0	0
PARAMETER-(COSTS<35,000)	0	0	0	0	0	0	0
PARAMETER-(COSTS=>50,000)	0	0	0	0	0	0	0
PARAMETER-(COSTS<50,000)	0	0	0	0	0	0	0
COST PARAMETER	0	0	0	0	0	0	0
PROJECT COST PER UNIT	0	0	0	0	0	0	0
PARAMETER-(CREDITS=>35,000)	0	0	0	0	0	0	0
PARAMETER-(CREDITS<35,000)	0	0	0	0	0	0	0
PARAMETER-(CREDITS=>50,000)	0	0	0	0	0	0	0
PARAMETER-(CREDITS<50,000)	0	0	0	0	0	0	0
CREDIT PARAMETER	0	0	0	0	0	0	0
PROJECT CREDIT PER UNIT	0	0	0	0	0	0	0
COST PER UNIT POINTS	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
CREDIT PER UNIT POINTS	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

	GENERAL							
	EFF-G	1 BR-G	2 BR-G	3 BR-G	4 BR-G	2 BR-TH	3 BR-TH	4 BR
AVG UNIT SIZE	0.00	0.00	878.19	1,105.68	0.00	0.00	0.00	0.0
NUMBER OF UNITS	0	0	79	49	0	0	0	0
PARAMETER-(COSTS=>35,000)	0	0	202,208	218,171	0	0	0	0
PARAMETER-(COSTS<35,000)	0	0	0	0	0	0	0	0
PARAMETER-(COSTS=>50,000)	0	0	202,208	218,171	0	0	0	0
PARAMETER-(COSTS<50,000)	0	0	53,794	58,041	0	0	0	0
COST PARAMETER	0	0	202,208	218,171	0	0	0	0
PROJECT COST PER UNIT	0	0	111,331	140,170	0	0	0	0
PARAMETER-(CREDITS=>35,000)	0	0	14,393	15,529	0	0	0	0
PARAMETER-(CREDITS<35,000)	0	0	0	0	0	0	0	0
PARAMETER-(CREDITS=>50,000)	0	0	14,393	15,529	0	0	0	0
PARAMETER-(CREDITS<50,000)	0	0	4,112	4,437	0	0	0	0
CREDIT PARAMETER	0	0	14,393	15,529	0	0	0	0
PROJECT CREDIT PER UNIT	0	0	3,386	4,263	0	0	0	0
COST PER UNIT POINTS	**0.00**	**0.00**	**27.74**	**13.69**	**0.00**	**0.00**	**0.00**	**0.0**
CREDIT PER UNIT POINTS	**0.00**	**0.00**	**94.40**	**55.54**	**0.00**	**0.00**	**0.00**	**0.0**

TOTAL COST PER UNIT POINTS 41.42

TOTAL CREDIT PER UNIT POINTS 149.94

Cost Parameters - Elderly

	Supportive Hsg	EFF-E	1 BR-E	2 BR-E	EFF-E-1 ST	1 BR-E-1 ST	2 BR-E-1 ST
Standard Cost Parameter - low rise	0	0	0	0	0	0	0
Parameter Adjustment - mid rise	0	0	0	0	0	0	0
Parameter Adjustment - high rise	0	0	0	0	0	0	0
Adjusted Cost Parameter	0	0	0	0	0	0	0

Credit Parameters - Elderly

	Supportive Hsg	EFF-E	1 BR-E	2 BR-E	EFF-E-1 ST	1 BR-E-1 ST	2 BR-E-1 ST
Standard Credit Parameter - low rise	0	0	0	0	0	0	0
Parameter Adjustment - mid rise	0	0	0	0	0	0	0
Parameter Adjustment - high rise	0	0	0	0	0	0	0
Adjusted Credit Parameter	0	0	0	0	0	0	0

Cost Parameters - General

	EFF-G	1 BR-G	2 BR-G	3 BR-G	4 BR-G	2 BR-TH	3 BR-TH	4 BR
Standard Parameter - low rise	0	0	202,208	218,171	0	0	0	0
Parameter Adjustment - mid rise	0	0	0	0	0	0	0	0
Parameter Adjustment - high rise	0	0	0	0	0	0	0	0
Adjusted Cost Parameter	0	0	202,208	218,171	0	0	0	0

Credit Parameters - General

	EFF-G	1 BR-G	2 BR-G	3 BR-G	4 BR-G	2 BR-TH	3 BR-TH	4 BR
Standard Credit Parameter - low rise	0	0	14,393	15,529	0	0	0	0
Parameter Adjustment - mid rise	0	0	0	0	0	0	0	0
Parameter Adjustment - high rise	0	0	0	0	0	0	0	0
Adjusted Credit Parameter	0	0	14,393	15,529	0	0	0	0

Northern Virginia Beltway (Rehab costs $15,000-$50,000)

Cost Parameters - Elderly

	Supportive Hsg	EFF-E	1 BR-E	2 BR-E	EFF-E-1 ST	1 BR-E-1 ST	2 BR-E-1 ST
Standard Cost Parameter - low rise	0	0	0	0	0	0	0
Parameter Adjustment - mid rise	0	0	0	0	0	0	0
Parameter Adjustment - high rise	0	0	0	0	0	0	0
Adjusted Cost Parameter	0	0	0	0	0	0	0

Credit Parameters - Elderly

	Supportive Hsg	EFF-E	1 BR-E	2 BR-E	EFF-E-1 ST	1 BR-E-1 ST	2 BR-E-1 ST
Standard Cost Parameter - low rise	0	0	0	0	0	0	0
Parameter Adjustment - mid rise	0	0	0	0	0	0	0
Parameter Adjustment - high rise	0	0	0	0	0	0	0
Adjusted Cost Parameter	0	0	0	0	0	0	0

Cost Parameters - General

	EFF-G	1 BR-G	2 BR-G	3 BR-G	4 BR-G	2 BR-TH	3 BR-TH	4 BR
Standard Cost Parameter - low rise	0	0	155,556	167,836	0	0	0	0
Parameter Adjustment - mid rise	0	0	0	0	0	0	0	0
Parameter Adjustment - high rise	0	0	0	0	0	0	0	0
Adjusted Cost Parameter	0	0	155,556	167,836	0	0	0	0

Credit Parameters - General

	EFF-G	1 BR-G	2 BR-G	3 BR-G	4 BR-G	2 BR-TH	3 BR-TH	4 BR
Standard Cost Parameter - low rise	0	0	11,161	12,042	0	0	0	0
Parameter Adjustment - mid rise	0	0	0	0	0	0	0	0
Parameter Adjustment - high rise	0	0	0	0	0	0	0	0
Adjusted Cost Parameter	0	0	11,161	12,042	0	0	0	0

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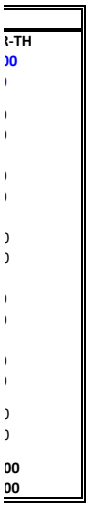

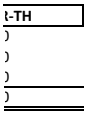
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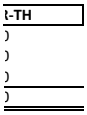
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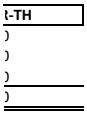
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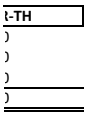
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AVG UNIT SIZE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NUMBER OF UNITS	0	0	0	0	0	0	0
PARAMETER-(COSTS=>35,000)	0	0	0	0	0	0	0
PARAMETER-(COSTS<35,000)	0	0	0	0	0	0	0
PARAMETER-(COSTS=>50,000)	0	0	0	0	0	0	0
PARAMETER-(COSTS<50,000)	0	0	0	0	0	0	0
COST PARAMETER	0	0	0	0	0	0	0
PROJECT COST PER UNIT	0	0	0	0	0	0	0
PARAMETER-(CREDITS=>35,000)	0	0	0	0	0	0	0
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CREDIT PARAMETER	0	0	0	0	0	0	0
PROJECT CREDIT PER UNIT	0	0	0	0	0	0	0
COST PER UNIT POINTS	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
CREDIT PER UNIT POINTS	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

	GENERAL							
	EFF-G	1 BR-G	2 BR-G	3 BR-G	4 BR-G	2 BR-TH	3 BR-TH	4 BR
AVG UNIT SIZE	0.00	0.00	878.19	1,105.68	0.00	0.00	0.00	0.0
NUMBER OF UNITS	0	0	79	49	0	0	0	0
PARAMETER-(COSTS=>35,000)	0	0	202,208	218,171	0	0	0	0
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PARAMETER-(COSTS=>50,000)	0	0	202,208	218,171	0	0	0	0
PARAMETER-(COSTS<50,000)	0	0	53,794	58,041	0	0	0	0
COST PARAMETER	0	0	202,208	218,171	0	0	0	0
PROJECT COST PER UNIT	0	0	111,331	140,170	0	0	0	0
PARAMETER-(CREDITS=>35,000)	0	0	14,393	15,529	0	0	0	0
PARAMETER-(CREDITS<35,000)	0	0	0	0	0	0	0	0
PARAMETER-(CREDITS=>50,000)	0	0	14,393	15,529	0	0	0	0
PARAMETER-(CREDITS<50,000)	0	0	4,112	4,437	0	0	0	0
CREDIT PARAMETER	0	0	14,393	15,529	0	0	0	0
PROJECT CREDIT PER UNIT	0	0	3,386	4,263	0	0	0	0
COST PER UNIT POINTS	**0.00**	**0.00**	**27.74**	**13.69**	**0.00**	**0.00**	**0.00**	**0.0**
CREDIT PER UNIT POINTS	**0.00**	**0.00**	**94.40**	**55.54**	**0.00**	**0.00**	**0.00**	**0.0**

TOTAL COST PER UNIT POINTS 41.42

TOTAL CREDIT PER UNIT POINTS 149.94

Cost Parameters - Elderly

	Supportive Hsg	EFF-E	1 BR-E	2 BR-E	EFF-E-1 ST	1 BR-E-1 ST	2 BR-E-1 ST
Standard Cost Parameter - low rise	0	0	0	0	0	0	0
Parameter Adjustment - mid rise	0	0	0	0	0	0	0
Parameter Adjustment - high rise	0	0	0	0	0	0	0
Adjusted Cost Parameter	0	0	0	0	0	0	0

Credit Parameters - Elderly

	Supportive Hsg	EFF-E	1 BR-E	2 BR-E	EFF-E-1 ST	1 BR-E-1 ST	2 BR-E-1 ST
Standard Credit Parameter - low rise	0	0	0	0	0	0	0
Parameter Adjustment - mid rise	0	0	0	0	0	0	0
Parameter Adjustment - high rise	0	0	0	0	0	0	0
Adjusted Credit Parameter	0	0	0	0	0	0	0

Cost Parameters - General

	EFF-G	1 BR-G	2 BR-G	3 BR-G	4 BR-G	2 BR-TH	3 BR-TH	4 BR
Standard Parameter - low rise	0	0	202,208	218,171	0	0	0	0
Parameter Adjustment - mid rise	0	0	0	0	0	0	0	0
Parameter Adjustment - high rise	0	0	0	0	0	0	0	0
Adjusted Cost Parameter	0	0	202,208	218,171	0	0	0	0

Credit Parameters - General

	EFF-G	1 BR-G	2 BR-G	3 BR-G	4 BR-G	2 BR-TH	3 BR-TH	4 BR
Standard Credit Parameter - low rise	0	0	14,393	15,529	0	0	0	0
Parameter Adjustment - mid rise	0	0	0	0	0	0	0	0
Parameter Adjustment - high rise	0	0	0	0	0	0	0	0
Adjusted Credit Parameter	0	0	14,393	15,529	0	0	0	0

Northern Virginia Beltway (Rehab costs $10,000-$50,000)

Cost Parameters - Elderly

	Supportive Hsg	EFF-E	1 BR-E	2 BR-E	EFF-E-1 ST	1 BR-E-1 ST	2 BR-E-1 ST
Standard Cost Parameter - low rise	0	0	0	0	0	0	0
Parameter Adjustment - mid rise	0	0	0	0	0	0	0
Parameter Adjustment - high rise	0	0	0	0	0	0	0
Adjusted Cost Parameter	0	0	0	0	0	0	0

Credit Parameters - Elderly

	Supportive Hsg	EFF-E	1 BR-E	2 BR-E	EFF-E-1 ST	1 BR-E-1 ST	2 BR-E-1 ST
Standard Cost Parameter - low rise	0	0	0	0	0	0	0
Parameter Adjustment - mid rise	0	0	0	0	0	0	0
Parameter Adjustment - high rise	0	0	0	0	0	0	0
Adjusted Cost Parameter	0	0	0	0	0	0	0

Cost Parameters - General

	EFF-G	1 BR-G	2 BR-G	3 BR-G	4 BR-G	2 BR-TH	3 BR-TH	4 BR
Standard Cost Parameter - low rise	0	0	161,387	174,128	0	0	0	0
Parameter Adjustment - mid rise	0	0	0	0	0	0	0	0
Parameter Adjustment - high rise	0	0	0	0	0	0	0	0
Adjusted Cost Parameter	0	0	161,387	174,128	0	0	0	0

Credit Parameters - General

	EFF-G	1 BR-G	2 BR-G	3 BR-G	4 BR-G	2 BR-TH	3 BR-TH	4 BR
Standard Cost Parameter - low rise	0	0	11,565	12,478	0	0	0	0
Parameter Adjustment - mid rise	0	0	0	0	0	0	0	0
Parameter Adjustment - high rise	0	0	0	0	0	0	0	0
Adjusted Cost Parameter	0	0	11,565	12,478	0	0	0	0

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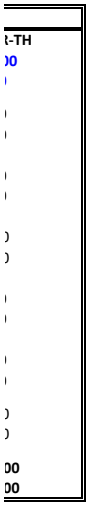

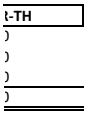
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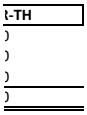
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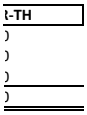
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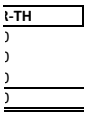
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A

Partnership or Operating Agreement

Including chart of ownership structure with percentage of interests **(MANDATORY)**

AGREEMENT OF LIMITED PARTNERSHIP
OF
LRC-DERBY RUN 1, LP

THIS AGREEMENT OF LIMITED PARTNERSHIP (this "Agreement") is made as of March 5, 2019, by and among LRC-Derby Run 1 GP, LLC, a Virginia limited liability company ("General Partner"), LRC SLP, LLC, a Delaware limited liability company ("LRC SLP") and LRC Owned, LLC, a Delaware limited liability company ("LRC Owned" and together with LRC SLP, "Limited Partner"), in accordance with the provisions of the Virginia Revised Uniform Limited Partnership Act, Title 50, Chapter 2.1 of the Code of Virginia.

RECITALS:

WHERAS, the Partnership was formed by General Partner pursuant to a Certificate of Limited Partnership filed with the Virginia State Corporation Commission ("VA SCC") on March 5, 2019; and

WHEREAS, the parties hereto desire to enter into this Agreement pursuant to the terms hereof.

NOW, THEREFORE, the parties hereto hereby agree to as follows:

I. **Name.** LRC-Derby Run 1, LP.

II. **Business.** The business of the Partnership is to acquire, construct, develop, improve, invest in, hold, lease, maintain, operate and otherwise deal with that certain multi-family affordable housing development located in the City of Hampton, Virginia, commonly known as Derby Run Apartments, Phase 1 (the "Project").

III. **Principal Office.** The address of the principal office of the Partnership, where records required to be maintained by Section 50-73.8 of the Act are to be kept, is at 105 Tallapoosa Street, Suite 300, Montgomery, Alabama 36104. The Partnership's registered agent for purposes of the Act is Corporation Service Company having a business address of Bank of America Center, 1111 East Main Street, Richmond, Virginia 23219. The sole duty of the registered agent is to forward to the Partnership any notice that is served on it as registered agent.

IV. **Partners.** The name and the business address of the General Partner and Limited Partners, and the percentages of ownership and cash flow in the Partnership by each such Partner, are as follows:

General Partner:

Name	Address	Percentage of Ownership
LRC-Derby Run I GP, LLC	105 Tallapoosa Street Suite 300 Montgomery, AL 36104	0.01%

Limited Partners:

LRC SLP, LLC	105 Tallapoosa Street Suite 300 Montgomery, AL 36104	0.01%
LRC Owned, LLC	105 Tallapoosa Street Suite 300 Montgomery, AL 36104	99.98%

V. **Term, Dissolution and Winding Up.** The Partnership shall continue in perpetuity, except that the Partnership shall be dissolved, and its affairs wound up, prior to such date upon the happening of any of the following:

A. The sale or other disposition of all or substantially all the assets of the Partnership, or

B. The retirement (which term includes the death, dissolution, adjudication of insanity or incompetence, bankruptcy or withdrawal for any reason) of a General Partner, unless the remaining General Partner(s) or Limited Partners elect to continue the business of the Partnership pursuant to Paragraph XIII hereof, or

C. The retirement of a General Partner if no General Partner remains, or

D. The decision of all the General Partners to terminate the Partnership.

VI. **Capital Contributions - Capital Accounts.** Each Partner has made capital contributions to the Partnership. A capital account shall be maintained for each Partner and such account shall be adjusted for each Partner's share of all items of profit and loss and distributions and each Partner's contributions to the Partnership.

VII. **Additional Contributions.** No Limited Partner has agreed to make any additional capital contribution. Except to the extent required by law, no General Partner shall be

required to make any additional capital contribution.

VIII. **Returns.** No time has been agreed upon for the return of the contributions of the Limited Partner.

IX. **Profits.** All profits, losses and distributions (including profits and proceeds from the sale or disposition of all or substantially all Partnership assets and all proceeds from a refinancing) shall be shared by the Partners in the ratio which the capital contributions of each Partner bear to the aggregate capital contributions of all the Partners. If the Partnership assets are distributed in kind to the Partners upon the dissolution and liquidation of the Partnership, the capital accounts of the Partners shall be adjusted to reflect their share of all unrecognized gains and losses and the assets shall be distributed based on the fair market value of such assets.

X. **Assignments.** In no event shall all or any part of a Limited Partner's interest in the Partnership be assigned or transferred to a minor or incompetent, and such attempted assignment shall be void and ineffectual and shall not bind the Partnership.

No Limited Partner shall have the right to substitute an assignee as a Limited Partner in its place. The General Partner shall, however, have the right to permit any such assignee to become a Substitute Limited Partner and any such permission by the General Partner shall be binding and conclusive without the consent or approval of any Limited Partners. Any such Substitute Limited Partner shall, as a condition of receiving any interest in the Partnership property, agree to be bound by the terms of any financial agreements and other documents required in connection with applicable mortgage financing to the same extent and on the same terms as the other Limited Partners. Any such Substitute Limited Partner shall also execute, acknowledge and deliver an instrument to the General Partner signifying his agreement to be bound by all the provisions of this Agreement, as last amended, and shall accept such other terms as the General Partner in its exclusive discretion may determine as a condition to permitting such substitution.

In the event of the death or incapacity of a Limited Partner, his legal representatives shall have the same status as an assignee of the Limited Partner unless and until the General Partner shall permit such legal representatives to become a Substitute Limited Partner on the same terms and conditions as herein provided for assignees generally. The death of a Limited Partner shall not dissolve the Partnership.

An assignee of a Limited Partner who does not become a Substitute Limited Partner as provided above shall have the right to receive the same share of profits, losses and distributions of the Partnership to which the assigning Limited Partner would have been entitled if no such assignment had been made by such Limited Partner.

If any assignment of the interest of a Limited Partner shall be made, there shall be filed with the Partnership a duly executed and acknowledged counterpart of the instrument making such assignment, and such instrument must evidence the written acceptance of the assignee to all

the terms and provisions of this Agreement and if such an instrument is not so filed, the Partnership need not recognize any such assignment for any purpose hereunder.

XI. **Additional Limited Partners.** The General Partner is authorized at any time and from time to time, to admit to the Partnership additional Limited Partners upon each such additional Limited Partner's making, or agreeing to make, such contributions to the capital of the Partnership as the General Partner shall determine.

XII. **Priorities.** No Limited Partner has any right of priority over any other Limited Partner, as to contributions or as to compensation by way of income.

XIII. **Continuation.** Upon the death, dissolution, incapacity, bankruptcy, or withdrawal from the Partnership of a General Partner, any remaining or surviving General Partner or Limited Partners may elect to continue the business of the Partnership.

XIV. **Demands for Property.** A Limited Partner has no right to demand and receive property in return for its capital contribution.

XV. **Additional Provisions.**

A. Management and control of the business and affairs of the Partnership shall be vested in LRC-Derby Run I GP, LLC, as the sole General Partner, and except as otherwise expressly provided herein, no Limited Partner shall have or exercise any rights in connection with the management of such business. The General Partner shall devote to the conduct of the business of the Partnership so much of its time as may be reasonably necessary to efficient operations, but it shall not be precluded from conducting other businesses as well, even if they compete with the Partnership.

B. General Partner is specifically authorized to execute such documents as it deems necessary in connection with the acquisition, development and financing of Partnership property, including without limiting the generality hereof, any note, mortgage, loan and regulatory agreements and any other documents which may be required in connection with the acquisition of the Partnership property or the financing and development thereof; and the Partnership is specifically authorized to execute such documents as it deems necessary in connection with all documents and actions necessary to qualify for, and apply to Virginia Housing Development Authority for financing and an allocation of low income housing tax credits for the Project (as defined below) under Section 42 of the Internal Revenue Code of 1986, as amended.

C. The Partnership is hereby authorized to borrow, by a mortgage loan from any lender, whatever amounts may be required for the acquisition of the Property, the development thereon of improvements constituting the Project, and the operation of the Project. Any such mortgage loan shall provide that neither the Partnership nor any Partner shall have any personal liability for the repayment of all or any part of such mortgage loan after the completion

of the Project.

D. Except as provided in Paragraph XV. C. hereof, the General Partner shall be bound by the terms of any mortgage note, mortgage, loan agreement and regulatory agreement and any other documents required in connection with the financing of the acquisition of the Property and the development of the Project thereon. Any incoming General Partner shall as a condition of receiving any interest in the Partnership property agree to be bound by the terms of such instruments and documents to the same extent and on the same terms as the other General Partners. Upon any dissolution of the Partnership, or any transfer of the Property subject to any applicable mortgage, no title or right to the possession and control of the Property and no right to collect the rents therefrom shall pass to any person or entity who is not, or does not become, bound by any regulatory or other agreement applicable to the Partnership or the Property in a manner satisfactory to the regulating agency or authority. In the event of any inconsistency between the provisions of this Agreement and any applicable regulatory agreement, the provisions of such regulatory agreement shall prevail.

E. Each General Partner and each Limited Partner (including a Substitute or additional General Partner or Limited Partner) hereby irrevocably constitutes, and empowers to act alone, the General Partner, as attorney-in-fact for such General Partner and such Limited Partner, with full power of substitution, with authority to execute, acknowledge and swear to all instruments, and file all documents, requisite to carrying out the intention and purpose of this Agreement, including, without limitation, all business certificates and necessary Certificates of Limited Partnership and amendments thereto from time to time in accordance with all applicable laws. The foregoing appointment shall be deemed to be a power coupled with an interest in recognition of the fact that each of the Partners under this Agreement will be relying upon the power of the General Partner to act as contemplated by this Agreement in such filing and other action on behalf of the Partnership and the Partners. The foregoing power of attorney shall survive the assignment by any partner of the whole or any part of his or its interest hereunder or the retirement of any appointing General Partner.

F. This Agreement may be executed in several counterparts and all so executed shall constitute one agreement binding on all parties hereto. This Agreement may not be changed except in a writing signed by the person(s) against whose interest such change shall operate. If any clause or provision hereof shall be deemed unlawful or unenforceable, in whole or in part, then such clause or provision shall have no force or effect as though not herein contained and the remainder of this Agreement shall remain operative and in full force and effect.

[Signature Pages Follow]

SIGNATURE PAGE TO
AGREEMENT OF LIMITED PARTNERSHIP OF
LRC-DERBY RUN 1, LP

IN WITNESS WHEREOF, the parties hereto have affixed their signatures and seals to this Agreement of Limited Partnership effective as of date stated above.

GENERAL PARTNER:

LRC-Derby Run I GP, LLC,
a Virginia limited liability company

By: LRC GP, LLC,
a Delaware limited liability company,
its sole member

By: LEDIC Realty Company, LLC
a Delaware limited liability company,
its sole member

By: _____(SEAL)
W. Daniel Hughes, Jr.,
Chairman of the Board

AGREEMENT OF LIMITED PARTNERSHIP OF
LRC-DERBY RUN 1, LP

IN WITNESS WHEREOF, the parties hereto have affixed their signatures and seals to this Agreement of Limited Partnership effective as of date stated above.

LIMITED PARTNERS:

LRC Owned, LLC,
a Delaware limited liability company

By: LEDIC Realty Company, LLC
a Delaware limited liability company,
its sole member

By: _____(SEAL)
W. Daniel Hughes, Jr.,
Chairman of the Board

LRC SLP, LLC,
a Delaware limited liability company

By: LEDIC Realty Management, LLC
an Alabama limited liability company,
its sole member

By: _____(SEAL)
W. Daniel Hughes, Jr.,
Chairman of the Board

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OPERATING AGREEMENT
OF
LRC-DERBY RUN 1 GP, LLC

This Operating Agreement (this "Agreement") of LRC-Derby Run 1 GP, LLC, a Virginia limited liability company (the "Company") is adopted and entered into as of February 27, 2019 by LRC GP, LLC, a Delaware limited liability company, as the sole member (the "Member," which term includes any other persons who may become members of the Company in accordance with the terms of this Agreement and the Act) and the Company pursuant to and in accordance with the Virginia Limited Liability Company Act, as amended from time to time (the "Act"). Terms used in this Agreement which are not otherwise defined shall have the respective meanings given those terms in the Act.

In consideration of the matters described above, and of the mutual benefits and obligations set forth in this Agreement, the parties agree as follows:

ARTICLE ONE
NAME

The name of the limited liability company is: LRC-Derby Run 1 GP, LLC.

ARTICLE TWO
TERM

The period of duration for the Company is perpetual, unless the Members unanimously agree in writing to limit the duration of the Company.

ARTICLE THREE
MANAGEMENT

Management of the Company is vested in its sole Member, which will manage the Company in accordance with the Act as Member-Manager. Any Member-Manager exercising management powers or responsibilities will be deemed to be a manager for purposes of applying the provisions of the Act, unless the context otherwise requires, and that Member-Manager will have and be subject to all of the duties and liabilities of a Manager provided in the Act. The Member-Manager will have the power to do any and all acts necessary or convenient to or for the furtherance of the purposes of the Company set forth in this Agreement, including all powers of Members under the Act.

ARTICLE FOUR
PURPOSES

The purpose of the Company is to acquire the general partnership interest in LRC-Derby Run 1, LP, a Virginia limited partnership, which will own and operate that certain multifamily apartment complex in the City of Hampton, Virginia, known as Derby Run Apartments, Phase 1.

ARTICLE FIVE
MEMBER

The name and the business, residence or mailing address of the Members are as follows:

Name	Address
LRC GP, LLC	105 Tallapoosa Street, Suite 300 Montgomery, Alabama 36104

ARTICLE SIX
CAPITAL CONTRIBUTIONS

The Members have contributed to the Company the following amounts, in the form of cash, property or services rendered, or a promissory note or other obligations to contribute cash or property or to render services:

Member	Amount of Initial Capital Contribution	Percentage
LRC GP, LLC	$1,000.00	100%

ARTICLE SEVEN
ADDITIONAL CONTRIBUTIONS

No Member is required to make any additional capital contribution to the Company.

ARTICLE EIGHT
ALLOCATION OF PROFITS AND LOSSES

The Company's profits and losses will be allocated in proportion to the value of the capital contributions of the Members.

ARTICLE NINE
DISTRIBUTIONS

Distributions shall be made to the Members at the times and in the aggregate amounts determined by the Members. Such distributions shall be allocated among the Members in the same proportion as their then capital account balances.

ARTICLE TEN
WITHDRAWAL OF MEMBER

A Member may withdraw from the Company in accordance with the Act.

ARTICLE ELEVEN
ADMISSION OF ADDITIONAL MEMBERS

One or more additional Members of the Company may be admitted to the Company with the vote or written consent of a majority in interest of the Members based upon the capital contributions of the Members.

ARTICLE TWELVE
LIABILITY OF MEMBERS

The Members do not have any liability for the obligations or liabilities of the Company, except to the extent provided in the Act.

ARTICLE THIRTEEN
EXCULPATION OF MEMBER-MANAGERS

A Member exercising management powers or responsibilities for or on behalf of the Company will not have personal liability to the Company or its Members for damages for any breach of duty in that capacity, provided that nothing in this Article shall eliminate or limit (i) the liability of any Member-Manager if a judgment or other final adjudication adverse to it establishes that its acts or omissions were in bad faith or involved intentional misconduct or a knowing violation of law, or that it personally gained in fact a financial profit or other advantage to which it was not legally entitled, or that, with respect to a distribution to Members, its acts were not performed in accordance with the Act, or (ii) the liability of any Member-Manager for any act or omission prior to the date of first inclusion of this paragraph in this Agreement.

ARTICLE FOURTEEN
GOVERNING LAW

This Agreement shall be governed by, and construed in accordance with, the laws of the Commonwealth of Virginia, all rights and remedies being governed by those laws.

ARTICLE FIFTEEN
INDEMNIFICATION

To the fullest extent permitted by law, the Company shall indemnify and hold harmless, and may advance expenses to, any Member, manager or other person, or any personal representative of such Member, manager or other person (collectively, the "Indemnitees"), from and against any and all claims and demands whatsoever, provided, however, that no indemnification may be made to or on behalf of any Indemnitee if a judgment or other final adjudication adverse to such Indemnitee establishes: (i) that its acts were committed in bad faith or were the result of active and deliberate dishonesty and were material to the cause of action so adjudicated, or (ii) that it personally gained in fact a financial profit or other advantage to which it was not legally entitled. The provisions of this section shall continue to afford protection to each Indemnitee regardless of whether it remains a Member, manager, employee or agent of the Company.

ARTICLE SIXTEEN
TAX MATTERS

The Member of the Company and the Company intend that the Company be treated as a sole proprietorship for all income tax purposes, and it will file all necessary and appropriate forms in furtherance of that position.

IN WITNESS, the parties have executed this Agreement the day and year first above written.

SOLE MEMBER:

LRC GP, LLC,
a Delaware limited liability company,
its Sole Member

By: LEDIC Realty Company, LLC,
a Delaware limited liability company,
its Sole Member

By: W. Daniel Hughes, Jr.
Its: Chairman of the Board

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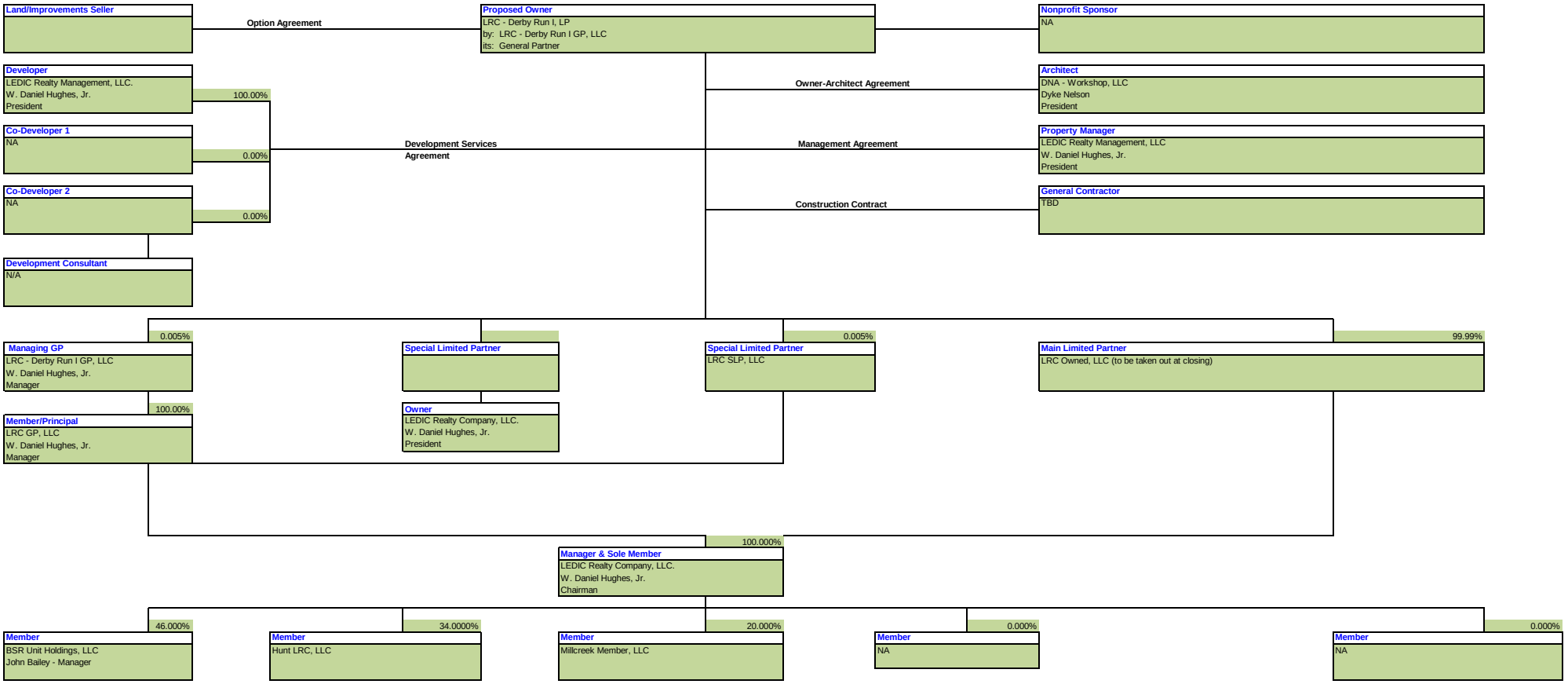
Organizational Chart for LRC - Derby Run I, LP, a Virginia limited partnership



B

Virginia State Corporation Commission Certification

(MANDATORY)

Commonwealth of Virginia

STATE CORPORATION COMMISSION

Richmond, March 5, 2019

This is to certify that the certificate of limited partnership of

LRC-DERBY RUN 1, LP

was this day admitted to record in this office and that the said limited partnership is authorized to transact its business subject to all Virginia laws applicable to the limited partnership and its business.

State Corporation Commission
Attest:

Joel H. Peck
Clerk of the Commission

CIS0368

COMMONWEALTH OF VIRGINIA
STATE CORPORATION COMMISSION

Office of the Clerk

March 5, 2019

JOY NICHOLS
WILLIAMS MULLEN
200 S 10TH ST STE 1600
RICHMOND, VA 23219

RECEIPT

RE: LRC-DERBY RUN 1, LP

ID: L021711 - 9

DCN: 19-03-04-1212

Dear Customer:

This receipt acknowledges payment of $100.00 to cover the fee for filing a certificate of limited partnership with this office.

This receipt also acknowledges payment of $100.00 to cover the fee for expedited service.

The effective date of the certificate is March 5, 2019.

If you have any questions, please call (804) 371-9733 or toll-free in Virginia, (866) 722-2551.

Sincerely,

Joel H. Peck
Clerk of the Commission

RECEIPT
NLP
CIS0368

Commonwealth of Virginia

STATE CORPORATION COMMISSION

Richmond, February 27, 2019

This is to certify that the certificate of organization of

LRC - Derby Run 1 GP, LLC

was this day issued and admitted to record in this office and that the said limited liability company is authorized to transact its business subject to all Virginia laws applicable to the company and its business. Effective date: *February 27, 2019*

State Corporation Commission
Attest:

Joel H. Peck
Clerk of the Commission

CISECOM

COMMONWEALTH OF VIRGINIA
STATE CORPORATION COMMISSION

Office of the Clerk

February 27, 2019

CORPORATION SERVICE COMPANY
111 EAST MAIN STREET, 16 FLOOR
RICHMOND, VA 23219

RECEIPT

RE: LRC - Derby Run 1 GP, LLC

ID: S8095467

DCN: 19-02-27-7106

Dear Customer:

This is your receipt for $100.00 to cover the fee(s) for filing articles of organization for a limited liability company with this office.

The effective date of the filing is February 27, 2019.

If you have any questions, please call (804) 371-9733 or toll-free in Virginia, (866) 722-2551.

Sincerely,

Joel H. Peck
Clerk of the Commission

RECEIPTLC
LLNCD
CISECOM

COMMONWEALTH OF VIRGINIA
STATE CORPORATION COMMISSION

AT RICHMOND, FEBRUARY 27, 2019

The State Corporation Commission has found the accompanying articles submitted on behalf of

LRC - Derby Run 1 GP, LLC

to comply with the requirements of law, and confirms payment of all required fees. Therefore, it is ORDERED that this

CERTIFICATE OF ORGANIZATION

be issued and admitted to record with the articles of organization in the Office of the Clerk of the Commission, effective February 27, 2019.

STATE CORPORATION COMMISSION

By

Judith Williams Jagdmann
Commissioner

DLLCACPT
CISECOM
19-02-27-7106

SCC eFile

ARTICLES OF ORGANIZATION
OF
LRC - DERBY RUN 1 GP, LLC

The undersigned, pursuant to Chapter 12 of Title 13.1 of the Code of Virginia, states as follows:

1. The name of the limited liability company is LRC - Derby Run 1 GP, LLC.

2. The purpose for which the limited liability company is formed is to engage in any lawful business, purpose or activity for which a limited liability company may be formed under the Virginia Limited Liability Company Act.

3. The name of the limited liability company's initial registered agent is CORPORATION SERVICE COMPANY. The initial registered agent is a foreign stock corporation authorized to transact business in Virginia.

4. The address of the limited liability company's initial registered office, which is identical to the business office of the initial registered agent, is 111 East Main Street, 16 Floor, Richmond, VA 23219. The initial registered office is located in Richmond City, Virginia.

5. The address of the limited liability company's principal office where the records of the limited liability company are to be kept is 105 Tallapoosa Street, Suite 300, Montgomery, AL 36104.

ORGANIZER:

/s/ Allison T. Domson Date: February 27, 2019
Allison T. Domson

C

Principal's Previous Participation Certification

(MANDATORY)

Previous Participation Certification

Development Name: Derby Run Apartments

Name of Applicant (entity): LRC - Derby Run 1, LP

LRC - Derby Run 1 GP, LLC

I hereby certify that:

1. All the statements made by me are true, complete and correct to the best of my knowledge and belief and are made in good faith, including the data contained in Schedule A and any statements attached to this certification.

2. During any time that any of the participants were principals in any multifamily rental property, no property has been foreclosed upon, in default or assigned to the mortgage insurer (governmental or private); nor has mortgage relief by the mortgagee been given;

3. During any time that any of the participants were principals in any multifamily rental property, there has not been any breach by the owner of any agreements relating to the construction or rehabilitation, use, operation, management or disposition of the property, including removal from a partnership;

4. That at no time have any principals listed in this certification been required to turn in a property to the investor or have been removed from a multifamily rental property ownership structure;

5. That to the best of my knowledge, there are no unresolved findings raised as a result of state or federal audits, management reviews or other governmental investigations concerning any multifamily rental property in which any of the participants were principals;

6. During any time that any of the participants were principals in any multifamily rental property, there has not been a suspension or termination of payments under any state or federal assistance contract for the property;

7. None of the participants has been convicted of a felony and is not presently, to my knowledge, the subject of a complaint or indictment charging a felony. A felony is defined as any offense punishable by imprisonment for a term exceeding one year, but does not include any offense classified as a misdemeanor under the laws of a state and punishable by imprisonment of two years or less;

8. None of the participants has been suspended, debarred or otherwise restricted by any federal or state governmental entity from doing business with such governmental entity; and

Previous Participation Certification, cont'd

9. None of the participants has defaulted on an obligation covered by a surety or performance bond and has not been the subject of a claim under an employee fidelity bond.

10. None of the participants is a Virginia Housing Development Authority (VHDA) employee or a member of the immediate household of any of its employees.

11. None of the participants is participating in the ownership of a multifamily rental housing property as of this date on which construction has stopped for a period in excess of 20 days or, in the case of a multifamily rental housing property assisted by any federal or state governmental entity, which has been substantially completed for more than 90 days but for which requisite documents for closing, such as the final cost certification, have not been filed with such governmental entity.

12. None of the participants has been found by any federal or state governmental entity or court to be in noncompliance with any applicable civil rights, equal employment opportunity or fair housing laws or regulations.

13. None of the participants was a principal in any multifamily rental property which has been found by any federal or state governmental entity or court to have failed to comply with Section 42 of the Internal Revenue Code of 1986, as amended, during the period of time in which the participant was a principal in such property. This does not refer to corrected 8823's.

14. None of the participants is currently named as a defendant in a civil lawsuit arising out of their ownership or other participation in a multi-family housing development where the amount of damages sought by plaintiffs (i.e., the ad damnum clause) exceeds One Million Dollars ($1,000,000).

15. None of the participants has pursued a Qualified Contract or planned foreclosure in Virginia after January 1, 2019.

Statements above (if any) to which I cannot certify have been deleted by striking through the words. In the case of any such deletion, I have attached a true and accurate statement to explain the relevant facts and circumstances.

Failure to disclose information about properties which have been found to be out of compliance or any material misrepresentations are grounds for rejection of an application and prohibition against future applications.

Signature

W. Daniel Hughes, Jr.

Printed Name

8/8/2019

Date (no more than 30 days prior to submission of the Application)

D

List of LIHTC Developments

(Schedule A)

(MANDATORY)

List of LIHTC Developments (Schedule A)

Development Name: _____

Name of Applicant: _____

INSTRUCTIONS:

1. **A Schedule A is required for <u>every</u> individual that makes up the GP or Managing Member** - does not apply to principals of publicly traded corporations.
2. For each property for which an <u>uncorrected</u> 8823 has been issued, provide a detailed explanation of the nature of the non-compliance, as well as a status statement.
3. List only tax credit development experience since 2003 (i.e. for the past 15 years)
4. Use separate pages as needed, for each principal.

Principal's Name: _____ **Controlling GP (CGP) or 'Named' Managing Member of Proposed property?*** _____ Y or N

	Development Name/Location	Name of Ownership Entity and Phone Number	CGP or 'Named' Managing Member at the time of dev.? (Y/N)*	Total Dev. Units	Total Low Income Units	Placed in Service Date	8609(s) Issue Date	Uncorrected 8823's? (Y/N) **Explain "Y"**
1	Albert Pike - Arkansas	Summit Albert Pike LP	Y	131	130	2013	2013	N
2	Aspen Park - Texas	Summit Aspen Park Apartments, Ltd.	Y	256	231	2007	2007	N
3	Arbor Place - Louisiana	Arbor Palce Apartments Partners, Ltd	Y	136	69	2009	2009	N
4	Ashland Woods Apartments	LRC - Ashland Woods, LP	Y	150	150	2018	2018	N
5	Audubon Village I	LRC - Audubon Village I, LP	Y	160	160	2018	2018	N
6	Audubon Village II	LRC - Audubon Village II, LP	Y	54	54	2018	2018	N
7	Azalea Point - Alabama	Summit Village Green, Ltd.	Y	208	208	2004	2004	N
8	Belmont Village - Louisiana	Summit Belmont Village Apartments, Ltd.	Y	204	104	2010	2010	N
9	Brookhaven - Oklahoma	Summit Brookhaven Apartments, L.P.	Y	120	120	2008	2009	N
10	Callier Forest - Georgia	Callier Forest, L.P.	Y	130	130	2004	2005	N
11	Center Ridge - Texas	Summit Center Ridge Apartments, Ltd	Y	224	213	2008	2008	N
12	Champions Crossing	Champions Crossing, L.P.	Y	156	156	2014	2015	Y
13	Coral Hills - Texas	Coral Hills Apartments, Ltd	Y	174	172	2006	2007	N
14	Clear Horizon - Louisiana	Summit Clear Horizon Apartments, LP	Y	84	84	2013	2014	N
15	Country Place - Kentucky	Summit Country Place Apartments, Ltd.	Y	150	150	2011	2012	N
16	Coweta - Oklahoma	Summit Coweta Apartments, LP	Y	60	60	2013	2014	N
17	Crestwood Apartments	Summit Crestwood Apartments, Ltd.	Y	216	216	2011	2011	N
18	Creekwood - Alabama	Summit Creekwood, Ltd	Y	125	121	2003	2003	N
19	Downing Place Townhomes	LRC - Downing Place, LP	Y	193	155	2018	2019	N
20	Deville Manor Apartments	LRC - Deville Manor, LP	Y	104	104	2018	2019	N
21	Eagles Landing	LRC - Eagles Landing, LP	Y	80	80	2016	2016	N
22	Eastgate - Georgia	Eastgate Apartments, Ltd.	Y	96	96	2005	2005	N
23	Elm Ridge - Texas	Elm Ridge Affordable Partners, Ltd.	Y	130	130	2011	2012	N
24	Emerald Point - Louisiana	Emerald Point Apartments Partners, Ltd.	Y	120	72	2008	2008	N
25	Fairview - Georgia	Thomaston Housing Partners, Ltd.	Y	100	98	2005	2006	N
26	Forest Court	LRC - Forest Westover, LP	Y	180	180	2017	2017	N
27	Forrester Gardens - Alabama	Summit Forrester Gardens Ltd.	Y	152	146	2003	2003	N
28	Franklin Place Townhomes	Frankling Place Townhomes, LP	Y	96	96	2014	2014	N
29	Garden Oaks - Louisiana	Summit Garden Oaks Ltd.	Y	98	98	2013	2013	N
30	Griner Gardens	Griner Gardens, LP	Y	48	48	2017	2018	N
31	Groveland Terrace	Groveland Terrace, LP	Y	52	52	2005	2005	N
32	Hillcrest - Texas	Summit Hillcrest Apartments, Ltd.	Y	353	299	2007	2007	N
33	Hickory Park - Georgia	Hickory Park, Ltd.	Y	150	150	2003	2003	N
34	Heritage View - Alabama	Summit Heritage View, Ltd	Y	55	55	2011	2012	N
35	Indian Springs Apartments	LRC - Indian Springs, LP	Y	261	261	2017	2018	N
36	Lakewood Terrace - Florida	Lakewood Terrace Affordable Housing Group, Ltd.	Y	132	132	2010	2010	N
37	Lapalco Court - Louisiana	Lapalco Court Apartments Partners, Ltd.	Y	100	45	2009	2009	N

* Must have the ability to bind the LIHTC entity; document with partnership/operating agreements and <u>one 8609</u> (per entity/development) for a total of 6.

1st PAGE TOTAL: 5,238 4,825 92% **LIHTC as % of Total Units**

ADD ADDITIONAL PROPERTIES USING NEXT TAB

Previous Participation Certification continued

	Development Name/Location	Name of Ownership Entity and Phone Number	Controlling General Partner? (Y/N)	Total Units	Low Income Units	Placed in Service Date	8609 Date	Non-compliance Found? Y/N (Explain Yes)
38	Live Oak Manor - Louisiana	Summit Live Oak Manor LP	Y	119	119	2014	2014	N
39	Marshall - Texas	Marshall Apartments, LLC	Y	100	100	2010	2011	N
40	Meadowbrook - Louisiana	Meadowbrook Apartments Partners, Ltd.	Y	200	193	2007	2007	N
41	Morris Heights	Morris Heights, LP	Y	60	60	2005	2005	N
42	New Zion - Louisiana	Summit New Zion Apartments, LP	Y	100	100	2014	2015	N
43	Narrow Lane Villas - Alabama	Summit Narrow Lane Villas, Ltd	Y	142	110	2003	2003	N
44	Northshore Meadows Apartments - Texas	Summit Point Apartments, Ltd.	Y	291	262	2008	2009	N
45	Parklane - Alabama	Parklane, Ltd.	Y	112	112	2002	2003	N
46	Pointe - Alabama	Pointe Apartments, Ltd	Y	198	183	2006	2007	N
47	Park Place - Oklahoma	Park Place Apartments, LP	Y	121	120	2009	2010	N
48	Midtown Park	Midtown Park, LP	Y	132	132	2014	2014	N
49	Quail Creek	LRC - Quail Creek, LP	Y	119	119	2018	2019	N
50	Red Hills Villas - Texas	South Creek Housing, Ltd	Y	168	168	2002	2002	N
51	Ridgefield - Louisiana	Ridgefield Apartments Partners, Ltd.	Y	200	200	2008	2008	N
52	Riverview Heights	Riverview Heights, LP	Y	116	116	2016	2017	N
53	South Bay - Alabama	South Bay, Ltd.	Y	224	224	2002	2002	N
54	Shady Oaks Manor	Shady Oaks Manor, LP	Y	138	138	2014	2014	N
55	Sherwood - Alabama	Summit Sherwood Apartments, Ltd.	Y	80	80	2008	2009	N
56	South Mall Apartment Homes	South Mall Apartment Homes, LP	Y	128	32	2007	2008	N
57	South Mall - Alabama	Summit South Mall Apartments, Ltd.	Y	160	129	2008	2008	N
58	Spanish Arms - Louisiana	Spanish Arms Apartments Partners, Ltd.	Y	204	202	2008	2009	N
59	Tall Pines - Georgia	Tall Pines Apartments, Ltd	Y	115	115	2002	2002	N
60	Union Hill Apartments - Georgia	Union Hill Apartments, Ltd.	Y	68	68	2005	2006	N
61	Victory Village Apartments	LRC - Victory Village, LP	Y	112	112	2018	2019	N
62	Village Park - Texas	Village Park Apartments Partners, Ltd.	Y	418	364	2006	2007	N
63	William Bell - Mississippi	Summit William Bell Apartments, Ltd.	Y	104	104	2009	2009	N
64	Washington Gardens - Mississippi	Summit Washington Gardens Apartments, Ltd.	Y	100	100	2012	2013	N
65	Ware Manor - Georgia	Ware Manor Ltd,	Y	84	84	2001	2002	N
66	Westover Village	LRC - Forest Westover, LP	Y	180	180	2017	2017	N
67	Wood Valley - Georgia	Summit Wood Valley, Ltd	Y	88	87	2003	2003	N
68	Plaza Tower - Arkansas	P.T. Apartments Limited Partnership	Y	132	132	2005	2005	N
69	King Street Apartments	LRC - King Street, LP	Y	184	184	2018	2019	N
			2nd PAGE TOTAL:	4,697	4,429			
			GRAND TOTAL:	9,935	9,254		93%	LIHTC as % of Total Unit

E

Site Control Documentation & Most Recent Real Estate Tax Assessment

(MANDATORY)

PURCHASE AND SALE CONTRACT

THIS PURCHASE AND SALE CONTRACT (this "Contract") is entered into as of February 21, 2019 (the "Effective Date") by and between **DERBY RUN ASSOCIATES, L.P.**, a Virginia limited partnership d/b/a Derby Run Apartments ("Seller") and **LRC ACQUISITIONS, LLC**, an Alabama limited liability company (the "Purchaser").

RECITALS

A. Seller owns the real estate located in the City of Hampton, Virginia, consisting of one hundred sixty (160) apartment units commonly known as Derby Run Apartments, and as more particularly described in **Exhibit A** attached hereto and made a part hereof, and the improvements thereon (the "Project").

B. Purchaser desires to purchase, and Seller desires to sell, such land, improvements and certain associated property, on the terms and conditions set forth below.

NOW, THEREFORE, in consideration of the mutual covenants set forth herein, Seller and Purchaser hereby agree as follows:

ARTICLE I
DEFINED TERMS

Unless otherwise defined herein, any term with its initial letter capitalized in this Contract shall have the meaning set forth in Schedule 1 attached hereto and made a part hereof.

ARTICLE II
PURCHASE AND SALE, PURCHASE PRICE & DEPOSIT

2.1. Purchase and Sale. Seller agrees to sell and convey the Property to Purchaser and Purchaser agrees to purchase the Property from Seller, all in accordance with the terms and conditions set forth in this Contract.

2.2. Purchase Price and Deposit. The total Purchase Price paid by Purchaser to Seller for the Property shall be equal to Ten Million One Hundred Forty-Five Thousand and 00/100 Dollars ($10,145,000.00) which shall be paid in accordance with the terms of this Section 2.2. as follows:

2.2.1. Within five (5) Business Days following the Effective Date, Purchaser shall deliver to Safe Harbor Title Company, LLC ("Escrow Agent") an initial deposit (the "Initial Deposit") of Fifty Thousand and 00/100 Dollars ($50,000.00) by wire transfer of immediately available funds.

2.2.2. The balance of the Purchase Price for the Property shall be paid to and received by Escrow Agent by wire transfer of immediately available funds on the Closing Date.

2.3. Escrow Provisions Regarding Deposit.

2.3.1. Escrow Agent shall hold the Initial Deposit and the Additional Deposit (as

defined below, and collectively with the Initial Deposit, each to the extent paid, the "Deposit"), and make delivery of the Deposit to the party entitled thereto under the terms of this Contract. Escrow Agent shall invest the Deposit in a non-interest bearing account reasonably approved by Purchaser and Seller.

2.3.2. Escrow Agent shall hold and apply the Deposit in strict accordance with the terms of this Contract. The tax identification numbers of the parties shall be furnished to Escrow Agent upon request.

2.3.3. Except for the return of the Deposit to Purchaser as a result of Purchaser exercising its termination right under Sections 3.1, 4.3 or 4.5 (in which event Escrow Agent shall promptly release the Deposit to Purchaser on demand), if prior to the Closing Date either party makes a written demand upon Escrow Agent for payment of the Deposit, Escrow Agent shall give written notice to the other party of such demand. If Escrow Agent does not receive a written objection from the other party to the proposed payment within five (5) Business Days after the giving of such notice, Escrow Agent is hereby authorized to make such payment. If Escrow Agent does receive such written objection within such five (5) Business Day period, Escrow Agent shall continue to hold such amount until otherwise directed by joint written instructions signed by all of the parties to this Contract or a final judgment or arbitrator's decision. However, Escrow Agent shall have the right at any time to deposit the Deposit with a court of competent jurisdiction in the state in which the Property is located. Escrow Agent shall give written notice of such deposit to Seller and Purchaser of the same. Upon such deposit, Escrow Agent shall be relieved and discharged of all further obligations and responsibilities hereunder.

2.3.4. The parties acknowledge that Escrow Agent shall not be liable for any act or omission on its part unless taken or suffered in bad faith in willful disregard of this Contract or involving gross negligence. Seller and Purchaser jointly and severally shall indemnify and hold Escrow Agent harmless from and against all costs, claims and expenses, including reasonable attorney's fees, incurred in connection with the performance of Escrow Agent's duties hereunder, except with respect to actions or omissions taken or suffered by Escrow Agent in bad faith, in willful disregard of this Contract or involving gross negligence on the part of the Escrow Agent. Notwithstanding the foregoing, any and all fees charged by Escrow Agent for the performance of its duties hereunder shall be shared evenly between Purchaser and Seller and shall not be directly deducted from the Deposit.

2.3.5. The parties shall deliver to Escrow Agent an executed copy of this Contract. Escrow Agent shall execute the signature page for Escrow Agent attached hereto which shall confirm Escrow Agent's agreement to comply with the terms of Seller's closing instruction letter delivered at Closing and the provisions of this Section 2.3.

2.3.6. Escrow Agent, as the person responsible for closing the transaction within the meaning of Section 6045(e)(2)(A) of the Internal Revenue Code of 1986, as amended (the "Code"), shall file or shall cause to be filed all necessary information, reports, returns, and statements regarding the transaction required by the Code including, but not limited to, the tax reports required pursuant to Section 6045 of the Code. Further, Escrow Agent agrees to indemnify and hold Purchaser, Seller, and their respective attorneys and brokers harmless from and against any Losses resulting from Escrow Agent's failure to file the reports Escrow Agent is required to file pursuant to this section.

2.3.7. Default by Seller. In the event that Seller defaults in its obligations hereunder, and if said default on the Contract remains uncured by Seller, after the expiration of any applicable cure period, then Purchaser may, at its option, terminate such contract and demand that the Escrow Agent return the Deposit to Purchaser. In addition to the foregoing, in such an event, Purchaser shall be entitled to any and all remedies available to Purchaser subject to the terms of Section 10.2. hereof.

2.3.8. Default by Purchaser. In the event that Purchaser defaults in its obligations hereunder, and if said default on this Contract remains uncured by Purchaser after the expiration of any applicable cure period, then Seller may, at its option, terminate such contract and demand that the Escrow Agent deliver the Deposit to Seller.

ARTICLE III
FEASIBILITY PERIOD

3.1. Feasibility Period. Purchaser shall have thirty (30) days after the delivery of all Materials pursuant to Section 3.3.1 (the "Feasibility Period") to complete its due diligence review of all aspects of Seller, the Property, and this transaction. This due diligence review shall include but shall not be limited to a complete review of the books and records of Seller showing all operating income and expenses, leases, utility bills, property tax statements, vendor service contracts, and personal property inventory and inspections, lien, and such tax, and litigation searches as Purchaser may desire. In addition, subject to the terms of Section 3.2. and the rights of Tenants under the Leases, from the Effective Date to and including the date of the Closing, Purchaser, and its agents, contractors, engineers, surveyors, attorneys, and employees (collectively, "Consultants") shall, at no cost or expense to Seller, have the right from time to time to enter onto the Property to conduct and make any and all customary studies, tests, examinations, inquiries, inspections and investigations of or concerning the Property, review the Materials and otherwise confirm any and all matters which Purchaser may reasonably desire to confirm with respect to the Property and Purchaser's intended use thereof (collectively, the "Inspections"). On or prior to the last day of the Feasibility Period, Purchaser shall either (i) notify Seller that Purchaser approves the due diligence review and agrees to pursue the closing of the transaction as contemplated herein, or (ii) if Purchaser elects to terminate this Contract, Purchaser shall so notify Seller and the Escrow Agent shall thereupon return the Deposit to Purchaser. If Purchaser fails to timely give notice under the foregoing sentence, Purchaser shall be deemed to have elected to proceed under subsection (i).

3.2. Conduct of Investigation. Purchaser shall not permit any mechanics' or materialmen's liens or any other liens to attach to the Property by reason of the performance of any work or the purchase of any materials by Purchaser or any other party in connection with any Inspections conducted by or for Purchaser. Purchaser shall give reasonable advance notice to Seller prior to any entry onto the Property and shall permit Seller to have a representative present during all Inspections conducted at the Property. Purchaser shall take all reasonable actions and implement all protections necessary to ensure that all actions taken in connection with the Inspections, and all equipment, materials and substances generated, used or brought onto the Property pose no material threat to the safety of persons, property or the environment.

In the event that any of the Inspections involve intrusive physical or environmental testing which disturbs the physical condition of the Property, written notice of such Inspection which includes a detailed description of the type, scope, manner and duration of the Inspection to be conducted shall be furnished to Seller. Purchaser and its Consultants shall endeavor to refrain from

interfering with the activities of tenants and occupants and any persons providing services to or at the Project. Upon completion of the Inspections, Purchaser and/or its Consultants shall, at Purchaser's expense, cause any portion of the Project damaged or altered by or in connection with any of the Inspections to be repaired and/or restored to the condition the Project was in prior to such Inspections. All such Inspections shall be conducted at Purchaser's sole cost and expense. Purchaser or Consultant shall be responsible for any damages to the Project caused by such Inspection, and Purchaser shall indemnify Seller for any damages to the Project incurred by Seller due to any such Inspections. The obligations of Purchaser under this Section 3.2 shall expressly survive Closing or the earlier termination of this Contract.

3.3. Property Materials.

3.3.1. Within five (5) days after the Effective Date, and to the extent the same have not already been provided by Seller to Purchaser, Seller agrees to deliver to Purchaser copies of such documents and information concerning the Property that are in Seller's possession or reasonable control, as further described on Schedule 3.3.1 attached hereto (collectively, the "Materials").

3.3.2. Not later than five (5) Business Days after the Effective Date and not later than five (5) Business Days after the last day of each calendar month prior to the Closing, and to the extent the same has not already been provided by Seller to Purchaser, Seller shall deliver to Purchaser (or otherwise make available to Purchaser as provided under Section 3.3.1.) the most recent rent roll for the Property, which is the rent roll Seller uses in the ordinary course of operating the Property (the "Rent Roll").

3.3.3. Not later than five (5) Business Days after the Effective Date, and to the extent the same have not already been provided by Seller to Purchaser, Seller shall deliver to Purchaser (or otherwise make available to Purchaser as provided under Section 3.3.) a list of all current Property Contracts (the "Property Contracts List"). In addition, Seller shall provide Purchaser with copies of any such contracts upon the request of Purchaser.

3.4 Property Contracts. Within thirty (30) days after the delivery of the Property Contracts List and any such Contracts requested by Purchaser, Purchaser may deliver written notice to Seller (the "Property Contracts Notice") specifying any Property Contracts which Purchaser desires to terminate at the Closing (the "Terminated Contracts"); provided that (a) the effective date of such termination on or after Closing shall be subject to the express terms of such Terminated Contracts, (b) if any such Property Contract cannot by its terms be terminated at Closing, it shall be assumed by Purchaser and not be a Terminated Contract, and (c) to the extent that any such Terminated Contract requires payment of a penalty, premium, or damages, including liquidated damages, for cancellation, Purchaser shall be solely responsible for the payment of any such cancellation fees, penalties, or damages, including liquidated damages. If Purchaser fails to deliver the Property Contracts Notice and any copies of any such contracts requested by Purchaser within thirty (30) days of receipt of the Property Contracts List, then there shall be no Terminated Contracts and Purchaser shall assume all Property Contracts at the Closing. If Purchaser delivers the Property Contracts Notice to Seller on or before the expiration of the Feasibility Period, then Seller shall execute and deliver, on or before Closing, a vendor termination notice (in the form attached hereto as **Exhibit F**) for each Terminated Contract informing the vendor(s) of the termination of such Terminated Contract as of the Closing Date (subject to any delay in the effectiveness of such termination pursuant to the express terms of each applicable Terminated Contract) (the "Vendor Terminations"). To the extent that any Property Contract to be assigned to Purchaser requires vendor consent, then, prior to the Closing, Purchaser and

Seller shall attempt to obtain from each applicable vendor a consent (each a "Required Assignment Consent") to such assignment, and Purchaser shall indemnify, hold harmless and, if requested by Seller (in Seller's sole discretion), defend (with counsel approved by Seller) Seller's Indemnified Parties from and against any and all Losses arising from or related to a failure to obtain any Required Assignment Consent.

ARTICLE IV
TITLE

4.1. Title Documents. Within five (5) days after the Effective Date, Seller shall deliver to Purchaser a copy of any existing owner's or lender's title insurance policies relating to the Project in Seller's possession. Within thirty (30) days of the Effective Date, Purchaser shall procure from a title insurance company identified by Purchaser (the "Title Insurer"), a standard form commitment or preliminary title report ("Title Commitment") to provide a standard American Land Title Association owner's title insurance policy for the Land and Improvements, using the current policy jacket customarily provided by the Title Insurer, in an amount equal to the Purchase Price (the "Title Policy"), together with copies of all instruments identified as exceptions therein (together with the Title Commitment, referred to herein as the "Title Documents"). All costs relating to the procurement of the Title Policy, and any endorsements reasonably requested by Purchaser with respect to the Property, including for extended coverage shall be paid by Purchaser.

4.2. Survey. Seller shall deliver to Purchaser an existing survey of the Property (the "Existing Survey") within three (3) days of the Effective Date. Within thirty (30) days of the Effective Date, Purchaser may, at its sole cost and expense, order a new or updated survey of the Property either before or after the Effective Date (such new or updated survey together with the Existing Survey, is referred to herein as the "Survey").

4.3. Objection and Response Process. On or before the date which is thirty (30) days after Purchaser's receipt of the last to be received of the Title Commitment and Survey (the "Objection Deadline"), Purchaser shall give written notice (the "Objection Notice") to the Title Insurer and the attorneys for Seller of any matter set forth in the Title Documents and the Survey to which Purchaser objects (the "Objections"). If Purchaser fails to tender an Objection Notice on or before the Objection Deadline, Purchaser shall be deemed to have approved and irrevocably waived any objections to any matters covered by the Title Documents and the Survey. On or before ten (10) days after Seller's receipt of the Objection Notice (the "Response Deadline"), Seller may, in Seller's sole discretion, give Purchaser notice (the "Response Notice") of those Objections which Seller is willing to cure, if any. If Seller fails to deliver a Response Notice by the Response Deadline, Seller shall be deemed to have elected not to cure or otherwise resolve any matter set forth in the Objection Notice. If Purchaser is dissatisfied with the Response Notice or the lack of Response Notice, Purchaser may, as its exclusive remedy, exercise its right to terminate this Contract prior to the later of (i) the expiration of the Feasibility Period in accordance with the provisions of Section 3.1 and (ii) ten (10) days after the later of (a) Purchaser's receipt of the Response Notice or (b) the expiration of the Response Deadline, and in each case receive a full refund of the Deposit. If Purchaser fails to timely exercise such right, Purchaser shall be deemed to accept the Title Documents and Survey with resolution, if any, of the Objections set forth in the Response Notice (or if no Response Notice is tendered, without any resolution of the Objections) and without any reduction or abatement of the Purchase Price.

4.4. Permitted Exceptions. At Closing, the Property shall be subject to no liens or

encumbrances of any nature whatsoever, other than the following, all of which shall be deemed "Permitted Exceptions":

4.4.1. All matters shown in the Title Documents, including, without limitation, the LURA, and the Survey, other than (a) those Objections, if any, which Seller has agreed to cure pursuant to Sections 4.3 and 4.5, (b) the standard exception regarding the rights of parties in possession, which shall be modified to be limited to those parties in possession pursuant to the Leases, and (c) the standard exception pertaining to taxes and assessments, which shall be limited to taxes and assessments not yet due and payable as of the Closing Date;

4.4.2. All Leases;

4.4.3. Applicable zoning and governmental regulations and ordinances;

4.4.4. Any defects in or objections to title to the Property, or title exceptions or encumbrances, arising by, through or under Purchaser; and

4.4.5. Property Contracts (other than Terminated Contracts).

4.5. Subsequently Disclosed Exceptions. If at any time after the expiration of the Feasibility Period, any update to the Title Commitment or Existing Survey discloses any additional item that adversely affects title to the Property (in Purchaser's reasonable opinion) which was not disclosed on any version of or update to the Title Commitment delivered to Purchaser during the Feasibility Period (the "New Exception"), Purchaser shall have a period of fifteen (15) days from the date of its receipt of such update (the "New Exception Review Period") to review and notify Seller in writing of Purchaser's approval or disapproval of the New Exception. Failure to timely provide notice shall be deemed to be an approval of the New Exception. If Purchaser disapproves of the New Exception, Seller may, in Seller's sole discretion, notify Purchaser as to whether it is willing to cure the New Exception on or prior to the Closing Date. If Seller fails to deliver a notice to Purchaser within ten (10) days after the expiration of the New Exception Review Period, Seller shall be deemed to have elected not to cure the New Exception. If Purchaser is dissatisfied with Seller's response, or lack thereof, Purchaser may, as its exclusive remedy elect either: (i) to terminate this Contract, in which event the Deposit shall be promptly returned to Purchaser or (ii) to waive the New Exception and proceed with the transactions contemplated by this Contract, in which event Purchaser shall be deemed to have approved the New Exception. If Purchaser fails to notify Seller of its election to terminate this Contract in accordance with the foregoing sentence within six (6) days after the expiration of the New Exception Review Period, Purchaser shall be deemed to have elected to approve and irrevocably waive any objections to the New Exception.

ARTICLE V
CLOSING

5.1. Closing Date. The Closing shall occur no later than June 28, 2019 (such selected date shall be herein referred to as the "Closing Date") through an escrow with Escrow Agent, whereby Seller, Purchaser and their attorneys need not be physically present at the Closing and may deliver documents by overnight air courier or other means. Notwithstanding the foregoing, Purchaser shall be entitled to extend the Closing Date by one (1) forty-five (45) day option period, by delivering written notice to Seller and an additional deposit (the "Additional Deposit") of

Twenty Thousand and No/100 Dollars ($20,000.00) to the Escrow Agent. The Additional Deposit shall be applicable to the Purchase Price but shall be non-refundable except pursuant to Section 10.2.

5.2. Seller Closing Deliveries. Seller shall deliver to Escrow Agent, each of the following items on or before the Closing Date:

5.2.1. A Special Warranty Deed (the "Deed") in the form attached as **Exhibit B** to Purchaser, subject to the Permitted Exceptions.

5.2.2. A Bill of Sale in the form attached as **Exhibit C**.

5.2.3. A General Assignment in the form attached as **Exhibit D** pursuant to which the Seller shall assign all contract documents, warranties, permits and other miscellaneous assets as set forth therein (the "General Assignment").

5.2.4. An Assignment of Leases and Security Deposits in the form attached as **Exhibit E** (the "Leases Assignment").

5.2.5. Seller's counterpart signature to the closing statement.

5.2.6. A title affidavit or an indemnity form reasonably acceptable to Seller, which is sufficient to enable Title Insurer to delete the standard pre-printed exceptions to the title insurance policy to be issued pursuant to the Title Commitment.

5.2.7. A certification of Seller's non-foreign status pursuant to Section 1445 of the Internal Revenue Code of 1986, as amended.

5.2.8. Resolutions, certificates of good standing, and such other organizational documents as Title Insurer shall reasonably require evidencing Seller's authority to consummate this transaction.

5.2.9. An updated Rent Roll effective as of a date no more than three (3) Business Days prior to the Closing Date; provided, however, that the content of such updated Rent Roll shall in no event expand or modify the conditions to Purchaser's obligation to close as specified under Section 8.1.

5.2.10. An updated Property Contracts List effective as of a date no more than three (3) Business Days prior to the Closing Date; provided, however, that the content of such updated Property Contracts List shall in no event expand or modify the conditions to Purchaser's obligation to close as specified under Section 8. 1.

5.2.11. A Seller's Certificate in the form attached as **Exhibit G**.

5.2.12. Evidence of delivery of advance written notice to Virginia Housing Development Authority that Seller is transferring the Property to Purchaser, as required by Section 10.A of the LURA.

5.2.13. Such notices, transfer disclosures, affidavits or other similar documents that are required by applicable law to be executed by Seller or otherwise reasonably necessary in order to consummate the transactions contemplated under the terms of the Contract.

5.3. Purchaser Closing Deliveries. Purchaser shall deliver to Escrow Agent each of the following items on or before the Closing Date:

5.3.1. The full Purchase Price (with credit for the Deposit, plus or minus the adjustments or prorations required by this Contract).

5.3.2. Purchaser's counterpart signature to the closing statement.

5.3.3. A countersigned counterpart of the General Assignment.

5.3.4. A countersigned counterpart of the Leases Assignment.

5.3.5. Notification letters to all Tenants prepared and executed by Purchaser in the form attached hereto as **Exhibit H**, which shall be delivered to all Tenants by Purchaser immediately after Closing.

5.3.6. Any cancellation fees or penalties due to any vendor under any Terminated Contract as a result of the termination thereof.

5.3.7. Resolutions, certificates of good standing, and such other organizational documents as Title Insurer shall reasonably require evidencing Purchaser's authority to consummate this transaction.

5.3.8. Intentionally omitted;

5.3.9. Intentionally omitted;

5.3.10. Such notices, transfer disclosures, affidavits or other similar documents that are required by applicable law to be executed by Purchaser or otherwise reasonably necessary in order to consummate the transactions contemplated under this Contract.

5.4. Closing Prorations and Adjustments.

5.4.1. General. All normal and customarily proratable items, including, without limitation, collected rents, operating expenses, personal property taxes, other operating expenses and fees, shall be prorated as of the Closing Date, Seller being charged or credited, as appropriate, for all of same attributable to the period up to the Closing Date (and credited for any amounts paid by Seller attributable to the period on or after the Closing Date, if assumed by Purchaser) and Purchaser being responsible for, and credited or charged, as the case may be, for all of the same attributable to the period on and after the Closing Date. Seller shall prepare a proration schedule (the "Proration Schedule") of the adjustments described in this Section 5.4. prior to Closing and shall use good faith efforts to deliver such Proration Schedule three (3) Business Days prior to Closing.

5.4.2. Operating Expenses. All of the operating, maintenance, taxes (other than real estate taxes), and other expenses incurred in operating the Property that Seller customarily pays, and

any other costs incurred in the ordinary course of business for the management and operation of the Property, shall be prorated on an accrual basis. Seller shall pay all such expenses that accrue prior to the Closing Date and Purchaser shall pay all such expenses that accrue from and after the Closing Date.

5.4.3. Utilities. The final readings and final billings for utilities will be made if possible as of the Closing Date, in which case Seller shall pay all such bills as of the Closing Date and no proration shall be made at the Closing with respect to utility bills. Otherwise, a proration shall be made based upon the parties' reasonable good faith estimate. Seller shall be entitled to the return of any deposit(s) posted by it with any utility company, and Seller shall notify each utility company serving the Property to terminate Seller's account, effective as of noon on the Closing Date. Seller shall have no responsibility or liability for Purchaser's failure to arrange utility service for the Property as of the Closing Date. Purchaser shall indemnify, hold harmless and, if requested by Seller (in Seller's sole discretion), defend (with counsel approved by Seller) Seller's Indemnified Parties from and against any and all Losses arising from or related to Purchaser's failure to arrange utility service as of the Closing Date. If the proration of utilities is based upon an estimate, either party may request a reproration subsequent to Closing pursuant to the provisions of Section 5.5. hereof.

5.4.4. Real Estate Taxes. Any real estate ad valorem or similar taxes for the Property, or any installment of assessments payable in installments which installment is payable in the calendar year of Closing, shall be prorated to the date of Closing, based upon actual days involved. The proration of real property taxes or installments of assessments shall be based upon the assessed valuation and tax rate figures (assuming payment at the earliest time to allow for the maximum possible discount) for the year in which the Closing occurs to the extent the same are available; provided, however, that in the event that actual figures (whether for the assessed value of the Property or for the tax rate) for the year of Closing are not available at the Closing Date, the proration shall be made using figures from the preceding year (assuming payment at the earliest time to allow for the maximum possible discount). The proration of real property taxes or installments of assessments shall be final and not subject to re-adjustment after Closing.

5.4.5. Property Contracts. Purchaser shall assume at Closing the obligations under the Property Contracts assumed by Purchaser; however, operating expenses shall be prorated under Section 5.4.2.

5.4.6. Leases.

5.4.6.1. All collected rent (whether fixed monthly rentals, additional rentals, escalation rentals, retroactive rentals, operating cost pass-throughs or other sums and charges payable by Tenants under the Leases), income and expenses from any portion of the Property shall be prorated as of the Closing Date. Purchaser shall receive all collected rent and income attributable to dates from and after the Closing Date. Seller shall receive all collected rent and income attributable to dates prior to the Closing Date. Notwithstanding the foregoing, no prorations shall be made in relation to either (a) non-delinquent rents which have not been collected as of the Closing Date, or (b) delinquent rents existing, if any, as of the Closing Date (the foregoing (a) and (b) referred to herein as the "Uncollected Rents"). In adjusting for Uncollected Rents, no adjustments shall be made in Seller's favor for rents which have accrued and are unpaid as of the Closing, but Purchaser shall pay Seller such accrued Uncollected Rents as and when collected by Purchaser. For a period of one hundred eighty (180) days following Closing, Purchaser agrees to bill Tenants of the Property for all

Uncollected Rents and to take reasonable actions (which shall not include an obligation to commence legal action) to collect Uncollected Rents. Notwithstanding the foregoing, Purchaser's obligation to collect Uncollected Rents shall be limited to Uncollected Rents of not more than ninety (90) days past due, and Purchaser's collection of rents shall be applied, first, towards current rent due and owing under the Leases, second, to Purchaser's reasonable third-party costs of such collection, and third to Uncollected Rents.

5.4.6.2. At Closing, an amount equal to the received and unapplied balance of all cash (or cash equivalent) Tenant Deposits, including, but not limited to, security, damage, pet or other refundable deposits paid by any of the Tenants to secure their respective obligations under the Leases, together, in all cases, with any interest payable to the Tenants thereunder as may be required by their respective Tenant Lease or state law (the "Tenant Security Deposit Balance") shall be determined by Seller. Any cash (or cash equivalents) held by Seller pursuant to the terms of the Leases which constitutes the Tenant Security Deposit Balance shall be transferred on the Closing Date by Seller to the property manager designated by Purchaser to manage the Project after the Closing Date. The obligation with respect to the Tenant Security Deposit Balance shall be assumed by Purchaser. There shall be no adjustment on the closing statement for the Tenant Security Deposit Balance. The Tenant Security Deposit Balance shall not include any non-refundable deposits or fees paid by Tenants to Seller, either pursuant to the Leases or otherwise.

5.4.7. Insurance. No proration shall be made in relation to insurance premiums and insurance policies that will not be assigned to Purchaser. Seller shall have the risk of loss of the Property until 11:59 p.m. on the Closing Date, after which time the risk of loss shall pass to Purchaser, and Purchaser shall be responsible for obtaining its own insurance thereafter.

5.4.8. Closing Costs. Seller shall pay (i) all sales, use, gross receipts or similar taxes, if any, (ii) all of Seller's attorneys' fees and expenses of every type and description, (iii) the grantor recording tax imposed on the conveyance and the recording of the Deed, and (iv) all prepayment and other penalties or costs incurred by Seller resulting from the payoff and release of any monetary liens on the Property or payable to its current lender. All other recording costs shall be paid by Purchaser along with its attorneys' fees and expenses and all other closing costs incurred by Purchaser in connection with the transactions contemplated by this Contract. Purchaser and Seller shall split evenly all the customary closing costs of the Escrow Agent.

5.4.9. Utility Contracts. If Seller has entered into an agreement for the purchase of electricity, gas or other utility service for the Property or a group of properties (including the Property) (a "Utility Contract"), or an affiliate of Seller has entered into a Utility Contract, then Seller shall assign and Purchaser shall assume the Utility Contract with respect to the Property, and if required by the terms of such Utility Contract, Purchaser shall attempt to obtain consent to such assignment and assumption, and Purchaser shall hold harmless and, if requested by Seller (in Seller's sole discretion), defend (with counsel approved by Seller) Seller's Indemnified Parties from and against any and all Losses arising from or related to Purchaser's failure to obtain such consent. Notwithstanding the foregoing, Seller may instead elect to receive a credit at Closing equal to the reasonably calculated costs of the Utility Contract attributable to the Property from and after the Closing, and Seller shall remain responsible for payments under the Utility Contract.

5.4.10. Possession. Possession of the Property, subject to the Leases, Property Contracts, other than Terminated Contracts, and Permitted Exceptions, shall be delivered to Purchaser

at the Closing upon release from escrow of all items to be delivered by Purchaser pursuant to Section 5.3. At Closing, the Property shall be free and clear of all liens and encumbrances subject only to Permitted Exceptions. Seller shall provide Purchaser with a certified rent roll at least three (3) days before the Closing Date. Originals of the Leases and Property Contracts, lease files, tenant files and income documentation (including tenant income certifications), warranties, guaranties, operating manuals, keys to the property, and Seller's books and records (other than proprietary information) (collectively, "Seller's Property-Related Files and Records") regarding the Property shall be made available to Purchaser at the Property after the Closing. Purchaser agrees, for a period of not less than three (3) years after the Closing (the "Records Hold Period"), to (a) provide and allow Seller reasonable access to Seller's Property-Related Files and Records for purposes of inspection and copying thereof, and (b) reasonably maintain and preserve Seller's Property-Related Files and Records. If at any time after the Records Hold Period, Purchaser desires to dispose of Seller's Property-Related Files and Records, Purchaser must first provide Seller prior written notice (the "Records Disposal Notice"). Seller shall have a period of thirty (30) days after receipt of the Records Disposal Notice to enter the Property (or such other location where such records are then stored) and remove or copy those of Seller's Property-Related Files and Records that Seller desires to retain.

5.5. Post-Closing Adjustments. Purchaser or Seller may request that Purchaser and Seller undertake to re-adjust any item on the Proration Schedule (or any item omitted therefrom), with the exception of real property taxes which shall be final and not subject to readjustment, in accordance with the provisions of Section 5.4, of this Contract; provided, however, that neither party shall have any obligation to re-adjust any items after the expiration of sixty (60) days after Closing. Purchaser and Seller acknowledge, covenant and agree that Seller shall be entitled to all rental income prorated to the Closing Date and shall be responsible for all services, utilities and operating expenses of the Project to the Closing Date; and Purchaser shall be entitled to all rental income on and after the Closing Date and shall be responsible for all such services, utilities and operating expenses on and after the Closing Date. Purchaser and Seller shall settle all such prorations and adjustments contemplated in Section 5.4. within sixty (60) days after the Closing Date. Any prepaid rents paid by tenants for future months shall be credited to Purchaser, if any.

ARTICLE VI
REPRESENTATIONS AND WARRANTIES OF SELLER AND PURCHASER

6.1. Seller's Representations. Seller represents and warrants to Purchaser the following (collectively, the "Seller's Representations") as of the Effective Date and as of the Closing Date:

6.1.1. Seller is validly existing and in good standing under the laws of the state of its formation set forth in the initial paragraph of this Contract; and has or at the Closing shall have the entity power and authority to sell and convey the Property and to execute the documents to be executed by Seller and prior to the Closing will have taken as applicable, all corporate, partnership, limited liability company or equivalent entity actions required for the execution and delivery of this Contract, and the consummation of the transactions contemplated by this Contract. The compliance with or fulfillment of the terms and conditions hereof will not conflict with, or result in a breach of, the terms, conditions or provisions of, or constitute a default under, any contract to which Seller is a party or by which Seller is otherwise bound, which conflict, breach or default would have a material adverse effect on Seller's ability to consummate the transaction contemplated by this Contract or on the Property. This Contract is a

valid and binding agreement against Seller in accordance with its terms.

6.1.2. Seller is not a "foreign person," as that term is used and defined in the Internal Revenue Code, Section 1445, as amended.

6.1.3. Seller has not received written notice of any material actions, proceedings, litigation or governmental investigations or condemnation actions either pending or threatened in writing against the Property.

6.1.4. Seller has not received written notice of any material default under any of the Property Contracts.

6.1.5. The Rent Roll (as updated pursuant to Section 5.2.9.) is accurate in all material respects.

6.1.6. The Property Contracts List (as updated pursuant to Section 5.2.10.) is accurate in all material respects.

6.1.7. Seller has not received notice of, and to Seller's knowledge, there is not pending or threatened, any litigation, condemnation, investigation or other legal proceeding affecting Seller, the Property or any portion thereof, and to Seller's knowledge, there are no actions, suits, proceedings, orders, administrative proceedings or investigations pending or threatened against or affecting Seller or the Property which might materially and adversely affect any of the following: (i) Seller's performance under this Contract; (ii) the current zoning status of the Property; or (iii) Purchaser's ability to continue the present operations on the Property as currently conducted; and to Seller's knowledge there are no pending or threatened public improvements in, about, or outside the Property which have resulted in or might result in the imposition of any assessment, lien, or charge against Seller or the Property. Notwithstanding the foregoing, the parties acknowledge and agree that this is the sale of an apartment complex and thus Seller, as part of its normal business operations is or may be a party to standard eviction and collection actions against its tenants. These actions, if any, however, are being pursued by Seller (and not against Seller) and should not have a material adverse effect on the Property.

6.1.8. Seller has not received any written notice from any governmental authority alleging that the Improvements violate any building codes, building or use restrictions, or zoning ordinances, rules, or regulations, or other laws, rules or regulations relating to the operation of the Property (including, without limitation, compliance with the Americans with Disabilities Act). To the best of Seller's knowledge, all operating permits required for the Property have been duly and validly issued, are in full force and effect, have been fully paid for (other than normal recurring future annual permit or license fees set forth in the operating statements of the Property provided to Purchaser).

6.1.9. To Seller's knowledge, there are no extraordinary governmental assessments or impositions levied against, applicable to, or proposed for the Property as distinct from ordinary ad valorem property taxes.

6.1.10. Except as disclosed in this Contract, to Seller's knowledge, there are no material unperformed obligations that are currently due relative to the Property to any governmental or quasi-governmental body or authority. At the time of Closing there will be no outstanding written or oral contracts made by Seller for any improvements to the Property which have not been fully paid for

and Seller shall cause to be discharged or bonded over all mechanics' and materialmen's liens arising from any labor or materials furnished to the Property prior to the date of Closing.

6.1.11. To Seller's knowledge, Seller has not received any uncured written notices, written demands or deficiency comments in writing from any federal, state, municipal or county government or any agency thereof or any third party with regard to any Hazardous Materials (as hereinafter defined) located on, in or about the Land and Improvements in violation of any applicable environmental laws relating to such Hazardous Materials. For the purposes of this paragraph, "Hazardous Materials" means all petroleum-based products, radon, asbestos, PCBs, and all substances, wastes, and materials that are so defined in the Comprehensive Environmental Response, Compensation, and Liability Act, 42 USC §§9601–9675, as amended; the Resource Conservation and Recovery Act, 42 USC §§6901–6992k, as amended; the Federal Water Pollution Control Act, 33 USC § 1251 et seq., as amended; the Clean Air Act, 42 USC § 7401 et seq., as amended; the Safe Drinking Water Act, 42 USC §§ 201-200mm, as amended; the Toxic Substance Control Act, 15 USC §§ 2601-2692, as amended; and the Hazardous Materials Transportation Act, 49 USC §§ 5101–5128, as amended.

6.1.12. To Seller's knowledge, as of the Effective Date, the operation of the Property is in compliance with federal low-income housing tax credits ("Tax Credits") provisions under Section 42 of the Code, and the requirements of Virginia Housing Development Authority for properties receiving Tax Credits (the "Tax Credit Obligations"). To Seller's knowledge, there are no defaults under the LURA and Seller is in full compliance with the obligations set forth in the LURA. There has been no "recapture" event in connection with the federal low income housing tax credits associated with the Property. The Property qualified for the federal low income housing tax credit in an amount shown on Form 8609. Seller has delivered true, complete and accurate copies of such forms to Purchaser.

6.1.13. To Seller's knowledge, the copies of the Leases that Seller makes available to Purchaser for review are true, correct and complete copies thereof to the extent in Seller's or the Partnership's possession or control, and the following information concerning the Leases set forth in the rent rolls and other materials included within the Materials are accurate in all material respects as of the dates such documents were prepared: (i) unit number, (ii) name of tenant, (iii) rental rate, (iv) commencement date, (v) expiration date, and (vi) amount of security deposit. No representation is made concerning the Leases with respect to any information contained in the Materials that is not described in the preceding sentence.

6.1.14. Seller has not granted any option or right of first refusal or first opportunity to any party to acquire any interest in any of the Property.

6.1.15. [RESERVED]

6.1.16. To Seller's knowledge, all permits required for the Property have been duly and validly issued, are in full force and effect, and have been fully paid for (other than normal recurring future annual permit or license fees). Seller has received no written notice of violation of any permit.

6.1.17. Seller has owned the Property for more than ten (10) years. Seller has only owned the Property and has never owned any other real property.

6.2. [RESERVED]

6.3. Survival of Seller's Representations. Seller's Representations shall survive Closing for a period of eighteen (18) months.

6.4. [RESERVED]

6.5. Representations and Warranties of Purchaser. For the purpose of inducing Seller to enter into this Contract and to consummate the sale and purchase of the Property in accordance herewith, Purchaser represents and warrants to Seller the following as of the Effective Date and as of the Closing Date:

6.5.1. Purchaser is a limited liability company duly organized and validly existing under the laws of the State of Alabama.

6.5.2. Purchaser, acting through any of its or their duly empowered and authorized officers or members, has all necessary entity power and authority to own and use its properties and to transact the business in which it is engaged, and has full power and authority to enter into this Contract, to execute and deliver the documents and instruments required of Purchaser herein, and to perform its obligations hereunder; and no consent of any of Purchaser's respective partners, directors, officers or members are required to so empower or authorize Purchaser. The compliance with or fulfillment of the terms and conditions hereof will not conflict with, or result in a breach of, the terms, conditions or provisions of, or constitute a default under, any contract to which Purchaser is a party or by which Purchaser is otherwise bound, which conflict, breach or default would have a material adverse effect on Purchaser's ability to consummate the transaction contemplated by this Contract. This Contract is a valid and binding agreement enforceable against Purchaser in accordance with its terms.

6.5.3. After the Closing Date, Purchaser shall ensure that the buildings in the Project shall continue to be operated as "qualified low-income buildings" as described in Section 42 of the Code for the remainder, if any, of the 15-year compliance period as defined in Section 42(i)(l) of the Code for each building in the Project. Purchaser shall indemnify, and keep indemnified, Seller, and hold and save Seller harmless from and against any and all disallowance and/or recapture of low-income housing tax credits as described in Section 42 of the Internal Revenue Code of 1986, arising from any events that actually occur after the Closing Date, including, without limitation, any damages, loss, costs, charges and expenses of whatsoever kind or nature, including counsel and reasonable attorneys' fees which Seller and/or its limited partner shall or may, at any time, sustain or incur by reason of or in connection with any disallowance and/or recapture of low-income housing tax credits due to any action or inaction by Purchaser which occurs after the Closing Date, and including any interest and penalties thereon (collectively, the "Recaptured Credits") in connection with the Project. Purchaser shall maintain sufficient liquidity to fully indemnify Seller for Recaptured Credits. Purchaser shall make available to Seller, upon reasonable request, copies or access to Seller's Property-Related Files and Records described in Section 5.4.10. hereof.

6.6. Survival of Purchaser's Representations. Purchaser's Representations shall survive Closing for a period of eighteen (18) months.

ARTICLE VII
OPERATION OF THE PROPERTY

7.1. Leases and Property Contracts. During the period of time commencing on the Effective Date and ending on the Closing Date, in the ordinary course of business, Seller may enter into new Property Contracts, new Leases, renew existing Leases or modify, terminate or accept the surrender or forfeiture of any of the Leases, modify any Property Contracts, or institute and prosecute any available remedies for default under any Lease or Property Contract without first obtaining the written consent of Purchaser; provided, however, without the prior written consent of Purchaser, which consent shall not be unreasonably withheld, conditioned or delayed, no new or renewed Leases shall have a term in excess of one (1) year, and any new Property Contract shall be terminable upon thirty (30) days' notice without penalty.

7.2. General Operation of Property. Except as specifically set forth in this ARTICLE VII, Seller shall operate the Property after the Effective Date in the ordinary course of business, and except as necessary to address any life or safety issue at the Property, or (b) any other matter which in Seller's reasonable discretion materially adversely affects the use, operation or value of the Property, Seller will not make any material alterations to the Property or remove any material Fixtures and Tangible Personal Property without the prior written consent of Purchaser which consent shall not be unreasonably withheld, denied or delayed.

7.3. Liens. Seller covenants that it will not voluntarily create or cause any lien or encumbrance to attach to the Property between the Effective Date and the Closing Date (other than Leases and Property Contracts as provided in Sections 5.4.5. and 5.4.6.) unless Purchaser approves such lien or encumbrance, which approval shall not be unreasonably withheld, conditioned or delayed. If Purchaser approves any such subsequent lien or encumbrance, the same shall be deemed a Permitted Encumbrance for all purposes hereunder.

7.4. Tax Appeals. If any tax reduction proceedings, tax protest proceedings or tax assessment appeals for the Property, relating to any tax years up to and including tax year 2016, are pending at the time of Closing, Seller reserves and shall have the right to continue to prosecute and/or settle the same without the consent of Purchaser and Purchaser. Seller hereby reserves and shall have the exclusive right, at any time after the Closing Date, to institute a tax reduction proceeding, tax protest proceeding or tax assessment appeal for the Property with respect to real estate taxes attributable to tax years up to and including the tax year in which the Closing occurs and Seller shall have the right to prosecute and/or settle the same without the consent of Purchaser. Purchaser agrees that it shall not independently institute any tax reduction proceedings, tax protest proceedings, or tax assessment appeals for the Property with respect to any tax year up to and including the 2019 tax year (or if Closing occurs after June 30, 2019, the 2020 tax year). Purchaser shall cooperate with Seller in connection with the prosecution and/or settlement of any such tax reduction proceedings, tax protest proceedings or tax assessment appeals, including executing such documents as Seller may reasonably request in order for Seller to prosecute and/or settle any such proceedings. Any refunds or savings in the payment of taxes resulting from any tax reduction proceedings, tax protest proceedings or tax assessment appeals applicable to the period prior to the Closing Date shall belong to Seller and any refunds or savings in the payment of taxes applicable to the period from and after the Closing Date shall belong to Purchaser. All attorneys' fees and other expenses incurred in obtaining such refunds or savings shall be apportioned between Seller and Purchaser in proportion to the gross amount of such refunds or savings payable to Seller and Purchaser, respectively.

ARTICLE VIII
CONDITIONS PRECEDENT TO CLOSING

8.1. Purchaser's Conditions to Closing. Purchaser's obligations to close under this Contract shall be subject to and conditioned upon the fulfillment of the following conditions precedent:

8.1.1. All of the documents required to be delivered by Seller to Purchaser or Escrow Agent at the Closing pursuant to the terms and conditions hereof shall have been delivered;

8.1.2. Each of Seller's Representations shall be true in all material respects as of the Closing Date, as if made on such date, except for Seller's Representations that are qualified by "material," "materiality," or words of like import, which shall be true in all respects as of the Closing Date, as if made on such date;

8.1.3. Seller shall have complied with, fulfilled and performed in all material respects each of the covenants, terms and conditions to be complied with, fulfilled or performed by Seller hereunder;

8.1.4. Seller shall not be a debtor in any bankruptcy proceeding; and

8.1.5. Purchaser shall have obtained all requisite consents and approvals contemplated by this Contract, including, without limitation, any notices to, or approvals from, Virginia Housing Development Authority to the transfer of the Property.

If any condition set forth in this Section 8.1. is not met, Purchaser may (a) waive any of the foregoing conditions and proceed to Closing on the Closing Date with no offset or deduction from the Purchase Price, (b) terminate this Contract and receive a return of the Deposit from Seller, or (c) if such failure constitutes a default by Seller of its covenants hereunder, exercise any of its remedies pursuant to Section 10.1.

8.2. Seller's Conditions to Closing. Seller's obligation to close with respect to the conveyance of the Property under this Contract shall be subject to and conditioned upon the fulfillment of the following conditions precedent:

8.2.1. All of the documents and funds required to be delivered by Purchaser to Seller at the Closing pursuant to the terms and conditions hereof shall have been delivered, including, but not limited to the payment of the Initial Deposit, any Additional Deposit as contemplated in Section 5.1. hereof, and the balance of the Purchase Price subject to closing prorations and adjustments described in Section 5.4.;

8.2.2. Each of the representations, warranties and covenants of Purchaser contained herein shall be true in all material respects as of the Closing Date, as if made as of such date, except for such representations that are qualified by "material," "materiality," or words of like import, which shall be true in all respects as of the Closing Date, as if made on such date;

8.2.3. Purchaser shall have complied with, fulfilled and performed in all material respects each of the covenants, terms and conditions to be complied with, fulfilled or performed by Purchaser hereunder;

8.2.4. Purchaser shall not be a debtor in any bankruptcy proceeding; and

8.2.5. There shall not be any pending litigation or, to the knowledge of either Purchaser or Seller, any litigation threatened in writing, which, if adversely determined, would restrain the consummation of any of the transactions contemplated by this Contract or declare illegal, invalid or nonbinding any of the covenants or obligations of the Purchaser.

8.2.6. Contemporaneous closing under that certain Membership Interest Purchase and Sale Contract (the "Membership P&S Contract") of even date herewith for the purchase and sale of all of the Interests (as defined in the Membership P&S Contract) in DR Two, L.L.C., a Virginia limited liability company, which is the owner of Derby Run II Apartments, located adjacent to the Property and with which the Project shares certain operating and management costs that are shared on a pro rata basis.

If any of the foregoing conditions to Seller's obligations to close with respect to the conveyance of the Property under this Contract are not met, Seller may (a) waive any of the foregoing conditions and proceed to Closing on the Closing Date, (b) terminate this Contract, or (c) if such failure constitutes a default by Purchaser, exercise any of its remedies pursuant to Section 10.1.

ARTICLE IX
BROKER

9.1. Broker. Seller and Purchaser represent to each other (a) that Purchaser and Seller have not received services from any real estate broker or agent other than Ripley Heatwole Company, Inc. (the "Broker"), which would give rise to any claim of any broker's lien or commission; and (b) there are or will be no other broker's commissions or fees payable in connection with this Contract. Purchaser and Seller hereby agree to indemnify, defend and hold each other harmless from and against the claims, demands, actions and judgments (together with reasonable attorneys' fees incurred in connection therewith) of any and all other brokers, agents and other intermediaries alleging a commission, fee or other payment to be owing by reason of their respective dealings, negotiations, or communications in connection with this Contract or the purchase and sale of the Property. The Broker shall be paid a commission of $208,000.00 from Seller's Purchase Price proceeds at Closing. The representations and obligations under this Section 9.1 shall survive Closing or earlier termination of this Contract.

9.2. Broker's Notice. Purchaser acknowledges that it has been disclosed to Purchaser that certain principals of Seller, including those who are also principals of the Broker, are licensed real estate brokers in the Commonwealth of Virginia.

ARTICLE X
DEFAULTS AND REMEDIES

10.1. Purchaser Default. If Purchaser defaults on its obligations hereunder to (a) deliver the Additional Deposit contemplated in Section 5.1. hereof, (b) deliver to Seller the deliveries specified under Section 5.3. on the date required thereunder, or (c) deliver the Purchase Price in accordance with Article II and close on the purchase of the Property on the Closing Date, then, (subject to the terms of

Section 14.1. hereof) immediately and without the right to receive notice or to cure, Purchaser shall forfeit the Deposit, and the Escrow Agent shall deliver the Deposit to Seller, and neither party shall be obligated to proceed with the purchase and sale of the Property. The provisions in this Section 10.1. are liquidated damages and the remedies herein are, except for Purchaser's confidentiality obligations hereunder, Seller's sole and exclusive remedy for Purchaser's failure to perform its obligation to purchase the Property. Seller expressly waives the remedies of specific performance and additional damages for such default by Purchaser. Notwithstanding the preceding sentences of this Section 10.1., Purchaser's indemnity obligations under Section 3.2. and Section 9.1. and Purchaser's obligations under Section 5.4.8. shall be excluded from the liquidated damages and waiver provisions of this Section 10.1. SELLER AND PURCHASER ACKNOWLEDGE THAT SELLER'S DAMAGES WOULD BE DIFFICULT TO DETERMINE, AND THAT THE PROVISIONS IN THIS SECTION 10.1. ARE A REASONABLE ESTIMATE OF SELLER'S DAMAGES RESULTING FROM A DEFAULT BY PURCHASER IN ITS OBLIGATION TO PURCHASE THE PROPERTY. SELLER AND PURCHASER FURTHER AGREE THAT THIS SECTION 10.1. IS INTENDED TO AND DOES LIQUIDATE THE AMOUNT OF DAMAGES DUE SELLER, AND SHALL BE SELLER'S EXCLUSIVE REMEDY AGAINST PURCHASER, BOTH AT LAW AND IN EQUITY, ARISING FROM OR RELATED TO A BREACH BY PURCHASER OF ITS OBLIGATION TO CONSUMMATE THE TRANSACTIONS CONTEMPLATED BY THIS CONTRACT, OTHER THAN WITH RESPECT TO PURCHASER'S CONFIDENTIALITY OBLIGATIONS HEREUNDER AND PURCHASER'S INDEMNITY OBLIGATIONS UNDER SECTION 3.2. AND SECTION 9.1.

10.2. Seller Default. If Seller (i) defaults on its obligations hereunder to deliver to Escrow Agent the deliveries specified under Section 5.2. on the date required thereunder, or to close on the sale of the Property on the Closing Date, or (ii) prior to the Closing, defaults on its covenants or obligations under this Contract and such default continues for more than ten (10) days after written notice from Purchaser, then, at Purchaser's election and as Purchaser's exclusive remedy, Purchaser may either (a) terminate this Contract, and all payments and things of value, including the Deposit and the Additional Deposit made by Purchaser pursuant to the terms of Section 5.1., provided by Purchaser hereunder shall be returned to Purchaser and Purchaser may recover, as its sole recoverable damages (but without limiting its right to receive a refund of the Deposit and the Additional Deposit made by Purchaser pursuant to the terms of Section 5.1,), its direct and actual out-of-pocket expenses and costs (documented by paid invoices to third parties) in connection with this transaction, or (b) seek specific performance of Seller's obligation to close on the sale of the Property pursuant to this Contract (but not damages). Notwithstanding the preceding sentences of this Section 10.2., Seller's indemnity obligations under Section 9.1. shall be excluded from the limited damages and waiver provisions of this Section 10.2. SELLER AND PURCHASER FURTHER AGREE THAT THIS SECTION 10.2. IS INTENDED TO AND DOES LIMIT THE AMOUNT OF DAMAGES DUE PURCHASER AND THE REMEDIES AVAILABLE TO PURCHASER, AND SHALL BE PURCHASER'S EXCLUSIVE REMEDY AGAINST SELLER, BOTH AT LAW AND IN EQUITY ARISING FROM OR RELATED TO A BREACH BY SELLER OF ITS COVENANTS OR ITS OBLIGATION TO CONSUMMATE THE TRANSACTIONS CONTEMPLATED BY THIS CONTRACT. UNDER NO CIRCUMSTANCES MAY PURCHASER SEEK OR BE ENTITLED TO RECOVER ANY SPECIAL, CONSEQUENTIAL, PUNITIVE, SPECULATIVE OR INDIRECT DAMAGES, ALL OF WHICH PURCHASER SPECIFICALLY WAIVES, FROM SELLER FOR ANY BREACH BY SELLER, OF ITS COVENANTS OR ITS OBLIGATIONS UNDER THIS CONTRACT.

Seller represents, covenants and agrees that Seller shall not take any actions whatsoever which will eliminate, impair, or delay Purchaser's remedy of specific performance.

10.3. Exculpation. Notwithstanding anything to the contrary contained in this Contract, it is expressly understood and agreed by and between the parties hereto that the recourse of Purchaser against Seller under Section 10.2. shall extend only to Seller's interest in the Property and not to any other assets of it, its constituent partners, any of their respective affiliates, subsidiaries, or divisions, or any of their respective directors, officers, employees, agents, constituent partners or members, beneficiaries, trustees or representatives. Except to the extent of Seller's interest in the Property, no personal liability or personal responsibility of any sort with respect to this Contract is assumed by, or shall at any time be asserted or enforceable against Seller, its constituent partners, any of their affiliates, subsidiaries, or divisions, or any of their respective directors, officers, employees, agents, constituent partners or members, beneficiaries, trustees or representatives.

ARTICLE XI
RISK OF LOSS OR CASUALTY

11.1. Major Damage. In the event that the Property is damaged or destroyed by fire or other casualty prior to Closing, and the cost for demolition, site cleaning, restoration, replacement, or other repairs (collectively, the "Repairs") is more than Five Hundred Thousand and No/100 Dollars ($500,000.00) (a "Major Damage"), then Seller shall have no obligation to make such Repairs, and shall notify Purchaser in writing of such damage or destruction (the "Damage Notice"). If there is a Major Damage, then Seller or Purchaser may elect, by delivering written notice to the other party on or before the earlier of (x) Closing and (y) the date which is ten (10) days after Purchaser's receipt of the Damage Notice, to terminate this Contract, in which event the Deposit and the Additional Deposit made pursuant to the terms of Section 5.1. hereof shall be returned to Purchaser. In the event Purchaser fails to timely terminate this Contract pursuant to this Section 11.1, this transaction shall be closed in accordance with Section 11.3. below.

11.2. Minor Damage. In the event the Property is damaged or destroyed by fire or other casualty prior to Closing, and the cost of Repairs is equal to or less than Five Hundred Thousand and No/100 Dollars ($500,000.00), then this transaction shall be closed in accordance with Section 11.3., notwithstanding such casualty. In such event, Seller may at its election endeavor to make such Repairs to the extent of any recovery from insurance carried on the Property, if such Repairs can be reasonably effected before the Closing. Regardless of Seller's election to commence such Repairs, or Seller's ability to complete such Repairs prior to Closing, this transaction shall be closed in accordance with Section 11.3. below.

11.3. Closing. In the event Purchaser fails to terminate this Contract following a casualty as set forth in Section 11.1, or in the event of a casualty as set forth in Section 11.1, then this transaction shall be closed in accordance with the terms of this Contract, at Purchaser's election, either (i) for the full Purchase Price, notwithstanding any such casualty, in which case Seller and Purchaser shall, at Closing, execute and deliver an assignment and assumption (in a form reasonably required by Purchaser) of Seller's rights and obligations with respect to the insurance claim related to such casualty, and thereafter Purchaser shall receive all insurance proceeds pertaining to such claim, less any amounts which may already have been spent by Seller for Repairs (plus a credit against the Purchase Price at Closing in the amount of any deductible payable by Seller in connection therewith); or (ii) for the full Purchase Price less a credit to Purchaser in the amount necessary to complete such Repairs (less any amounts which may already have been spent by Seller for Repairs if and only if Seller does not have adequate insurance coverage for the casualty).

11.4. Repairs. To the extent that Seller elects to commence any Repairs prior to Closing, then Seller shall be entitled to receive and apply available insurance proceeds to any portion of such Repairs completed or installed prior to Closing, with Purchaser being responsible for completion of such Repairs after Closing. To the extent that any Repairs have been commenced prior to Closing, then the Property Contracts shall include, and Purchaser shall assume at Closing, all construction and other contracts entered into by Seller in connection with such Repairs; provided, however, that (except in the event of emergency, as determined in Seller's sole discretion) Seller will consult with Purchaser prior to entering into any such contract if Purchaser will likely have to assume such contract. Notwithstanding the foregoing to the contrary, Seller retains the sole right and authority to enter into any such contract.

ARTICLE XII
EMINENT DOMAIN

12.1. Eminent Domain. In the event that, at the time of Closing, any material part of the Property is (or previously has been) acquired, or is about to be acquired, by any governmental agency by the powers of eminent domain or transfer in lieu thereof (or in the event that at such time there is any notice of any such acquisition or intent to acquire by any such governmental agency), Purchaser shall have the right, at Purchaser's option, to terminate this Contract by giving written notice within ten (10) days after Purchaser's receipt from Seller of notice of the occurrence of such event, and if Purchaser so terminates this Contract, then Escrow Agent shall release the Deposit hereunder to Purchaser. If Purchaser fails to terminate this Contract within such ten (10) day period, this transaction shall be closed in accordance with the terms of this Contract for the full Purchase Price, and Purchaser shall receive the full benefit of any condemnation award. It is expressly agreed between the parties hereto that this section shall in no way apply to customary dedications for public purposes which may be necessary for any rehabilitation of the Property.

ARTICLE XIII
MISCELLANEOUS

13.1. Binding Effect of Contract. This Contract shall not be binding on either party until executed by both Purchaser and Seller. Subject to Section 13.3., this Contract shall be binding upon and inure to the benefit of Seller and Purchaser, and their respective successors and permitted assigns.

13.2. Exhibits and Schedules. All Exhibits and Schedules, whether or not annexed hereto, are a part of this Contract for all purposes.

13.3. Assignability. Purchaser may assign this Contract, without first obtaining the prior written approval of Seller, to one or more entities so long as (a) Purchaser is an affiliate of the purchasing entity(ies), and (b) Purchaser is not released from its liability hereunder.

13.4. Captions. The captions, headings, and arrangements used in this Contract are for convenience only and do not in any way affect, limit, amplify, or modify the terms and provisions hereof.

13.5. Number and Gender of Words. Whenever herein the singular number is used, the same shall include the plural where appropriate, and words of any gender shall include each other

gender where appropriate.

13.6. Notices. All notices, demands, requests and other communications required or permitted hereunder shall be in writing, and shall be (a) personally delivered with a written receipt of delivery; (b) sent by a nationally-recognized overnight delivery service requiring a written acknowledgement of receipt or providing a certification of delivery or attempted delivery; (c) sent by certified or registered mail, return receipt requested; or (d) sent by facsimile or e-mail (and deemed received upon confirmation of the facsimile or email transmission), as long as notice is also given by one of the other methods set forth in (a), (b) or (c), All notices shall be deemed effective when actually delivered in the method set forth in (a) through (c), above, as documented in a delivery receipt obtained by the person effecting hand delivery, generated by the overnight delivery service, returned by U.S. mail. Notwithstanding the foregoing, if the notice was sent by overnight courier or mail as aforesaid and is affirmatively refused or cannot be delivered during customary business hours by reason of the absence of a signatory to acknowledge receipt, or by reason of a change of address with respect to which the addressor did not have either knowledge or written notice delivered in accordance with this paragraph, then the first attempted delivery shall be deemed to constitute delivery. Each party shall be entitled to change its address for notices from time to time by delivering to the other party notice thereof in the manner herein provided for the delivery of notices. All notices shall be sent to the addressee at its address set forth following its name below:

To Purchaser:

LRC Acquisitions, LLC
Attn: W. Daniel Hughes, Jr.
105 Tallapoosa Street, Suite 300
Montgomery, Alabama 36104
E-mail:

with a copy to:

Williams Mullen
Attn: Allison T. Domson
200 South 10th Street, Suite 1600
Richmond, Virginia 23219
E-mail: adomson@williamsmullen.com

To Seller:

Derby Run Associates, L.P.
Attn: Ronald C. Ripley
and Lauren Kretchman
808 Newtown Road
Virginia Beach, Virginia 23462
E-mail: rripley@ripheat.com
lkretchman@ripheat.com

with a copy to:

Faggert & Frieden, P.C.
Attn: Alan M. Frieden
222 Central Park Avenue, Suite 1300
Virginia Beach, Virginia 23462
E-mail: afrieden@fflaw.com

Any notice required hereunder to be delivered to the Escrow Agent shall be delivered in accordance with above provisions as follows:

Angela D. Molin
Safe Harbor Title Company, LLC
3526 George Washington Memorial Highway
Suite D-1
Yorktown, VA 23692
Email: angelam@safeharbortc.com

Unless specifically required to be delivered to the Escrow Agent pursuant to the terms of this Contract, no notice hereunder must be delivered to the Escrow Agent in order to be effective so long as it is delivered to the other party in accordance with the above provisions.

13.7. Governing Law and Venue. The laws of the Commonwealth of Virginia shall govern the validity, construction, enforcement, and interpretation of this Contract, unless otherwise specified herein except for the conflict of laws provisions thereof. All claims, disputes and other matters in question arising out of or relating to this Contract, or the breach thereof, shall be decided by proceedings instituted and litigated in a court of competent jurisdiction in Virginia, and the parties hereto expressly consent to the venue and jurisdiction of such court.

13.8. Entire Agreement. This Contract embodies the entire Contract between the parties hereto concerning the subject matter hereof and supersedes all prior conversations, proposals, negotiations, understandings and contracts, whether written or oral.

13.9. Amendments. This Contract shall not be amended, altered, changed, modified, supplemented or rescinded in any manner except by a written contract executed by all of the parties; provided, however, that, the signature of the Escrow Agent shall not be required as to any amendment of this Contract other than an amendment of Section 2.3.

13.10. Severability. In the event that any part of this Contract shall be held to be invalid or unenforceable by a court of competent jurisdiction, such provision shall be reformed, and enforced to the maximum extent permitted by law. If such provision cannot be reformed, it shall be severed from this Contract and the remaining portions of this Contract shall be valid and enforceable.

13.11. Multiple Counterparts/Facsimile Signatures. This Contract may be executed in a number of identical counterparts. This Contract may be executed by facsimile signatures or electronic delivery of signatures which shall be binding on the parties hereto. Each copy of this Contract bearing the facsimile or electronic delivery of signatures of any party's authorized representative shall be deemed to be an original.

13.12. Construction. No provision of this Contract shall be construed in favor of, or against,

any particular party by reason of any presumption with respect to the drafting of this Contract; both parties, being represented by counsel, having fully participated in the negotiation of this instrument.

13.13. Confidentiality. Seller and Purchaser shall not disclose the terms and conditions contained in this Contract and shall keep the same confidential, provided that each may disclose the terms and conditions of this Contract (a) as required by law, (b) to consummate the terms of this Contract, or any financing relating thereto, or (c) to its lenders, attorneys and accountants. Furthermore, Seller may disclose the terms and conditions of this Contract as is necessary, in Seller's sole discretion, in order for Seller to make any public disclosures required under federal or state securities laws or regulations. Any information obtained by Purchaser in the course of its inspection of the Property, and any Materials provided by Seller to Purchaser hereunder, shall be confidential and Purchaser shall be prohibited from making such information public to any other person or entity other than its Consultants, without Seller's prior written authorization, which may be granted or denied in Seller's sole discretion. In addition, each party shall use its reasonable efforts to prevent its Consultants from divulging any such confidential information to any unrelated third parties except for the limited purpose of analyzing and investigating such information for the purpose of consummating the transaction contemplated by this Contract. Unless and until the Closing occurs, Purchaser shall not market the Property (or any portion thereof) to any prospective purchaser or lessee without the prior written consent of Seller, which consent may be withheld in Seller's sole discretion.

13.14. Time of the Essence. It is expressly agreed by the parties hereto that time is of the essence with respect to this Contract and any aspect thereof.

13.15. Waiver. No delay or omission to exercise any right or power accruing upon any default, omission, or failure of performance hereunder shall impair any right or power or shall be construed to be a waiver thereof: but any such right and power may be exercised from time to time and as often as may be deemed expedient. No waiver, amendment, release, or modification of this Contract shall be established by conduct, custom, or course of dealing and all waivers must be in writing and signed by the waiving party.

13.16. Attorneys' Fees. In the event either party hereto commences litigation against the other to enforce its rights hereunder, the prevailing party in such litigation shall be entitled to recover from the other party its reasonable attorneys' fees and expenses incidental to such litigation and arbitration, including the cost of any appeals.

13.17. Time Zone/Time Periods. Any reference in this Contract to a specific time shall refer to the time in the time zone where the Property is located. Should the last day of a time period fall on a weekend or legal holiday, the next Business Day thereafter shall be considered the end of the time period.

13.18. No Recording. Purchaser shall not cause or allow this Contract or any contract or other document related hereto, nor any memorandum or other evidence hereof, to be recorded or become a public record without Seller's prior written consent, which consent may be withheld at Seller's sole discretion. If Purchaser records this Contract or any other memorandum or evidence thereof, Purchaser shall be in default of its obligations under this Contract. Purchaser hereby appoints Seller as Purchaser's attorney-in-fact to prepare and record any documents necessary to effect the nullification and release of the Contract or other memorandum or evidence thereof from the public records. This appointment shall be coupled with an interest and irrevocable.

13.19. Relationship of Parties. Purchaser and Seller acknowledge and agree that the relationship established between the parties pursuant to this Contract is only that of a seller and a purchaser of property. Neither Purchaser nor Seller is, nor shall either hold itself out to be, the agent, employee, joint venturer or partner of the other party.

13.20. Multiple Purchasers. As used in this Contract, the term "Purchaser" includes all entities acquiring any interest in the Property at the Closing, including, without limitation, any assignee(s) of the original Purchaser pursuant to Section 13.3. of this Contract. In the event that "Purchaser" has any obligations or makes any covenants, representations or warranties under this Contract, the same shall be made jointly and severally by all entities being a Purchaser hereunder.

13.21. WAIVER OF JURY TRIAL. THE PARTIES HERETO WAIVE TRIAL BY JURY IN ANY ACTION, PROCEEDING OR COUNTERCLAIM BROUGHT BY ANY PARTY AGAINST ANY OTHER PARTY ON ANY MATER ARISING OUT OF OR IN ANYWAY CONNECTED WITH THIS CONTRACT.

ARTICLE XIV
INDEMNIFICATION

14.1 Seller Indemnity. If Closing occurs, Seller shall hold harmless, indemnify and defend Purchaser from and against any and all losses, costs, expenses (including reasonable attorneys' fees), obligations, claims, demands, debts, liabilities and damages (collectively, "Losses") suffered, sustained or incurred by Purchaser at any time or times after the Closing in defending against or discharging third party claims arising from (i) Seller's ownership or operation of the Property prior to the Closing, (ii) a default or claim of default prior to the Closing under the LURA or under any other agreement to which Seller was a party prior to Closing, or (iii) any disallowance or recapture of Low Income Housing Tax Credits for the Project (and related penalties, interest and other similar amounts) resulting from (A) a deficiency in "qualified basis" (as defined in Section 42(c) of the Code), except to the extent such deficiency results from failure to comply with Tax Credit Obligations (including tenant qualification requirements, rent limitations and tenant certification requirements) on or after Closing Date, or (B) failure to comply with Tax Credit Obligations (including tenant qualification requirements, rent limitations and tenant certification requirements) before the Closing Date. The obligations set forth in this Section 14.1 shall survive the Closing for a period of three (3) years.

14.2 Purchaser Indemnity. If Closing occurs, Purchaser shall hold harmless, indemnify and defend Seller from and against (i) any and all Losses suffered, sustained or incurred by Seller at any time or times after the Closing in connection with third party claims related to the Property, Seller or the ownership or operation of the Property, relating to the period following the Closing, (ii) any and all Losses incurred by Seller in connection with third-party claims relating to the period following the Closing resulting from a default or claim of default of Purchaser or the Seller under any agreement to which Seller was a party prior to Closing, (iii) failure to comply with Tax Credit Obligations (including tenant qualification requirements, rent limitations and tenant certification requirements) after the Closing Date and (iv) all costs and expenses, including reasonable attorneys' fees, incurred by Seller as a result of such claims. The obligations set forth in this Section 14.2 shall survive the Closing for a period of three (3) years.

ARTICLE XV
TAX FREE EXCHANGE

16.1 The following provisions of this Section 16.1 shall prevail over any other provisions of this Contract to the contrary. Purchaser and Seller acknowledge that either party may wish to structure this transaction as a tax-deferred exchange of like-kind property within the meaning of Section 1031 of the Internal Revenue Code (an "Exchange"). Purchaser and Seller agree that the rights, interest and obligations under this Contract of the party seeking the tax-deferred exchange may be assigned to a "qualified intermediary" (the "Intermediary") as such term is defined in the regulations issued under Internal Revenue Code Section 1031. Each party agrees to reasonably cooperate with the other party to effect such an exchange; provided, however, that (i) the cooperating party shall not be required to acquire or take title to any exchange property, (ii) the cooperating party shall not be required to incur any expense or liability whatsoever in connection with the exchange, including, without limitation, any obligation for the payment of any escrow, title, brokerage or other costs including attorneys' fees incurred with respect to the exchange, (iii) no substitution of the effectuating party shall release said party from any of its obligations, warranties or representations set forth in this Contract or from liability for any prior or subsequent default under this Contract by the effectuating party, its successors, or assigns, which obligations shall continue as the obligations of a principal and not of a surety or guarantor, (iv) the effectuating party shall give the cooperating party at least five (5) business days prior notice of the proposed changes required to effect such exchange and the identity of any party to be substituted in the escrow, (v) the effectuating party shall be responsible for preparing all additional agreements, documents and escrow instructions (collectively, the "Exchange Documents") required by the exchange, at its sole cost and expense, (vi) the effectuating party shall be responsible for making all determinations as to the legal sufficiency, tax considerations and other considerations relating to the proposed exchange, the Exchange Documents and the transactions contemplated thereby, and the cooperating party shall in no event be responsible for, or in any way be deemed to warrant or represent any tax or other consequences of the exchange transaction, and (vii) the election to effect such an exchange shall not delay the Closing of the transaction as defined herein. In connection with an Exchange, this Contract may be assigned to a qualified intermediary ("QI") in furtherance of the Exchange without the consent of the other party. Such cooperation shall include, without limitation, an acknowledgment of the assignment of this Contract to the QI and acceptance of instructions from the QI in furtherance of the Exchange, including in an Exchange at the request of Purchaser, a direction to deed the Property following such assignment directly from Seller to Purchaser in furtherance of the Exchange, and execution of a settlement statement reflecting the Exchange.

[SIGNATURE PAGE FOLLOWS]

Executed as of the date first written above.

Purchaser:

LRC Acquisitions, LLC,
an Alabama limited liability company

By: _____
W. Daniel Hughes, Jr.,
Authorized Signatory

Seller:

DERBY RUN ASSOCIATES, L.P.,
a Virginia limited partnership

By: Derby, Inc.,
a Virginia corporation,
Its Managing General Partner

By: _____(SEAL)
Name: Ronald C. Ripley
Title: President

Executed as of the date first written above.

Purchaser:

LRC Acquisitions, LLC,
an Alabama limited liability company

By: _____
W. Daniel Hughes, Jr.,
Authorized Signatory

Seller:

DERBY RUN ASSOCIATES, L.P.,
a Virginia limited partnership

By: Derby, Inc.,
a Virginia corporation,
Its Managing General Partner

By: _____ (SEAL)
Name: Ronald C. Ripley
Title: President

SCHEDULE 1 DEFINED TERMS

1.1. "Additional Deposit" shall have the meaning set forth in Section 5.1.

1.2. "Broker" shall have the meaning set forth in Section 9.1.

1.3. "Business Day" means any day other than (i) a Saturday or Sunday or Federal holiday or legal holiday in the State of Alabama.

1.4. "Closing" means the consummation of the purchase and sale and related transactions contemplated by this Contract in accordance with the terms and conditions of this Contract.

1.5. "Closing Date" means the date on which date the Closing of the conveyance of the Property is required to be held pursuant to Section 5.1.

1.6. "Code" shall have the meaning set forth in Section. 2.3.6.

1.7. "Consultants" shall have the meaning set forth in Section 3.1.

1.8. "Damage Notice" shall have the meaning set forth in Section 11.1.

1.9. "Deposit" shall have the meaning set forth in Section 2.3.1.

1.10. "Escrow Agent" shall have the meaning set forth in Section 2.2.1.

1.11. "Excluded Permits" means those Permits which, under applicable law, are nontransferable.

1.12. "Existing Survey" shall have the meaning set forth in Section 4.2.

1.13. "Feasibility Period" shall have the meaning set forth in Section 3.1.

1.14. "Fixtures and Tangible Personal Property" means all fixtures, furniture, furnishings, fittings, equipment, machinery, apparatus, appliances and other articles of tangible personal property located on the Land or in the Improvements as of the Effective Date, to the extent transferable, and used or usable in connection with the occupation or operation of all or any part of the Property; provided, however, that the term "Fixtures and Tangible Personal Property" specifically excludes any of the foregoing to the extent (a) the same are not owned by Seller (including, without limitation, if the same are leased by Seller or are owned or leased by any Tenant or guest, employee or other person furnishing goods or services to the Property), or (b) the same are owned by Seller but are not used exclusively for the business, operation or management of the Property.

1.15. "General Assignment" shall have the meaning set forth in Section 5.2.3.

1.16. Intentionally omitted.

1.17. Intentionally omitted.

1.18. "Improvements" means all buildings and improvements located on the Land taken as is.

1.19. "Initial Deposit" shall have the meaning set forth in Section 2.2.1.

1.20. "Inspections" shall have the meaning set forth in Section 3.1.

1.21. "Land" means all of those certain tracts of land located in the Commonwealth of Virginia described on **Exhibit A**, and all rights, privileges and appurtenances pertaining thereto.

1.22. "Lease(s)" means the interest of Seller in and to all leases, subleases and other occupancy contracts, whether or not of record, which provide for the use or occupancy of space or facilities on or relating to the Property and which are in force as of the Closing Date for the Property.

1.23. "Lease Assignment" shall have the meaning set forth in Section 5.2.4.

1.24. "LURA" shall mean that certain Extended Use Regulatory Agreement and Declaration of Restrictive Covenants, as amended, recorded against the Property.

1.25. "Major Damage" shall have the meaning set forth in Section 11.1.

1.26. "Materials" shall have the meaning set forth in Section 3.3.

1.27. "Miscellaneous Property Assets" means all contract rights, leases, concessions, warranties, plans, drawings and other items of intangible personal property relating to the ownership or operation of the Property and owned by Seller, excluding, however, (a) receivables, (b) Property Contracts, (c) Leases, (d) Permits, (e) cash or other funds, whether in petty cash or house "banks," or on deposit in bank accounts or in transit for deposit, (f) refunds, rebates or other claims, or any interest thereon, for periods or events occurring prior to the Closing Date, (g) utility and similar deposits, (h) insurance or other prepaid items, or (i) Seller's proprietary books and records. The term "Miscellaneous Property Assets" also shall include all of Seller's rights, if any, in and to the name "Derby Run Apartments" and to any internet domain name (but not the content of any website maintained by Seller or any of Seller's affiliates), as they relate solely to use in connection with the Property (and not with respect to any other property owned or managed by Seller or its affiliates).

1.28. "New Exception" shall have the meaning set forth in Section 4.5.

1.29. "New Exception Review Period" shall have the meaning set forth in Section 4.5.

1.30. "Objection Deadline" shall have the meaning set forth in Section 4.3.

1.31. "Objection Notice" shall have the meaning set forth in Section 4.3.

1.32. "Objections" shall have the meaning set forth in Section 4.3.

1.33. "Permits" means all licenses and permits granted by any governmental authority having jurisdiction over the Propelty owned by Seller and required in order to own and operate the Property.

1.34. "Permitted Exceptions" shall have the meaning set forth in Section 4.4.

1.35. "Project" shall have the meaning set forth in the Recitals.

1.36. "Property" means (a) the Land and Improvements and all rights of Seller, if any, in and to all of the easements, rights, privileges, and appurtenances belonging or in any way appertaining to the Land and Improvements, (b) the Property Contracts, Leases, Permits (other than Excluded Permits), and the right, if any, of Seller in and to the Fixtures and Tangible Personal Property, and (c) the Miscellaneous Property Assets owned by Seller which are located on the Property and used in its operation.

1.37. "Property Contracts" means all contracts, agreements, equipment leases, purchase orders, maintenance, service and similar contracts, excluding Leases, regardless of whether entered into by Seller, Seller's property manager, or an affiliate of either, which relate to the ownership, maintenance, construction or repair and/or operation of the Property, whether or not assignable by their terms, but not including (a) any national contracts entered into by Seller, Seller's property manager with respect to the Property (i) which terminate automatically upon transfer of the Property by Seller, or (ii) which Seller, in Seller's sole discretion, elects to terminate with respect to the Property effective as of the Closing Date, or (b) any cellular phone contract or property management contract for the Property. Property Contracts shall not include forward or similar long-term contracts to purchase electricity, natural gas, or other utilities, which contracts shall be "Utility Contracts" governed by the provisions of Section 5.4.9.

1.38. "Property Contracts List" shall have the meaning set forth in Section 3.3.3.

1.39. "Property Contracts Notice" shall have the meaning set forth in Section 3.4.

1.40. "Proration Schedule" shall have the meaning set forth in Section 5.4.1.

1.41. "Purchase Price" means the consideration to be paid by Purchaser to Seller pursuant to Section 2.2.

1.42. "Records Disposal Notice" shall have the meaning set forth in Section 5.4.10.

1.43. "Records Hold Period" shall have the meaning set forth in Section 5.4.10.

1.44. Intentionally omitted.

1.45. "Rent Roll" shall have the meaning set forth in Section 3.3.2.

1.46. "Required Assignment Consent" shall have the meaning set forth in Section 3.4.

1.47. "Response Deadline" shall have the meaning set forth in Section 4.3.

1.48. "Response Notice" shall have the meaning set forth in Section 4.3.

1.49. "Seller's Property-Related Files and Records" shall have the meaning set forth in Section 5.4.10.

1.50. "Seller's Representations" shall have the meaning set forth in Section 6.1.

1.51. "Survey" shall have the meaning ascribed thereto in Section 4.2.

1.52. Intentionally omitted.

1.53. "Tenant" means any person or entity entitled to occupy any portion of the Property under a Lease.

1.54. "Tenant Deposits" means all security deposits, prepaid rentals, cleaning fees and other refundable deposits and fees collected from Tenants, plus any interest accrued thereon, paid by Tenants to Seller pursuant to the Leases. Tenant Deposits shall not include any non-refundable deposits or fees paid by Tenants to Seller, either pursuant to the Leases or otherwise.

1.55. "Tenant Security Deposit Balance" shall have the meaning set forth in Section 5.4.6.2.

1.56. "Terminated Contracts" shall have the meaning set forth in Section 3.4.

1.57. Intentionally omitted.

1.58. "Third-Party Reports" means any reports, studies or other information prepared or compiled for Purchaser by any Consultant or other third-party in connection with Purchaser's investigation of the Property.

1.59. "Title Commitment" shall have the meaning set forth in Section 4.1.

1.60. "Title Documents" shall have the meaning set forth in Section 4.1.

1.61. "Title Insurer" shall have the meaning set forth in Section 4.1.

1.62. "Title Policy" shall have the meaning set forth in Section 4.1.

1.63. "Uncollected Rents" shall have the meaning set forth in Section 5.4.6.1.

1.64. "Utility Contract" shall have the meaning set forth in Section 5.4.9.

1.65. "Vendor Terminations" shall have the meaning set forth in Section 3.4.

SCHEDULE 3.3.1
LIST OF MATERIALS

1. Current Rent Roll with a listing of concessions, options and other pertinent information. We will also need updated rent rolls throughout the contract period

2. Real estate tax bills for the last three (3) calendar years.

3. Financial statements for the last two (2) calendar years and the most recent monthly financial and operating statements with year-to-date results for the current year. We will also need updated monthly financial statements throughout the contract period.

4. Summaries from the local utility companies of utility usage for the last twelve (12) months. We will also need a summary of the utility structure at the property and a summary of the tenant vs. property-paid utilities.

5. A copy of the most recent survey completed with respect to the Property.

6. A list of all service agreements.

7. An inventory of all personalty owned or leased by Seller or its affiliates that is used in connection with the Property (both office and maintenance equipment), with leased items listed separately from owned items.

8. All environmental reports, lead based paint surveys, asbestos surveys, and any other environmental reports or information.

9. Copies of any plans, specifications or as-built drawings of the Improvements, including.

10. Any inspection reports from any engineer or other consultant.

11. Copies of all Leases shall be made available for Purchaser's inspection at the Property Office.

12. A list of all pending litigation, evictions and other proceedings.

13. Budget for the current year.

14. Capital expenditure history for the last three full calendar years prior to the year in which this Contract is executed, if available, with a capital expenditure budget for the current year. We will also need copies of all warranties related to recent capital improvements (if applicable).

15. Special or extraordinary bills for the last two full calendar years prior to the year in which this Contract is executed, together with the current year to date.

16. Aged receivables report for the Property.

17. Original / current certificates of occupancy relating to the entire Improvements if in Seller's possession.

18. A schedule of all claims made by Seller under its insurance policies for the two (2) year period prior to the date of the Contract.

19. A complete roster for site employees, with annual compensation or other pay rate, years of service, accrued vacation, job title and any employee discounts or free apartments listed.

20. Historical occupancy, month-by-month, for the past two (2) years.

21. Insurance loss runs with respect to the Property for the past three (3) years.

EXHIBIT A
PROPERTY LEGAL DESCRIPTION

ALL THAT certain lot, piece or parcel of land, located in the City of Hampton, Virginia, known, numbered and designated as Lot 9-A, as shown on that certain plat entitled "Subdivision of Lots 9 & 10, Magruder Estates, Section 3, Hampton, Virginia, property of Hampton Venture No. One, Scale: 1" = 100 feet, November 18, 1993", made by Horton & Dodd, P.C. and recorded in the Clerk's Office of the Circuit Court of the City of Hampton, Virginia, in Plat Book 11, at page 19.

IT BEING the same property conveyed to Derby Run Associates, L.P., a Virginia limited partnership, from Hampton Venture No. One, a Texas Joint Venture, by deed dated November 24, 1993, recorded in the aforesaid Clerk's Office in Deed Book 1085, at page 1390.

TOGETHER WITH AND SUBJECT TO those certain rights, privileges, responsibilities and easements as contained in that certain Declaration of Cross Easements Agreement between Derby Run Associates, L.P., a Virginia limited partnership, and Derby Run II Associates, L.P., a Virginia limited partnership, dated December 10, 1996, recorded in the aforesaid Clerk's Office in Deed Book 1191, at page 1352.

EXHIBIT B
FORM OF WARRANTY DEED

Prepared by:
_____, Esq. (VSB #_____)
_____
_____
_____

Tax Map No.: _____

Consideration: $_____
Assessed Value: $_____

SPECIAL WARRANTY DEED

THIS SPECIAL WARRANTY DEED (this "Deed") is made as of the ____ day of _____, _____, by and between _____, a _____ ("Grantor"), and _____ ("Grantee"), with an address of _____.

W I T N E S S E T H:

THAT FOR AND IN CONSIDERATION of the sum of TEN AND NO/100 DOLLARS ($10.00), and other good and valuable consideration not set forth herein, the receipt and sufficiency of which are hereby acknowledged, Grantor does hereby GRANT, BARGAIN, SELL AND CONVEY unto Grantee, in fee simple WITH SPECIAL WARRANTY OF TITLE, the following described real estate, to-wit:

SEE EXHIBIT A ATTACHED HERETO AND MADE A PART HEREOF

The conveyance of the real estate described in Exhibit A is made expressly subject to such recorded restrictions, conditions and easements as may lawfully apply to the real estate or any part thereof.

[SIGNATURE PAGE FOLLOWS]

IN WITNESS WHEREOF, Grantor has executed this Deed as of the day, month, and year first above written, with the intention of creating an instrument under seal.

GRANTOR:

_____,
a _____

By: _____
Name: _____
Title: _____

COMMONWEALTH OF VIRGINIA
CITY/COUNTY OF _____, to-wit:

The foregoing instrument was acknowledged before me in the city/county and state aforesaid this ____ day of _____, _____, by _____, who is personally known to me, as the _____ of _____, a _____, on behalf of the _____.

My Commission expires: _____.

Registration Number: _____.

_____
Notary Public

Grantee's Address:

_____
_____
_____

EXHIBIT A

Legal Description to Deed

EXHIBIT C
FORM OF BILL OF SALE

THIS BILL OF SALE ("Bill of Sale") is made this _____ day of _____, _____ by _____, a _____ (the "Seller"), in favor of _____, a _____(the "Purchaser").

W I T N E S S E T H:

WHEREAS, Seller and Purchaser entered into that certain Purchase and Sale Contract dated as of _____ (the "Contract") with respect to the sale of certain Property identified therein. (Any capitalized term used, but not otherwise defined herein, shall have the meaning set forth in the Contract.)

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Seller does hereby absolutely and unconditionally give, grant, bargain, sell, transfer, set over, assign, convey, release, confirm and deliver to Purchaser all of the Seller's Fixtures and Tangible Personal Property, without representation or warranty of any kind whatsoever except as set forth in and subject to the terms of the Contract.

This Bill of Sale conveys good and marketable title to the assets conveyed hereby, free and clear of any liens.

WITH RESPECT TO ALL MATTERS TRANSFERRED, WHETHER TANGIBLE OR INTANGIBLE, PERSONAL OR REAL, SELLER EXPRESSLY DISCLAIMS A WARRANTY OF MERCHANTABILITY AND WARRANTY FOR FITNESS FOR A PARTICULAR USE OR ANY OTHER WARRANTY EXPRESSED OR IMPLIED THAT MAY ARISE BY OPERATION OF LAW OR UNDER THE UNIFORM COMMERCIAL CODE FOR THE STATE IN WHICH THE PROPERTY IS LOCATED (OR ANY OTHER STATE).

This Bill of Sale shall be binding upon and inure to the benefit of the successors and permitted assigns of Purchaser and Seller.

This Bill of Sale shall be governed by, interpreted under, and construed and enforceable in accordance with, the laws of the State of Virginia.

[Remainder of page intentionally left blank.]

IN WITNESS WHEREOF, the undersigned has executed this Bill of Sale as of the day and year first written above.

Seller:

_____
, a _____

By: _____
Name: _____
Title: _____

EXHIBIT D
FORM OF GENERAL ASSIGNMENT AND ASSUMPTION

This General Assignment and Assumption (this "Assignment") is executed by and between _____, a _____ ("Seller"), and _____, a _____ ("Purchaser") as of _____, 20__ (the "Effective Date").

WHEREAS, Seller and Purchaser entered into that certain Purchase and Sale Agreement dated as of _____, 20___ (the "Purchase Agreement") with respect to the sale of certain Property identified therein. (Any capitalized term used, but not otherwise defined herein, shall have the meaning set forth in the Purchase Agreement.)

WHEREAS, pursuant to the Purchase Agreement, Seller has agreed to assign, without recourse or warranty except as set forth in the Purchase Agreement, to Purchaser all of Seller's right, title and interest, if any, in and to the Miscellaneous Property Assets, the Permits, and the Assigned Contracts, but excluding the Excluded Assets.

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Seller and Purchaser agree as follows:

1. Assignment. As of the Effective Date, Seller hereby assigns, sells and transfers, without recourse or warranty, to Purchaser all of Seller's right, title and interest, if any, in and to the Miscellaneous Property Assets, the Permits (other than the Excluded Permits), and the Property Contracts. Seller agrees to indemnify, defend, protect and hold Purchaser harmless from and against any and all liability, loss, cost, damage and expense (including, without limitation reasonable attorneys' fees and costs) asserted against, incurred or suffered by Purchaser relating to obligations under the Miscellaneous Property Assets, the Permits (other than the Excluded Permits), and the Property Contracts first arising prior to the Effective Date.

2. Assumption. As of the Effective Date, Purchaser expressly agrees to assume and hereby assumes all liabilities and obligations of the Seller in connection with the Miscellaneous Property Assets, the Permits (other than the Excluded Permits), and the Property Contracts arising on or after the Effective Date. Purchaser agrees to indemnify, defend, protect and hold Seller harmless from and against any and all liability, loss, cost, damage and expense (including without limitation reasonable attorneys' fees and costs) asserted against, incurred or suffered by Seller relating to obligations under Miscellaneous Property Assets, the Permits (other than the Excluded Permits), and the Property Contracts first arising on or after the Effective Date.

3. Attorney's Fees. If any action or proceeding is commenced by either party to enforce its rights under this Assignment, the prevailing party in such action or proceeding shall be awarded all reasonable costs and expenses incurred in such action or proceeding, including reasonable attorneys' fees and costs (including the cost of appeals), in addition to any other relief awarded by the court.

4. Counterparts. This Assignment may be executed in a number of identical counterparts. Signatures may be delivered by facsimile or electronic delivery, and such signatures shall be binding on the parties hereto, with original signatures to be delivered as soon as reasonably practical thereafter.

5. Applicable Law. This Assignment shall be governed by and interpreted in

accordance with the laws of the Commonwealth of Virginia.

6. Binding Effect. This Assignment shall be binding upon and inure to the benefit of the parties hereto and their respective successors and assigns.

[Remainder of page intentionally left blank.]

IN WITNESS WHEREOF, the undersigned has executed this General Assignment and Assumption as of the day and year first written above.

Seller:

_____,

a _____

By: _____
Name: _____
Title: _____

Purchaser:

_____,

a _____

By: _____
Name: _____
Title: _____

EXHIBIT E
FORM OF ASSIGNMENT AND ASSUMPTION OF LEASES AND SECURITY DEPOSITS

This Assignment and Assumption of Leases and Security Deposits (this "Assignment") is executed by and between _____, a _____ ("Seller") and _____, a _____ ("Purchaser") as of _____, 20__ (the "Effective Date").

WHEREAS, Seller and Purchaser entered into that certain Purchase and Sale Agreement dated as of _____, 20___ (the "Purchase Agreement") with respect to the sale of certain Property more particularly described in the Purchase Agreement. (Any capitalized term used, but not otherwise defined herein, shall have the meaning set forth in the Purchase Agreement.)

WHEREAS, Seller, as landlord, has entered into certain leases for the use of the Property by tenants (collectively, together with all amendments, modifications, supplements, restatements and guarantees thereof, the "**Leases**").

WHEREAS, the Purchase Agreement requires Seller and Purchaser to execute this Assignment.

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Seller and Purchaser hereby agree as follows:

1. Assignment and Assumption. As of the Effective Date, Seller hereby irrevocably assigns, sets over, transfers and conveys to Purchaser all of Seller's right, title and interest in and to (a) the Leases and (b) the Tenant Security Deposit Balance. Purchaser hereby accepts this Assignment and the rights granted herein, and Purchaser hereby expressly assumes, for itself and its successors, assigns and legal representatives, the Leases and the Tenant Security Deposit Balance and all of the obligations and liabilities, fixed and contingent, of Seller thereunder accruing from and after the Effective Date with respect to the Leases and the Tenant Security Deposit Balance and agrees to (i) be fully bound by all of the terms, covenants, agreements, provisions, conditions, obligations and liability of Seller thereunder, which accrue from and after the Effective Date, and (ii) keep, perform and observe all of the covenants and conditions contained therein on the part of Seller to be kept, performed and observed, from and after the Effective Date.

2. Reciprocal Indemnifications. Seller hereby agrees to indemnify, defend, protect and hold Purchaser harmless from and against any and all liability, loss, cost, damage and expense (including without limitation reasonable attorneys' fees and costs) ("Claims") asserted against, incurred or suffered by Purchaser relating to obligations under the Leases and the Tenant Security Deposit Balance first arising prior to the Effective Date. Purchaser hereby agrees to indemnify, defend, protect and hold Seller harmless from and against any and all Claims asserted against, incurred or suffered by Seller relating to obligations under the Leases and the Tenant Security Deposit Balance first arising on or after the Effective Date.

3. General Provisions.

a. Successors. This Assignment shall inure to the benefit of, and be binding upon, the parties hereto and their respective successors and assigns.

b. Counterparts. This Assignment may be executed in a number of identical

counterparts. Signatures may be delivered by facsimile or electronic delivery, and such signatures shall be binding on the parties hereto, with original signatures to be delivered as soon as reasonably practical thereafter.

c. Governing Law. This Assignment and the legal relations between the parties hereto shall be governed by and construed and enforced in accordance with the laws of the State wherein the Property is located, without reference to the conflict of law provisions thereof.

d. Attorney's Fees. If any action or proceeding is commenced by either party to enforce its rights under this Assignment, the prevailing party in such action or proceeding shall be awarded all reasonable costs and expenses incurred in such action or proceeding, including reasonable attorneys' fees and costs (including the cost of appeals), in addition to any other relief awarded by the court.

[Remainder of page intentionally left blank.]

IN WITNESS WHEREOF, the undersigned has executed this Assignment and Assumption of Leases and Security Deposits as of the day and year first written above.

Seller:

_____,

a _____

By: _____
Name: _____
Title: _____

Purchaser:

_____,

a _____

By: _____
Name: _____
Title: _____

[Signature Page]

EXHIBIT F
NOTICE TO VENDOR REGARDING TERMINATION OF CONTRACT

DERBY RUN APARTMENTS

[DATE]

To: [INSERT VENDOR INFORMATION]

Re: Termination of [Insert Name and Date of Contract] (the "Contract")

Dear [Insert Name]:

_____, a _____ ("Seller"), intends to sell the property located at _____ (the "Property") to _____, a _____ ("Purchaser") on _____, 20__ (the "Closing Date"). In connection with such purchase and sale, Seller hereby terminates the Contract as provided below; provided however, if Purchaser has not acquired the Property by the Closing Date (as the same may be extended), Seller shall have the right to rescind its termination of the Contract by providing written notice to you of the same, in which event, the Contract shall continue in full force and effect. Accordingly, this letter shall serve as notice that the Contract is terminated as of _____, 20__ (the "Termination Date").

Any and all future notices and inquiries that you may have regarding the termination of the Contract should be forwarded to Purchaser at the following address:

_____
_____
_____
_____

Very truly yours,

_____,

a _____

By: _____
Name: _____
Title: _____

EXHIBIT G
SELLER'S CERTIFICATE

ACQUISITION CREDIT CERTIFICATION

With respect to the property and all improvements located at _____ and known as _____ (the "Apartment Complex") which has been conveyed by Derby Run Associates, L.P., a Virginia limited partnership ("Seller") to _____ ("Purchaser"), the undersigned, _____, as Managing General Partner of the Seller, hereby certifies to [investor] and to [investor's law firm] that as of the date of such conveyance (the "Acquisition Date") each of the following was true and correct:

(1) the Acquisition Date is at least ten (10) years after the latest date that the Seller acquired legal and beneficial ownership to all of the buildings of the Apartment Complex and placed in service the last building to be placed in service (as defined by Section 42 of the Internal Revenue Code of 1986, as amended);

(2) prior to the Acquisition Date, the buildings in the Apartment Complex were not previously placed in service by the Purchaser or by any person who was a related person, as defined in Section 42(d)(2)(D)(iii)(II) of the Code, with respect to the Purchaser at the time of such previous placement in service; and

(3) no person or group of persons which has on the Acquisition Date a direct or indirect ownership interest of 50% or more in the Purchaser also has or ever had in the past a direct or indirect ownership interest of 50% or more in the Seller ("ownership interest" shall mean an interest in any of profits, losses or cash distributions (including fees based on available cash) from operations or sale or refinancing).

This Certification is dated as of _____, 2019.

_____

By: _____,
_____, _____

EXHIBIT H
TENANT NOTIFICATION

[DATE]

To: Tenants of Derby Run Apartments

Ladies and Gentlemen:

This is to advise you that, effective this date, Derby Run Apartments have been sold to _____ ("Purchaser").

Effective immediately, please make all rent checks payable to and make all rental payments to _____. Any security deposit you made at the time of signing your lease has also been transferred to Purchaser, and Purchaser is solely responsible for returning any security deposit to which you are entitled at the termination of your lease.

The manager of Derby Run Apartments is _____.

Please contact _____ at _____ if you have any questions regarding this transfer.

Very truly yours,

_____,

a _____

By: _____
Name: _____
Title: _____

_____,

a _____

By: _____
Name: _____
Title: _____

SECOND AMENDMENT TO PURCHASE AND SALE CONTRACT

THIS SECOND AMENDMENT TO PURCHASE AND SALE CONTRACT (this "Amendment") is made and entered into this 15th day of May, 2019, by and between **Derby Run Associates, L.P.**, a Virginia limited partnership d/b/a Derby Run Apartments ("Seller"), and **LRC – Acquisitions, LLC**, an Alabama limited liability company (the "Purchaser").

PRELIMINARY STATEMENTS

Seller and Purchaser entered into that certain Purchase and Sale Contract dated February 21, 2019, as amended by that First Amendment to Purchase and Sale Agreement dated as of March 22, 2019 (collectively, the "Contract"), regarding the purchase and sale of certain property located in the City of Hampton, Virginia, commonly known as Derby Run Apartments and as more particularly described in the Contract. Capitalized terms used in this Amendment but not defined in this Amendment shall have the meanings assigned to them in the Contract. Seller and Purchaser desire to amend the Contract as further set forth herein.

NOW, THEREFORE, in consideration of the mutual promises, covenants and conditions set forth below, and other valuable consideration, the receipt and sufficiency of which are hereby expressly acknowledged, Seller and Purchaser acknowledge and agree that the Contract is hereby amended as set forth below.

Section 1. **Closing Date.** Section 5.1 of the Contract is hereby deleted in its entirety and replaced with the following:

"5.1 Closing Date. The Closing shall occur no later than one hundred fifty (150) days from the Effective Date of Membership P&S Contract, as defined in Section 8.2.6 below; provided, however, such date shall be extended as necessary for a simultaneous closing under the Membership P&S Contract (such selected date shall be herein referred to as the "Closing Date") through an escrow with Escrow Agent, whereby Seller, Purchaser and their attorneys need not be physically present at the Closing and may deliver documents by overnight air courier or other means. Notwithstanding the foregoing, Purchaser shall be entitled to extend the Closing Date by one (1) forty-five (45) day option period, by delivering written notice to Seller and an additional deposit (the "Additional Deposit") of Twenty Thousand and No/100 Dollars ($20,000.00) to the Escrow Agent. The Additional Deposit shall be applicable to the Purchase Price but shall be non-refundable except pursuant to Section 10.2."

Section 2. **Brokers.** Section 9.1 of the Contract is hereby deleted in its entirety and replaced with the following:

"9.1. Broker. Seller and Purchaser represent to each other (a) that Purchaser and Seller have not received services from any real estate broker or agent other than Ripley Heatwole Company, Inc. (the "Broker"), which would give rise to any claim of any broker's lien or commission; and (b) there are or will be no other broker's commissions or fees payable in connection with this Contract. Purchaser and Seller hereby agree to indemnify, defend and hold each other harmless from and against the claims, demands, actions and judgments (together with reasonable attorneys' fees incurred in connection therewith) of any and all other brokers, agents and other intermediaries alleging a commission, fee or other payment to be owing by reason of their respective dealings, negotiations, or communications in connection with this Contract or the purchase and sale of the Property. The Broker shall be paid a commission of $136,957.00 from Seller's Purchase Price proceeds at Closing. The representations and obligations under this Section 9.1 shall survive Closing or earlier termination of this Contract."

Section 3. **Full Force and Effect; Counterparts**. To the extent not inconsistent herewith, all other terms and provisions of the Contract shall remain in full force and effect and are ratified by the parties hereto. This Amendment may be executed in counterparts, each of which when taken together shall constitute one entire agreement.

[Signature Page Follows]

IN WITNESS WHEREOF, the parties hereto have executed this Amendment as of the day and year first above written.

Purchaser:

LRC ACQUISITIONS, LLC,
an Alabama limited liability company

By: _____
W. Daniel Hughes, Jr.,
Authorized Signatory

Seller:

DERBY RUN ASSOCIATES, L.P.,
a Virginia limited partnership

By: Derby, Inc.,
a Virginia corporation,
Its Managing General Partner

By: _____ (SEAL)
Name: Andrew F. Heatwole
Title: Vice President

39008984_1

OFFICE OF THE CITY TREASURER
City of Hampton, Virginia
1 Franklin Street, Suite 100
Hampton, VA 23669
Phone: (757)727-6374
Fax: (757) 727-6796

Print Tax Info

CURRENT OWNER:	DERBY RUN ASSOCIATES L P	RPC:	6000964
	601 SOUTH BELVIDERE ST	CURRENT ACCOUNT#:	1024641
LEGAL DESCRIPTION:	MAGRUDER ESTATES RESUB 3 L9A	MAP#:	06M003 03 00009A0
PARCEL ID:	06M003 03 00009A0		

NOTICE REGARDING CREDITS ON REAL ESTATE

The City of Hampton offers Real Estate Tax Relief programs to qualifying homeowners. This Tax Relief will appear as a CREDIT under "Yearly Transactions". These amounts may constitute a tax lien on the real estate and may become due if there is a change in status of the qualifying homeowner or the property is transferred. If you have any questions regarding the amounts due, please contact the Treasurer's Office.

BILL BALANCES, FEES AND CHARGES

Penalty and Interest are as of today's date: Monday, August 05, 2019

Tax Year	Description	Bill#	Bill Seq#	Date Due	Adj Value	Base Balance	Penalty	Interest	Total
2020	REAL ESTATE	2K20R11235	1	12/5/2019	$9,450,300.00	$58,591.86	$0.00	$0.00	$58,591.86
2020	REAL ESTATE	2K20E11235	2	6/5/2020	$9,450,300.00	$58,591.86	$0.00	$0.00	$58,591.86
2020	**STORM WATER**	**2K20S10858**	**1**	**12/5/2019**	**N/A**	**$5,933.76**	**$0.00**	**$0.00**	**$5,933.76**
2020	**STORM WATER**	**2K20W10858**	**2**	**6/5/2020**	**N/A**	**$5,933.76**	**$0.00**	**$0.00**	**$5,933.76**
					YEARLY TOTAL	$129,051.20	$0.00	$0.00	$129,051.20

TODAY'S BALANCE **$129,051.20**

UNBILLED ITEMS

Tax Year	Description	Seq#	Effective Date	Amount/Value	Note
NO UNBILLED ITEMS					

YEARLY TRANSACTIONS

Tax Year	Tran Date	Tran Type	Bill/Receipt	Seq#	Billed	Refund	Paid	Adj/Credit	Date Due
2020	7/25/2019	BILL	2K20R11235	1	$58,591.86	$0.00	$0.00	$0.00	12/05/2019
2020	7/29/2019	BILL	2K20S10858	1	$5,933.76	$0.00	$0.00	$0.00	12/05/2019
2020	7/25/2019	BILL	2K20E11235	2	$58,591.86	$0.00	$0.00	$0.00	06/05/2020
2020	7/29/2019	BILL	2K20W10858	2	$5,933.76	$0.00	$0.00	$0.00	06/05/2020
			YEARLY TOTALS		**$129,051.20**	**$0.00**	**$0.00**	**$0.00**	
2019	8/1/2018	BILL	2K19R11174	1	$58,591.86	$0.00	$0.00	$0.00	12/06/2018
2019	8/1/2018	BILL	2K19S10788	1	$5,261.76	$0.00	$0.00	$0.00	12/06/2018
2019	12/4/2018	PAYMENT	9394455	1	$0.00	$0.00	$5,261.76	$0.00	N/A
2019	12/4/2018	PAYMENT	9394455	1	$0.00	$0.00	$58,591.86	$0.00	N/A
2019	8/1/2018	BILL	2K19E11174	2	$58,591.86	$0.00	$0.00	$0.00	06/05/2019
2019	8/1/2018	BILL	2K19W10788	2	$5,261.76	$0.00	$0.00	$0.00	06/05/2019
2019	6/3/2019	PAYMENT	9523313	2	$0.00	$0.00	$5,261.76	$0.00	N/A
2019	6/3/2019	PAYMENT	9523313	2	$0.00	$0.00	$58,591.86	$0.00	N/A
			YEARLY TOTALS		**$127,707.20**	**$0.00**	**$127,707.20**	**$0.00**	
2018	5/30/2018	REFUND	299602	0	$0.00	$167.88	$0.00	$0.00	N/A
2018	5/30/2018	PAYMENT	9259323	0	$0.00	$0.00	$167.88	$0.00	N/A
2018	8/1/2017	BILL	2K18R11162	1	$58,591.86	$0.00	$0.00	$0.00	12/05/2017
2018	8/1/2017	BILL	2K18S10772	1	$5,261.76	$0.00	$0.00	$0.00	12/05/2017
2018	11/29/2017	PAYMENT	9115761	1	$0.00	$0.00	$5,261.76	$0.00	N/A
2018	11/29/2017	PAYMENT	9115761	1	$0.00	$0.00	$58,591.86	$0.00	N/A
2018	8/1/2017	BILL	2K18E11162	2	$58,591.86	$0.00	$0.00	$0.00	06/05/2018
2018	8/1/2017	BILL	2K18W10772	2	$5,261.76	$0.00	$0.00	$0.00	06/05/2018
2018	5/30/2018	PAYMENT	9259323	2	$0.00	$0.00	$5,261.76	$0.00	N/A

2018	5/30/2018	PAYMENT	9259323	2	$0.00	$0.00	$58,591.86	$0.00	N/A
			YEARLY TOTALS		$127,707.20	$167.88	$127,875.10	$0.00	
2017	7/30/2016	BILL	2K17R11108	1	$58,591.86	$0.00	$0.00	$0.00	12/05/2016
2017	7/30/2016	BILL	2K17S10733	1	$5,261.76	$0.00	$0.00	$0.00	12/05/2016
2017	12/2/2016	PAYMENT	8858546	1	$0.00	$0.00	$5,261.76	$0.00	N/A
2017	12/2/2016	PAYMENT	8858546	1	$0.00	$0.00	$58,591.86	$0.00	N/A
2017	7/30/2016	BILL	2K17E11108	2	$58,591.86	$0.00	$0.00	$0.00	06/05/2017
2017	7/30/2016	BILL	2K17W10733	2	$5,261.76	$0.00	$0.00	$0.00	06/05/2017
2017	5/26/2017	PAYMENT	8986189	2	$0.00	$0.00	$5,261.76	$0.00	N/A
2017	5/26/2017	PAYMENT	8986189	2	$0.00	$0.00	$58,591.86	$0.00	N/A
			YEARLY TOTALS		$127,707.20	$0.00	$127,707.20	$0.00	
2016	8/2/2015	BILL	2K16R11051	1	$58,591.86	$0.00	$0.00	$0.00	12/07/2015
2016	8/6/2015	BILL	2K16S10639	1	$5,261.76	$0.00	$0.00	$0.00	12/07/2015
2016	12/4/2015	PAYMENT	8601432	1	$0.00	$0.00	$5,261.76	$0.00	N/A
2016	12/4/2015	PAYMENT	8601432	1	$0.00	$0.00	$58,591.86	$0.00	N/A
2016	8/2/2015	BILL	2K16E11051	2	$58,591.86	$0.00	$0.00	$0.00	06/06/2016
2016	8/6/2015	BILL	2K16W10639	2	$5,261.76	$0.00	$0.00	$0.00	06/06/2016
2016	5/31/2016	PAYMENT	8725381	2	$0.00	$0.00	$5,261.76	$0.00	N/A
2016	5/31/2016	PAYMENT	8725381	2	$0.00	$0.00	$58,591.86	$0.00	N/A
			YEARLY TOTALS		$127,707.20	$0.00	$127,707.20	$0.00	
2015	8/2/2014	BILL	2K15R11212	1	$58,591.86	$0.00	$0.00	$0.00	12/05/2014
2015	8/6/2014	BILL	2K15S10825	1	$4,697.28	$0.00	$0.00	$0.00	12/05/2014
2015	12/1/2014	PAYMENT	8354568	1	$0.00	$0.00	$4,697.28	$0.00	N/A
2015	12/1/2014	PAYMENT	8354568	1	$0.00	$0.00	$58,591.86	$0.00	N/A
2015	8/2/2014	BILL	2K15E11212	2	$58,591.86	$0.00	$0.00	$0.00	06/05/2015
2015	8/6/2014	BILL	2K15W10825	2	$4,697.28	$0.00	$0.00	$0.00	06/05/2015
2015	6/5/2015	PAYMENT	8486011	2	$0.00	$0.00	$4,697.28	$0.00	N/A
2015	6/5/2015	PAYMENT	8486011	2	$0.00	$0.00	$58,591.86	$0.00	N/A
			YEARLY TOTALS		$126,578.30	$0.00	$126,578.30	$0.00	
2014	7/20/2013	BILL	2K14R11234	1	$58,591.86	$0.00	$0.00	$0.00	12/05/2013
2014	8/1/2013	BILL	2K14S10885	1	$4,697.28	$0.00	$0.00	$0.00	12/05/2013
2014	12/5/2013	PAYMENT	8090754	1	$0.00	$0.00	$4,697.28	$0.00	N/A
2014	12/5/2013	PAYMENT	8090754	1	$0.00	$0.00	$58,591.86	$0.00	N/A
2014	7/20/2013	BILL	2K14E11234	2	$58,591.86	$0.00	$0.00	$0.00	06/05/2014
2014	8/1/2013	BILL	2K14W10885	2	$4,697.28	$0.00	$0.00	$0.00	06/05/2014
2014	5/30/2014	PAYMENT	8207860	2	$0.00	$0.00	$4,697.28	$0.00	N/A
2014	5/30/2014	PAYMENT	8207860	2	$0.00	$0.00	$58,591.86	$0.00	N/A
			YEARLY TOTALS		$126,578.30	$0.00	$126,578.30	$0.00	
2013	8/1/2012	BILL	2K13R11207	1	$49,141.56	$0.00	$0.00	$0.00	12/05/2012
2013	8/15/2012	BILL	2K13S10386	1	$6,076.68	$0.00	$0.00	$0.00	12/05/2012
2013	12/5/2012	PAYMENT	7825127	1	$0.00	$0.00	$6,076.68	$0.00	N/A
2013	12/5/2012	PAYMENT	7825127	1	$0.00	$0.00	$49,141.56	$0.00	N/A
2013	8/1/2012	BILL	2K13E11207	2	$49,141.56	$0.00	$0.00	$0.00	06/05/2013
2013	8/15/2012	BILL	2K13W10386	2	$6,076.68	$0.00	$0.00	$0.00	06/05/2013
2013	6/4/2013	PAYMENT	7970107	2	$0.00	$0.00	$6,076.68	$0.00	N/A
2013	6/4/2013	PAYMENT	7970107	2	$0.00	$0.00	$49,141.56	$0.00	N/A
			YEARLY TOTALS		$110,436.50	$0.00	$110,436.50	$0.00	
2012	8/1/2011	BILL	2K12R11193	1	$48,654.84	$0.00	$0.00	$0.00	12/05/2011
2012	8/10/2011	BILL	2K12S10475	1	$4,360.80	$0.00	$0.00	$0.00	12/05/2011
2012	12/2/2011	PAYMENT	7549539	1	$0.00	$0.00	$4,360.80	$0.00	N/A
2012	12/2/2011	PAYMENT	7549539	1	$0.00	$0.00	$48,654.84	$0.00	N/A
2012	8/1/2011	BILL	2K12E11193	2	$48,654.84	$0.00	$0.00	$0.00	06/05/2012
2012	8/10/2011	BILL	2K12W10475	2	$4,360.80	$0.00	$0.00	$0.00	06/05/2012
2012	5/31/2012	PAYMENT	7684553	2	$0.00	$0.00	$4,360.80	$0.00	N/A
2012	5/31/2012	PAYMENT	7684553	2	$0.00	$0.00	$48,654.84	$0.00	N/A
			YEARLY TOTALS		$106,031.30	$0.00	$106,031.30	$0.00	
2011	8/10/2010	BILL	2K11R11145	1	$48,654.84	$0.00	$0.00	$0.00	12/06/2010
2011	8/20/2010	BILL	2K11S10432	1	$4,360.80	$0.00	$0.00	$0.00	12/06/2010
2011	12/6/2010	PAYMENT	7296036	1	$0.00	$0.00	$4,360.80	$0.00	N/A
2011	12/6/2010	PAYMENT	7296036	1	$0.00	$0.00	$48,654.84	$0.00	N/A
2011	8/10/2010	BILL	2K11E11145	2	$48,654.84	$0.00	$0.00	$0.00	06/06/2011
2011	8/20/2010	BILL	2K11W10432	2	$4,360.80	$0.00	$0.00	$0.00	06/06/2011
2011	6/2/2011	PAYMENT	7423564	2	$0.00	$0.00	$4,360.80	$0.00	N/A
2011	6/2/2011	PAYMENT	7423564	2	$0.00	$0.00	$48,654.84	$0.00	N/A
			YEARLY TOTALS		$106,031.30	$0.00	$106,031.30	$0.00	
2010	7/1/2009	ADJUSTMENT	776278	1	$0.00	$0.00	$0.00	$11,904.36	N/A

2010	8/10/2009	BILL	2K10R11122	1	$61,952.80	$0.00	$0.00	$0.00	12/07/2009
2010	8/20/2009	BILL	2K10S10388	1	$4,360.80	$0.00	$0.00	$0.00	12/07/2009
2010	12/7/2009	PAYMENT	7043617	1	$0.00	$0.00	$4,360.80	$0.00	N/A
2010	12/7/2009	PAYMENT	7043617	1	$0.00	$0.00	$50,048.44	$0.00	N/A
2010	7/1/2009	ADJUSTMENT	776279	2	$0.00	$0.00	$0.00	$11,904.36	N/A
2010	8/10/2009	BILL	2K10E11122	2	$61,952.80	$0.00	$0.00	$0.00	06/07/2010
2010	8/20/2009	BILL	2K10W10388	2	$4,360.80	$0.00	$0.00	$0.00	06/07/2010
2010	6/3/2010	PAYMENT	7160075	2	$0.00	$0.00	$4,360.80	$0.00	N/A
2010	6/3/2010	PAYMENT	7160075	2	$0.00	$0.00	$50,048.44	$0.00	N/A
			YEARLY TOTALS		**$132,627.20**	**$0.00**	**$108,818.50**	**$23,808.72**	
2009	7/1/2008	REFUND	188087	1	$0.00	$11,904.36	$0.00	$0.00	N/A
2009	7/1/2008	ADJUSTMENT	776280	1	$0.00	$0.00	$0.00	$11,904.36	N/A
2009	8/10/2008	BILL	2K9R11197	1	$61,952.80	$0.00	$0.00	$0.00	12/05/2008
2009	8/16/2008	BILL	2K9S10476	1	$4,360.80	$0.00	$0.00	$0.00	12/05/2008
2009	12/5/2008	PAYMENT	6764242	1	$0.00	$0.00	$4,360.80	$0.00	N/A
2009	12/5/2008	PAYMENT	6764242	1	$0.00	$0.00	$61,952.80	$0.00	N/A
2009	7/1/2008	REFUND	188088	2	$0.00	$11,904.36	$0.00	$0.00	N/A
2009	7/1/2008	ADJUSTMENT	776281	2	$0.00	$0.00	$0.00	$11,904.36	N/A
2009	8/10/2008	BILL	2K9E11197	2	$61,952.80	$0.00	$0.00	$0.00	06/05/2009
2009	8/16/2008	BILL	2K9W10476	2	$4,360.80	$0.00	$0.00	$0.00	06/05/2009
2009	6/4/2009	PAYMENT	6907981	2	$0.00	$0.00	$4,360.80	$0.00	N/A
2009	6/4/2009	PAYMENT	6907981	2	$0.00	$0.00	$61,952.80	$0.00	N/A
			YEARLY TOTALS		**$132,627.20**	**$23,808.72**	**$132,627.20**	**$23,808.72**	
2008	7/1/2007	REFUND	188089	1	$0.00	$13,856.85	$0.00	$0.00	N/A
2008	7/1/2007	ADJUSTMENT	776283	1	$0.00	$0.00	$0.00	$13,856.85	N/A
2008	8/15/2007	BILL	2K8R11179	1	$61,881.74	$0.00	$0.00	$0.00	12/05/2007
2008	8/16/2007	BILL	2K8S10169	1	$4,360.80	$0.00	$0.00	$0.00	12/05/2007
2008	12/5/2007	PAYMENT	6520599	1	$0.00	$0.00	$61,881.74	$0.00	N/A
2008	12/11/2007	PAYMENT	6520599	1	$0.00	$0.00	$4,360.80	$0.00	N/A
2008	7/1/2007	REFUND	188090	2	$0.00	$13,856.85	$0.00	$0.00	N/A
2008	7/1/2007	ADJUSTMENT	776284	2	$0.00	$0.00	$0.00	$13,856.85	N/A
2008	8/15/2007	BILL	2K8E11179	2	$61,881.74	$0.00	$0.00	$0.00	06/05/2008
2008	8/16/2007	BILL	2K8W10169	2	$4,360.80	$0.00	$0.00	$0.00	06/05/2008
2008	5/21/2008	PAYMENT	6614329	2	$0.00	$0.00	$4,360.80	$0.00	N/A
2008	5/21/2008	PAYMENT	6614329	2	$0.00	$0.00	$61,881.74	$0.00	N/A
			YEARLY TOTALS		**$132,485.10**	**$27,713.70**	**$132,485.10**	**$27,713.70**	
2007	8/15/2006	BILL	2K7R11097	1	$53,389.05	$0.00	$0.00	$0.00	12/05/2006
2007	8/23/2006	BILL	2K7S10220	1	$3,412.80	$0.00	$0.00	$0.00	12/05/2006
2007	11/30/2006	PAYMENT	6205062	1	$0.00	$0.00	$3,412.80	$0.00	N/A
2007	11/30/2006	PAYMENT	6205062	1	$0.00	$0.00	$53,389.05	$0.00	N/A
2007	8/15/2006	BILL	2K7E11097	2	$53,389.05	$0.00	$0.00	$0.00	06/05/2007
2007	8/23/2006	BILL	2K7W10220	2	$3,412.80	$0.00	$0.00	$0.00	06/05/2007
2007	5/23/2007	PAYMENT	6355688	2	$0.00	$0.00	$3,412.80	$0.00	N/A
2007	5/23/2007	PAYMENT	6355688	2	$0.00	$0.00	$53,389.05	$0.00	N/A
			YEARLY TOTALS		**$113,603.70**	**$0.00**	**$113,603.70**	**$0.00**	
2006	7/15/2005	BILL	2K6R11099	1	$51,338.40	$0.00	$0.00	$0.00	12/05/2005
2006	8/23/2005	BILL	2K6S10211	1	$3,412.80	$0.00	$0.00	$0.00	12/05/2005
2006	11/23/2005	PAYMENT	5897054	1	$0.00	$0.00	$3,412.80	$0.00	N/A
2006	11/23/2005	PAYMENT	5897054	1	$0.00	$0.00	$51,338.40	$0.00	N/A
2006	7/15/2005	BILL	2K6E11099	2	$51,338.40	$0.00	$0.00	$0.00	06/05/2006
2006	8/23/2005	BILL	2K6W10211	2	$3,412.80	$0.00	$0.00	$0.00	06/05/2006
2006	6/5/2006	PAYMENT	6098271	2	$0.00	$0.00	$3,412.80	$0.00	N/A
2006	6/5/2006	PAYMENT	6098271	2	$0.00	$0.00	$51,338.40	$0.00	N/A
			YEARLY TOTALS		**$109,502.40**	**$0.00**	**$109,502.40**	**$0.00**	
2005	7/25/2004	BILL	2K5S10044	1	$3,412.80	$0.00	$0.00	$0.00	12/06/2004
2005	7/26/2004	BILL	2K5R11181	1	$47,688.75	$0.00	$0.00	$0.00	12/06/2004
2005	11/23/2004	PAYMENT	5594990	1	$0.00	$0.00	$3,412.80	$0.00	N/A
2005	11/23/2004	PAYMENT	5594990	1	$0.00	$0.00	$47,688.75	$0.00	N/A
2005	7/25/2004	BILL	2K5W10044	2	$3,412.80	$0.00	$0.00	$0.00	06/06/2005
2005	7/26/2004	BILL	2K5E11181	2	$47,688.75	$0.00	$0.00	$0.00	06/06/2005
2005	6/6/2005	PAYMENT	5796031	2	$0.00	$0.00	$3,412.80	$0.00	N/A
2005	6/6/2005	PAYMENT	5796031	2	$0.00	$0.00	$47,688.75	$0.00	N/A
			YEARLY TOTALS		**$102,203.10**	**$0.00**	**$102,203.10**	**$0.00**	
2004	8/31/2003	BILL	2K4R11255	1	$48,103.79	$0.00	$0.00	$0.00	12/05/2003
2004	9/4/2003	BILL	2K4S10301	1	$3,412.80	$0.00	$0.00	$0.00	12/05/2003
2004	11/19/2003	PAYMENT	5294505	1	$0.00	$0.00	$3,412.80	$0.00	N/A

2004	11/19/2003	PAYMENT	5294505	1	$0.00	$0.00	$48,103.79	$0.00	N/A
2004	8/31/2003	BILL	2K4E11255	2	$48,103.79	$0.00	$0.00	$0.00	06/07/2004
2004	9/4/2003	BILL	2K4W10301	2	$3,412.80	$0.00	$0.00	$0.00	06/07/2004
2004	5/20/2004	PAYMENT	5472562	2	$0.00	$0.00	$3,412.80	$0.00	N/A
2004	5/20/2004	PAYMENT	5472562	2	$0.00	$0.00	$48,103.79	$0.00	N/A
			YEARLY TOTALS		$103,033.20	$0.00	$103,033.20	$0.00	
2003	9/5/2002	BILL	2K3R11214	1	$45,477.43	$0.00	$0.00	$0.00	12/05/2002
2003	9/8/2002	BILL	2K3S10209	1	$3,318.00	$0.00	$0.00	$0.00	12/05/2002
2003	11/15/2002	PAYMENT	5024712	1	$0.00	$0.00	$3,318.00	$0.00	N/A
2003	11/15/2002	PAYMENT	5024712	1	$0.00	$0.00	$45,477.43	$0.00	N/A
2003	9/5/2002	BILL	2K3E11214	2	$45,477.43	$0.00	$0.00	$0.00	06/05/2003
2003	9/8/2002	BILL	2K3W10209	2	$3,318.00	$0.00	$0.00	$0.00	06/05/2003
2003	5/12/2003	PAYMENT	5178845	2	$0.00	$0.00	$3,318.00	$0.00	N/A
2003	5/12/2003	PAYMENT	5178845	2	$0.00	$0.00	$45,477.43	$0.00	N/A
			YEARLY TOTALS		$97,590.86	$0.00	$97,590.86	$0.00	
2002	9/2/2001	BILL	2K2R11208	1	$45,477.43	$0.00	$0.00	$0.00	12/05/2001
2002	9/13/2001	BILL	2K2S10040	1	$3,318.00	$0.00	$0.00	$0.00	12/05/2001
2002	12/5/2001	PAYMENT	4780377	1	$0.00	$0.00	$3,318.00	$0.00	N/A
2002	12/5/2001	PAYMENT	4780377	1	$0.00	$0.00	$45,477.43	$0.00	N/A
2002	9/2/2001	BILL	2K2E11208	2	$45,477.43	$0.00	$0.00	$0.00	06/05/2002
2002	9/13/2001	BILL	2K2W10040	2	$3,318.00	$0.00	$0.00	$0.00	06/05/2002
2002	5/28/2002	PAYMENT	4943616	2	$0.00	$0.00	$3,318.00	$0.00	N/A
2002	5/28/2002	PAYMENT	4943616	2	$0.00	$0.00	$45,477.43	$0.00	N/A
			YEARLY TOTALS		$97,590.86	$0.00	$97,590.86	$0.00	
2001	9/12/2000	BILL	2K1R11169	1	$43,457.50	$0.00	$0.00	$0.00	12/05/2000
2001	9/19/2000	BILL	2K1S7400	1	$2,370.00	$0.00	$0.00	$0.00	12/05/2000
2001	12/5/2000	PAYMENT	4537560	1	$0.00	$0.00	$2,370.00	$0.00	N/A
2001	12/5/2000	PAYMENT	4537560	1	$0.00	$0.00	$43,457.50	$0.00	N/A
2001	9/12/2000	BILL	2K1E11169	2	$43,457.50	$0.00	$0.00	$0.00	06/05/2001
2001	9/19/2000	BILL	2K1W7400	2	$2,370.00	$0.00	$0.00	$0.00	06/05/2001
2001	6/5/2001	PAYMENT	4708512	2	$0.00	$0.00	$2,370.00	$0.00	N/A
2001	6/5/2001	PAYMENT	4708512	2	$0.00	$0.00	$43,457.50	$0.00	N/A
			YEARLY TOTALS		$91,655.00	$0.00	$91,655.00	$0.00	
2000	9/10/1999	BILL	2KR11123	1	$42,191.88	$0.00	$0.00	$0.00	12/06/1999
2000	9/12/1999	BILL	2KS11123	1	$2,370.00	$0.00	$0.00	$0.00	12/06/1999
2000	12/6/1999	PAYMENT	4305082	1	$0.00	$0.00	$2,370.00	$0.00	N/A
2000	12/6/1999	PAYMENT	4305082	1	$0.00	$0.00	$42,191.88	$0.00	N/A
2000	9/10/1999	BILL	2KE11123	2	$42,191.88	$0.00	$0.00	$0.00	06/05/2000
2000	9/12/1999	BILL	2KW11123	2	$2,370.00	$0.00	$0.00	$0.00	06/05/2000
2000	5/25/2000	PAYMENT	4429040	2	$0.00	$0.00	$2,370.00	$0.00	N/A
2000	5/25/2000	PAYMENT	4429040	2	$0.00	$0.00	$42,191.88	$0.00	N/A
			YEARLY TOTALS		$89,123.76	$0.00	$89,123.76	$0.00	
1999	10/14/1998	BILL	99R11591	1	$40,962.50	$0.00	$0.00	$0.00	12/05/1998
1999	10/15/1998	BILL	99S11591	1	$2,370.00	$0.00	$0.00	$0.00	12/05/1998
1999	11/27/1998	PAYMENT	4041438	1	$0.00	$0.00	$2,370.00	$0.00	N/A
1999	11/27/1998	PAYMENT	4041438	1	$0.00	$0.00	$40,962.50	$0.00	N/A
1999	10/14/1998	BILL	99E11591	2	$40,962.50	$0.00	$0.00	$0.00	06/07/1999
1999	10/15/1998	BILL	99W11591	2	$2,370.00	$0.00	$0.00	$0.00	06/07/1999
1999	5/25/1999	PAYMENT	4193368	2	$0.00	$0.00	$2,370.00	$0.00	N/A
1999	5/25/1999	PAYMENT	4193368	2	$0.00	$0.00	$40,962.50	$0.00	N/A
			YEARLY TOTALS		$86,665.00	$0.00	$86,665.00	$0.00	
1998	10/15/1997	BILL	98R11431	1	$40,962.50	$0.00	$0.00	$0.00	12/05/1997
1998	10/15/1997	BILL	98S11431	1	$2,370.00	$0.00	$0.00	$0.00	12/05/1997
1998	11/25/1997	PAYMENT	3201694	1	$0.00	$0.00	$40,962.50	$0.00	N/A
1998	11/25/1997	PAYMENT	3201713	1	$0.00	$0.00	$2,370.00	$0.00	N/A
1998	4/15/1998	BILL	98E11431	2	$40,962.50	$0.00	$0.00	$0.00	06/05/1998
1998	4/15/1998	BILL	98W11431	2	$2,370.00	$0.00	$0.00	$0.00	06/05/1998
1998	6/1/1998	PAYMENT	3600756	2	$0.00	$0.00	$40,962.50	$0.00	N/A
1998	6/1/1998	PAYMENT	3600768	2	$0.00	$0.00	$2,370.00	$0.00	N/A
			YEARLY TOTALS		$86,665.00	$0.00	$86,665.00	$0.00	
1997	10/15/1996	BILL	97R11410	1	$39,612.15	$0.00	$0.00	$0.00	12/05/1996
1997	10/15/1996	BILL	97S11410	1	$956.25	$0.00	$0.00	$0.00	12/05/1996
1997	12/5/1996	PAYMENT	2740861	1	$0.00	$0.00	$39,612.15	$0.00	N/A
1997	12/5/1996	PAYMENT	2740870	1	$0.00	$0.00	$956.25	$0.00	N/A
1997	4/15/1997	BILL	97E11410	2	$39,612.15	$0.00	$0.00	$0.00	06/05/1997
1997	4/15/1997	BILL	97W11410	2	$956.25	$0.00	$0.00	$0.00	06/05/1997

1997	5/30/1997	PAYMENT	3091057	2	$0.00	$0.00	$39,612.15	$0.00	N/A
1997	5/30/1997	PAYMENT	3091144	2	$0.00	$0.00	$956.25	$0.00	N/A
			YEARLY TOTALS		$81,136.80	$0.00	$81,136.80	$0.00	
1996	10/15/1995	BILL	96R11265	1	$43,099.20	$0.00	$0.00	$0.00	12/05/1995
1996	10/15/1995	BILL	96S11265	1	$956.25	$0.00	$0.00	$0.00	12/05/1995
1996	11/28/1995	PAYMENT	2298342	1	$0.00	$0.00	$956.25	$0.00	N/A
1996	12/4/1995	ADJUSTMENT	72140	1	$0.00	$0.00	$0.00	$4,723.20	N/A
1996	12/5/1995	PAYMENT	2337832	1	$0.00	$0.00	$38,376.00	$0.00	N/A
1996	12/4/1995	ADJUSTMENT	72141	2	$0.00	$0.00	$0.00	$4,723.20	N/A
1996	4/15/1996	BILL	96E11265	2	$43,099.20	$0.00	$0.00	$0.00	06/05/1996
1996	4/15/1996	BILL	96W11265	2	$956.25	$0.00	$0.00	$0.00	06/05/1996
1996	5/31/1996	PAYMENT	2593936	2	$0.00	$0.00	$956.25	$0.00	N/A
1996	5/31/1996	PAYMENT	2593936	2	$0.00	$0.00	$38,376.00	$0.00	N/A
			YEARLY TOTALS		$88,110.90	$0.00	$78,664.50	$9,446.40	
1995	10/15/1994	BILL	95R11071	1	$3,929.85	$0.00	$0.00	$0.00	12/05/1994
1995	11/18/1994	PAYMENT	1946178	1	$0.00	$0.00	$3,929.85	$0.00	N/A
1995	4/15/1995	BILL	95E11071	2	$3,929.85	$0.00	$0.00	$0.00	06/05/1995
1995	6/5/1995	PAYMENT	2179534	2	$0.00	$0.00	$3,929.85	$0.00	N/A
			YEARLY TOTALS		$7,859.70	$0.00	$7,859.70	$0.00	

Search | Results | Details | Map

Printer-Friendly

View In Map | Back To Results

Deeded Address
300 FLOYD THOMPSON BLVD
HAMPTON , VA 23666

Mailing Address
601 SOUTH BELVIDERE ST
RICHMOND , VA 23220-6500

Property Identification Number/LRSN/RPC
6000964

General | Improvements | Transfer History | Assessments | Tax Information | City Resources | Tidal Flooding Info

Assessment Information

For missing fiscal years, the value is the same as the preceding year.

Fiscal Year	Effective Date	Land Value	Improvement Value	Total Value
FY2020	7/1/2019	$2,400,000	$7,050,300	$9,450,300
FY2019	7/1/2018	$2,400,000	$7,050,300	$9,450,300
FY2018	7/1/2017	$2,400,000	$7,050,300	$9,450,300
FY2017	7/1/2016	$2,400,000	$7,050,300	$9,450,300
FY2016	7/1/2015	$2,400,000	$7,050,300	$9,450,300
FY2015	7/1/2014	$2,000,000	$7,450,300	$9,450,300
FY2014	7/1/2013	$2,000,000	$7,450,300	$9,450,300
FY2013	7/1/2012	$2,000,000	$7,450,300	$9,450,300
FY2012	7/1/2011	$1,328,000	$8,028,700	$9,356,700
FY2011	7/1/2010	$1,328,000	$8,028,700	$9,356,700
FY2010	7/1/2009	$1,328,000	$8,296,700	$9,624,700
FY2010	7/1/2009	$1,328,000	$10,586,000	$11,914,000
FY2009	7/1/2008	$1,328,000	$8,296,700	$9,624,700
FY2009	7/1/2008	$1,328,000	$10,586,000	$11,914,000
FY2008	7/1/2007	$1,328,000	$7,733,300	$9,061,300
FY2008	7/1/2007	$1,328,000	$10,347,800	$11,675,800
FY2007	7/1/2006	$1,265,100	$8,101,400	$9,366,500
FY2006	7/1/2005	$1,204,900	$7,351,500	$8,556,400
FY2005	7/1/2004	$1,204,900	$6,425,300	$7,630,200
FY2004	7/1/2003	$960,400	$6,615,000	$7,575,400

ASSIGNMENT AGREEMENT

THIS ASSIGNMENT AGREEMENT is made as of this 28th day of August, 2019, by and between LRC Acquisitions, LLC, an Alabama limited liability company (the "Assignor") and LRC – Derby Run 1, LP, a Virginia limited partnership (the "Assignee").

WHEREAS, Assignor entered into Purchase and Sale Contract dated as of February 21, 2019, as amended on March 22, 2019, and further amended on May 15, 2019 (collectively, the "Contract"), with Derby Run Associates, L.P., a Virginia limited partnership, as seller (the "Seller") for the purchase of certain real property located in the City of Hampton, Virginia, commonly known as Derby Run Apartments 1, and described more particularly in the Contract; and

WHEREAS, Assignor formed Assignee, for the purposes of purchasing the property subject to the Contract;

WHEREAS, Assignor now wishes to assign, and Assignee wishes to accept, the assignment of the Contract pursuant to the terms hereof.

NOW, THEREFORE, in consideration of the foregoing, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties agree as follows:

1. Assignor hereby assigns to Assignee, and the Assignee hereby accepts, all right, title, interest and liability under and to the Contract as Purchaser.

2. Assignee shall indemnify and hold Assignor harmless from any and all claims, costs, liabilities and causes of action of any kind pertaining to the Contract which may arise after the date of this Assignment Agreement.

3. The terms of this Assignment Agreement shall be interpreted and construed pursuant to the laws of the Commonwealth of Virginia.

[Signature Page Follows]

IN WITNESS WHEREOF, the parties have set their hands and seals as of the date first written above.

ASSIGNOR:

LRC Acquisitions, LLC,
an Alabama limited liability company

By: _____
W. Daniel Hughes, Jr.,
Chairman

ASSIGNEE:

LRC – DERBY RUN 1, LP,
a Virginia limited partnership

By: LRC – Derby Run 1 GP, LLC,
a Virginia limited liability company,
Its General Partner

By: LRC GP, LLC,
a Delaware limited liability
company, Its Sole Member

By: LEDIC Realty Company, LLC,
a Delaware limited liability
company, Its Sole Member

By: _____
W. Daniel Hughes, Jr.,
Chairman of Board

40753551_1

F

Architect's Certification and Third-Party RESNET Rater Certification

(MANDATORY)

INSTRUCTIONS FOR THE COMPLETION OF APPENDIX F ARCHITECT'S CERTIFICATION

(This form must be included in the Application – Tab F)

NOTE: If the development includes any combination of **New Construction**, **Rehabilitation** or Adaptive Reuse, then separate Architect Certifications must be provided for each construction type.

The proper completion of this certification is critical to calculate the average unit square feet and net rentable square feet of each unit type, to document amenity items for which will be awarded, and to calculate certain elements of the efficient use of resources points.

If this certification is not completed correctly there may be loss of points or disqualification of the application to compete for tax credits. **If this development receives an allocation of tax credits and items are not provided as indicated on this certification then VHDA may, at its sole option, require the payment by the Owner of an amount up to 10% of the Total Development Cost (as set forth in the Application) of the development as liquidated damages for such violation or the total loss of credits may result.** Therefore, it is imperative that this certification reflect the true and accurate intent of what will be provided in return for an allocation of tax credits.

Each section of this certification contains instructions on how the information should be provided. For Unit Size Calculations, the Average Unit Square Feet and Net Rentable Square Feet should be listed to two (2) decimal places. The number of units indicated should be only the units for which rent will be collected. For Average Unit Square Feet calculations, the Total Square Feet should equal the Average Unit Square Feet multiplied by the Number of Units/Type. The total at the bottom of the Total Square Feet column should equal item (D) on the same page of the certification, or be within 1 digit due to rounding.

Accessibility certifications on page 6 are for tax credit point categories only and are not to be confused with minimum code requirements.

Architect's Certification

Name of Development: Derby Run Apartments I

Address of Development: 6 Derby Drive, Hampton, VA 23666

Name of Owner: LRC-Derby Run I, LP

The architect signing this document is certifying that all unit and site amenities indicated in this certification are incorporated into the development plans and specifications, and that all products necessary to fulfill these representations are available for these purposes. The architect signing this document also certifies their understanding that both the excel application and the information in the architect certification must be the same and discrepancies between the excel application and architect's certification can result in penalties or even disqualification.

The individual who certifies this information must initial the pages where indicated, provide the personal information requested and sign on the last page. This certification should not be mailed separately to VHDA but returned to the developer for inclusion in the tax credit application.

(Acknowledge and include this instruction sheet as part of the certification)

Acknowledged: 

Printed Name: J. Dyke Nelson

All developments seeking Virginia Low Income Housing Tax Credits are required to meet one of the following as certified by a RESNET Rater:

New Construction - EnergyStar Certification
The development's design meets the criteria for the EnergyStar certification.

Rehabilitation -30% performance increase over existing, based on HERS Index
Or Must evidence a HERS Index of 80 or better

Adaptive Reuse - Must evidence a HERS Index of 95 or better.

Plans and Specifications: Required documentation for all properties (new construction, rehabilitation and adaptive reuse)

1 A location map with property(ies) clearly defined.

2 A site plan showing overall dimensions of main building(s), major site elements (e.g., parking lots and location of existing utilities, and water, sewer, electric, gas in the streets adjacent to the site). Contour lines and elevations are not required. For combination 4% and 9% properties, site plan must show all elements of both properties labeled so that the elements are distinguishable as to 4% and 9%.

3 Sketch plans of main building(s) reflecting overall dimensions of:
a. Typical floor plan(s) showing apartment types and placement
b. Ground floor plan(s) showing common areas;
c. Sketch floor plan(s) of typical dwelling unit(s);

A Unit by Unit write up is required for all Rehabilitation properties

This certification includes two (2) separate calculations of square footage:

1. **Average Gross Unit Square Feet**: Measurements Include A Prorata Share of Heated Residential Common Area
2. **Net Rentable Square Feet**: Measurements *Do Not* Include A Prorata Share of Any Common Area and Reflect All Floor Plans of Each Unit Type (1-BR, 2-BR, etc.) measured from the interior face of the unit perimeter walls

1. Average Gross Unit Square Feet: (These measurements impact the scoring of tax credit applications)

For purposes of determining the total residential heated square feet (D), the building(s) were measured from the outside face of exterior walls and the centerline of any party walls. All unheated spaces (B) and nonresidential, (income producing commercial spaces) (C) were subtracted from this measurement. Community rooms, laundry rooms, property management offices and apartments, heated maintenance facilities, and other common space designed to serve residential tenants were not deducted. Based on this procedure, I certify the following calculations in determining the usable heated square feet for the above referenced development:

187,048.66		(A) Total gross floor area in (sq. ft.) for the entire development
30,590.87	-	(B) Unheated floor area (breezeways, balconies, storage)
3,207.95	-	(C) Nonresidential, (commercial income producing) area
153,249.84	=	(D) Total residential heated area (sq. ft.) for the development

INSTRUCTIONS FOR AVERAGE UNIT SQUARE FEET CALCULATIONS:

Provide the average unit size for each bedroom type, (1 bedroom elderly, 2 bedroom garden, 3 bedroom townhouse, etc.) by adding the total square feet of all the same bedroom types (2 bedroom garden with 1 bath and 2 bedroom garden with 2 baths) and adding the prorated share of heated common residential space and divide by the total number of the same bedroom types (2 bedroom garden). Do not alter any items below.

Unit Types	Average Unit Sq. Ft.*	x	Number of Units/Type	=	Total Square Feet	
Supportive Housing	0.00		0		0.00	
1 Story/EFF-Elderly	0.00		0		0.00	
1 Story/1 BR-Elderly	0.00		0		0.00	
1 Story/2 BR-Elderly	0.00		0		0.00	
Efficiency Elderly	0.00		0		0.00	
1 Bedroom Elderly	0.00		0		0.00	
2 Bedrooms Elderly	0.00		0		0.00	
Efficiency Garden	0.00		0		0.00	
1 Bedroom Garden	0.00		0		0.00	
2 Bedrooms Garden	878.19		104		91,331.76	
3 Bedrooms Garden	1,105.68		56		61,918.08	
4 Bedrooms Garden	0.00		0		0.00	
2+ Story 2 BR Townhouse	0.00		0		0.00	
2+ Story 3 BR Townhouse	0.00		0		0.00	
2+ Story 4 BR Townhouse	0.00		0		0.00	
	Total		160	Total	153,249.84	**

* Including pro rata share of heated, residential common area. This information should match Structure tab of the excel application

2. Net Rentable Square Feet *

For purposes of calculating Net Rentable Square Feet, the units were measured from the face of each unit perimeter wall. The values below therefore indicate the actual square footage of each unit floor plan. (For example, there may be 2 distinct 1-bedroom floor plans, 3 distinct 2-bedroom floor plans, etc. The purpose of this section of the Architect Certification is to document and certify the floor space attributable to residential rental units in the development.)

Percentage of Net Rentable Square Feet Deemed To Be **New Rental Space** 0.00%

	Unit Type	Floor Plan Square Feet	Number of Units This Floor Plan	Total
Mix 1	2 BR - 2 Bath	878.19	100	88697.19
Mix 2	2 BR - 1 Bath	878.19	4	2634.57
Mix 3	3 BR - 2 Bath	1105.68	56	61918.08
Mix 4				0
Mix 5				0
Mix 6				0
Mix 7				0
Mix 8				0
Mix 9				0
Mix 10				0
Mix 11				0
Mix 12				0
Mix 13				0
Mix 14				0
Mix 15				0
Mix 16				0
Mix 17				0
Mix 18				0
Mix 19				0
Mix 20				0
Mix 21				0
Mix 22				0
Mix 23				0
Mix 24				0
Mix 25				0
Mix 26				0
Mix 27				0
Mix 28				0
Mix 29				0
Mix 30				0
Mix 31				0
Mix 32				0
Mix 33				0
Mix 34				0
Mix 35				0
Mix 36				0
Mix 37				0
Mix 38				0
Mix 39				0
Mix 40				0
Mix 41				0
Mix 42				0
Mix 43				0
Mix 44				0
Mix 45				0
Mix 46				0
Mix 47				0
Mix 48				0
Mix 49				0
Mix 50				0
	Totals		**160**	**153249.84**

***This information should match Unit Details page of the excel application**

DEV Name: Derby Run Apartments I

INITIALS JDN

Development Amenities:

I certify that the development's plans and specifications and proposed budget incorporate all items from VHDA's most current Minimum Design and Construction Requirements and the Unit by Unit write up. In the event the plans and specifications do not include VHDA Minimum Design and Construction Requirements and any immediate needs and recommendations from the Physical Needs Assessment , then those requirements still must be met, even though the application is accepted for credits. Please note that this may cause the Application to be ineligible for credits. The Requirements apply to any new, adaptive reuse or rehabilitated development (including those serving elderly and/or physically disabled households).

The Minimum Design & Construction Requirements may be found on VHDA's website at..... www.VHDA.com

For any development upon completion of construction/rehabilitation: (non-mandatory amenities)
(Enter TRUE in each box where appropriate)

TRUE a. The development will have a community/meeting room with a minimum of 749 square feet.

14% b.i,ii Percentage of brick or other similar low-maintenance material approved by the Authority covering the exterior walls (excluding triangular gable end area, doors, windows, kneewalls, columns, retaining walls, stairwells and any features that are not a part of the façade) Community buildings are to be included in percentage calculations.

TRUE c. Water expense will be sub-metered (tenant will pay monthly or bi-monthly bill)

TRUE d. Each bathroom consists only of Water Sense labeled toilets, faucets and showerheads

FALSE e. Provide necessary infrastructure in all units for high-speed internet/broadband service.

FALSE f. Free Wi-Fi access will be provided for community room for resident only usage.

FALSE g. Each Unit is provided free individual high-speed Internet access
OR
FALSE h. Each Unit is provided free individual Wi-Fi access

FALSE i.,j. Bath fan wired to primary light with delayed timer, or, continuous exhaust by ERV/DOAS OR Bath Fan with humidistat

TRUE k. Fire Prevention - all Ranges equipped with temperature limiting controls
OR
FALSE l. Fire Suppression - Cooking surfaces are equipped with fire suppression features

FALSE m. Rehab only- Each apartment has dedicated space, drain and electrical hookups to accept a permanently installed dehumidification system OR
FALSE n. All development types- Each Unit is equipped with a permanent dehumidification system

FALSE o. All interior doors within units are solid core

FALSE p. At minimum one USB charging port in each Kitchen, Living room and all bedrooms

TRUE q. All Kitchen light fixtures are LED and meet MDCR lighting guidelines

FALSE r. Shelf or ledge outside each primary apartment entry door located in an interior hallway

FALSE s. New Construction only- Each unit to have balcony or patios minimum depth 5' clear from face of building. Minimum 30 square feet.

DEV Name: Derby Run Apartments I

For all developments exclusively serving elderly tenants upon completion of construction/rehabilitation:
(optional point items)

FALSE a. All cooking ranges will have front controls

FALSE b. All full bathrooms will have an independent or supplemental heat source

FALSE c. All entrance doors have two eye viewers, one at 42" and the other at standard height

For all rehabilitation and adaptive reuse developments, upon completion of construction/rehabilitation:
(optional point items)

FALSE The structure is listed individually in the National Register of Historic Places or is located in a registered historic district and certified by the Secretary of the Interior as being of historical significance to the district, and the rehabilitation will **be completed in such a manner as to be eligible for historic rehabilitation tax credits.**

Building Structure:

Number of Stories

X **Low-Rise** (1-5 stories with any structural elements being wood frame construction)

[ ] **Mid-Rise** (5-7 stories with no structural elements being wood frame construction)

[ ] **High-Rise** (8 or more stories with no structural elements being wood frame construction)

Accessibility:

I certify that the development plans and specifications meet all requirements of the federal Americans with Disabilities Act and Fair Housing Act (if applicable).

I certify that the development plans and specifications meet all requirements of HUD regulations interpreting the accessibility requirements of section 504 of the Rehabilitation Act. Complying units must be "permanently accessible," rather than to "adaptable" standards. Please reference Uniform Federal Accessibility Standards(UFAS) for more particular information.

Check one or none of the following point categories, as appropriate:

[ ] Any development in which (i) the greater of 5 units or 10% of the total # of units will be assisted by HUD project-based vouchers or another form of documented and binding federal, state or locality project-based rent subsidies in order to ensure occupancy by extremely low-income persons; and (ii) the greater of 5 or 10% of the units will conform to HUD regulations interpreting accessibility requirements of Section 504 of the Rehabilitation Act.
(All of the units described in (ii) above must include roll-in showers (must contain pemanent grab bars and fixed seats), roll under sinks, and front controls for ranges unless agreed to by the Authority prior to the applicant's submission of its application.)
60 pts.

[ ] Any development in which the greater of 5 units or 10% of the total # of units (i) have rents within HUD's Housing Choice Voucher payment standard; (ii) conform to HUD regulations interpreting accessibility requirements of Section 504 of the Rehabilitation Act
30 pts.

X Any development in which **five percent (5%)** of the total # of units (i) conform to HUD regulations interpreting accessibility requirements of Section 504 of the Rehabilitation Act
15 pts.

For any accessibility option elected above, all common space must also conform to accessibility requirements of HUD Section 504 regulations.

DEV Name: Derby Run Apartments I

INITIALS JDN

As architect of record for the above referenced development, the above certifications are correct to the best of my knowledge.

Signed: 

Printed Name: J. Dyke Nelson

Title: Architect

Virginia Registration #: 0401017290

Phone: 225-224-3363

Date:

NOTE TO ARCHITECT: If representaions in plans and specifications and/or any information certified in this certification is misrepresented then the architect may be penalized. Any change in this form may result in disqualification or a reduction of points under the scoring system. If you have any questions, please call JD Bondurant at VHDA (804) 343-5725.

Return this certification to the developer for inclusion in the tax credit application package.

DEV Name: Derby Run Apartments I

Appendix F
VHDA's Universal Design Certification

FALSE Units in the development will meet VHDA's **Universal Design Guidelines.** Before issuance of IRS Form 8609, applicant will provide documentation to VHDA as evidence that such units meet VHDA's Universal Design guidelines.

The number of rental units that will meet these standards:	0
The total number of rental units in this development:	160

NOTE: For Elderly Developments, 100% of the units in the development must meet the Universal Design standards in order to qualify for points.

For Family Developments, points are awarded based on a percentage of the number of units meeting the Universal Design standards.

For the tax credit applicant to qualify for points associated with Universal Design, the architect of record must be on VHDA's list of Universal Design certified architects. VHDA Universal Design Certifications are only valid for 2019 applications if certification date is after January 1, 2014

All tax credit applications which include amenity points for providing VHDA Universally Designed dwelling units must include plans that clearly identify the following items in the format found on vhda.com or no points will be awarded:

- Overall building plans identifying the location of Universal Design dwelling units, and the means of vertical transportation (if applicable), along the accessible route(Minimum scale 1/8"=1'-0"). Include a legend and Universal Design General Notes section. Anything other than a fully handicap accessible elevator must have been presented to and approved by VHDA for this project at least two weeks prior to submission of reservation application.

- Site plan and building plans identifying accessible pedestrian routes from all Universal Design units to accessible parking, leasing office, community room, laundry facility, mailboxes, garbage collection areas and public transportation pick up areas. Architect must identify running slope and cross slope of route, and consider any obstructions. Include required number of accessible parking spaces, a legend for the accessible route, and a Universal Design general notes section.

- Enlarged Universal Design unit plans (Minimum scale 1/4"=1'-0") identifying clearances and all Essential Elements

Signed: _____

Printed Name: J. Dyke Nelson

Architect of Record
(same individual as on page 7)

Date: 8/27/19

DEV Name: Derby Run Apartments I

INITIALS JDN

G

Zoning Certification Letter

(MANDATORY)

ZC19-0029

City of Hampton, Virginia

Zoning Certification

Complete/submit the following and allow up to 5 business days for processing:

1. **This form completed in its entirety**
2. **Check payment of $25 for single-family and two-family dwellings, $75 for all others, payable to City of Hampton**
3. **A. For return by mail: self-addressed return envelope, only standard US mail returns accepted (we cannot return via FedEx, UPS, Priority Mail, etc.)**
   B. For return by emailed PDF, provide email address erush@williamsmullen.com

Submittals are made by mail only to the following address:
City of Hampton, Attn: Zoning Staff
Community Development Department
22 Lincoln Street, 3rd Floor
Hampton, Virginia 23669

Freedom of Information Act (FOIA) Notice:
Requests for copies of any reports, permits or other documents related to the items listed below must be made to the FOIA Coordinator, Ann Crist at 22 Lincoln Street, Hampton, VA 23669 or 757-728-2444.

Applicant to Complete:

Property Address: Magruder Estates Resub 3 L9A

LRSN, if known: 6000964

Description of current use of the property: Apartments

City of Hampton to Complete:

This property is located in a/an RM zoning district

This property is located in the following overlay zoning districts: D-AICUZ, D-MVC

The use of this property as described by the applicant is ✓ conforming ___ legally non-conforming ___ illegal

This property was the subject of a rezoning ___ No ✓ Yes, Case No. RZ 851

This property was the subject of a use permit, conditional privilege, or special exception approval ✓ No ___ Yes, Case No(s). _____

This property was the subject of a variance approval ___ No ✓ Yes, Case No. VA96-00061

This property has active zoning violation notices on file ✓ No ___ Yes, Record No. _____

By: Angela Pafflett, Zoning Official Date 21 May 19

This response is not an official order, requirement, decision or determination issued pursuant to Virginia Code Section 15.2-2307.

The Hampton Zoning Ordinance is available online at www.municode.com.

HAMPTON VA

ZONING CERTIFICATION

DATE:

TO: Virginia Housing Development Authority
601 South Belvidere Street
Richmond, Virginia 23220
Attention: JD Bondurant

RE: ZONING CERTIFICATION

Name of Development: Derby Run Apartments

Name of Applicant: Derby Run I, LP

Name of Current Owner: Derby Run Associates, L.P.

The above-referenced Applicant has asked this office to complete this form letter regarding the zoning of the proposed Development (more fully described below). This certification is rendered solely for the purpose of confirming property zoning for the site of the Development. It is understood that this letter will be used by the Virginia Housing Development Authority solely for the purpose of determining whether the Development qualifies for points available under VHDA's Qualified Allocation Plan for housing tax credits.

DEVELOPMENT DESCRIPTION:

Development Address: 6 Derby Drive
Hampton, Virginia 23666

Legal Description: ALL THAT certain lot, piece or parcel of land, located in the City of Hampton, Virginia, known, numbered and designated as Lot 9-A, as shown on that certain plat entitled "Subdivision of Lots 9 & 10, Magruder Estates, Section 3, Hampton, Virginia, property of Hampton Venture No. One, Scale: 1" = 100 feet, November 18, 1993", made by Horton & Dodd, P.C. and recorded in the Clerk's Office of the Circuit Court of the City of Hampton, Virginia, in Plat Book 11, at page 19.

Proposed Improvements:

Rehabilitation: 160 # Units 16 # Buildings 178,800 Total Floor Area Sq. Ft.

HAMPTON VA

Current Zoning: RM allowing a density of N/A units per acre, and the following other applicable conditions: _____

Other Descriptive Information:

LOCAL CERTIFICATION:

Check one of the following as appropriate:

☑ The zoning for the proposed development described above is proper for the proposed residential development. To the best of my knowledge, there are presently no zoning violations outstanding on this property. No further zoning approvals and/or special use permits are required.

☐ The development described above is an approved non-conforming use. To the best of my knowledge, there are presenting no zoning violations outstanding on this property. No further zoning approvals and/or special use permits are required.

Angela Leflett
Signature

Angela Leflett
Printed Name

Zoning Official
Title of Local Official or Civil Engineer

757-727-1408
Phone:

27 June 19
Date:

NOTES TO LOCALITY:

1. Return this certification to the developer for inclusion in the tax credit application package.
2. Any change in this form may result in disqualification of the application.
3. If you have any questions, please call the Tax Credit Allocation Department at (804) 343-5518.

39642986_1

H

Attorney's Opinion

(MANDATORY)

Direct Dial: 804.420.6915
adomson@williamsmullen.com

August 29, 2019

TO: Virginia Housing Development Authority
601 South Belvidere Street
Richmond, VA 23220

RE: 2019 Tax Credit Reservation Request

Name of Development: Derby Run Apartments I
Name of Owner: LRC – Derby Run 1, LP

Gentlemen:

This undersigned firm represents the above-referenced Owner as its counsel. It has received a copy of and has reviewed the completed application package dated August 28, 2019 (of which this opinion is a part) (the "Application") submitted to you for the purpose of requesting, in connection with the captioned Development, a reservation of low income housing tax credits ("Credits") available under Section 42 of the Internal Revenue Code of 1986, as amended (the "Code"). It has also reviewed Section 42 of the Code, the regulations issued pursuant thereto and such other binding authority as it believes to be applicable to the issuance hereof (the regulations and binding authority hereinafter collectively referred to as the "Regulations").

Based upon the foregoing reviews and upon due investigation of such matters as it deems necessary in order to render this opinion, but without expressing any opinion as to either the reasonableness of the estimated or projected figures or the veracity or accuracy of the factual representations set forth in the Application, the undersigned is of the opinion that:

1. It is more likely than not that the inclusion in eligible basis of the Development of such cost items or portions thereof, as set forth in the Hard Costs and Owners Costs section of the Application form, complies with all applicable requirements of the Code and Regulations.

2. The calculations (a) of the Maximum Allowable Credit available under the Code with respect to the Development and (b) of the Estimated Qualified Basis of each building in the Development comply with all applicable requirements of the Code and regulations, including the selection of credit type implicit in such calculations.

3. The information set forth in the Unit Details section of the Application form as to proposed rents satisfies all applicable requirements of the Code and Regulations.

4. The site of the captioned Development is controlled by the Owner, as identified in the Site Control section of the Application.

5. It is more likely than not that the representations made in the Rehab Information section of the Application form as to the Development's compliance with or exception to the Code's minimum expenditure requirements for rehabilitation projects are correct.

6. After reasonable investigation, the undersigned has no reason to believe that the representations made under the Rehab Information (Ten-Year Rule) section of the Application form as to the Development's compliance with or eligibility for exception to the ten-year "look-back rule" requirement of Code §42(d)(2)(B) are not correct.

Finally, the undersigned is of the opinion that, if all information and representations contained in the Application and all current law were to remain unchanged, upon the placement in service of each building of the Development, the Owner would be eligible under the applicable provisions of the Code and the Regulations to an allocation of Credits in the amount(s) requested in the Application.

This opinion is rendered solely for the purpose of inducing the Virginia Housing Development Authority ("VHDA") to issue a reservation of Credits to the Owner. Accordingly, it may be relied upon only by VHDA and may not be relied upon by any other party for any other purpose.

This opinion was not prepared in accordance with the requirements of Treasury Department Circular No. 230. Accordingly, it may not be relied upon for the purpose of avoiding U.S. Federal tax penalties or to support the promotion or marketing of the transaction or matters addressed herein.

WILLIAMS MULLEN, A Professional Corporation

By:_____
Allison T. Domson
Its: Shareholder

I

Nonprofit Questionnaire

(MANDATORY for points or pool)

NOT APPLICABLE

J

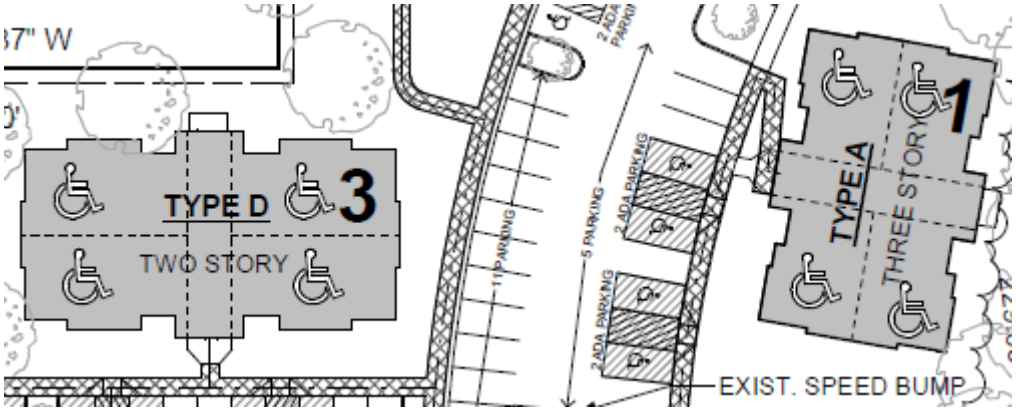
Relocation Plan

(MANDATORY, if tenants are displaced**)**

RESIDENT RELOCATION PLAN
Derby Run Apartments
6 Derby Drive Hampton, VA 23666

These Relocation Plan guidelines are established to lessen the adverse effects on tenants facing displacement during the execution of contracted demolition, substantial rehabilitation of occupied apartment dwellings. It is the policy of the owner/developer to work with the contractor to avoid displacing resident households, whenever possible.

Limited resident relocation is expected as part of the proposed acquisition and rehabilitation of Phase 1 of Derby Run Apartments in Hampton, VA. Residents living in one of the 8 ADA units that will be remodeled should be the only residents effected. These units will become HUD regulated and will adhere to requirements of section 504 of the Rehabilitation Act. They will be located in buildings #1 and #3 as shown below. The rehabilitation of these 8 units will be completed in the first months of the 12-month construction period (expected December 2019 – February 2020).



It is important to note that these units are not currently ADA units or occupied by ADA qualifying tenants, therefore relocation of these tenants to new ADA units is not required. It is the owner/developer's intent to use available remodeled standard vacant units to temporarily house residents currently occupying one of the 8 units that will be remodeled as ADA units. If for unforeseen reasons there is not a remodeled unit of the same or larger type to temporarily relocate a resident into, the owner would pay all reasonable expenses and provide the required assistance to move an affected family into a hotel on a temporary basis until an appropriate unit becomes available. Temporary moves are expected to last no longer than 30 days. All costs associated with relocation of these tenants will be paid by the owner.

Upon completion, the newly renovated ADA units will be marketed and leased to ADA qualifying tenants. Should the new ADA units be leased to existing tenants of Derby Run Apartments, all costs associated with their move will be paid by the owner. Lastly, the tenants relocated away from these units (the tenants discussed in the previous paragraph) will have the option to remain where they are, or select a new, readily available unit. Again, all costs associated with any further relocation will be paid by the owner. This process should allow for the remodel of the ADA units with the least impact to tenants.

Excluding relocations due to the 8 ADA units, no other resident relocation is expected. LRC has extensive experience with resident-in-place rehabs and the proposed scope of work should not require relocation outside of the ADA units discussed. Of course, we are very sensitive to the needs of our new residents

and make every effort to inconvenience them as little as possible, usually spending no more than two days in an individual unit. All relocation efforts will be in compliance with all tenant notice requirements and with all applicable HUD regulations, policies and guidelines regarding relocation.

By: _____

Project Manager

K

Documentation of Development Location:

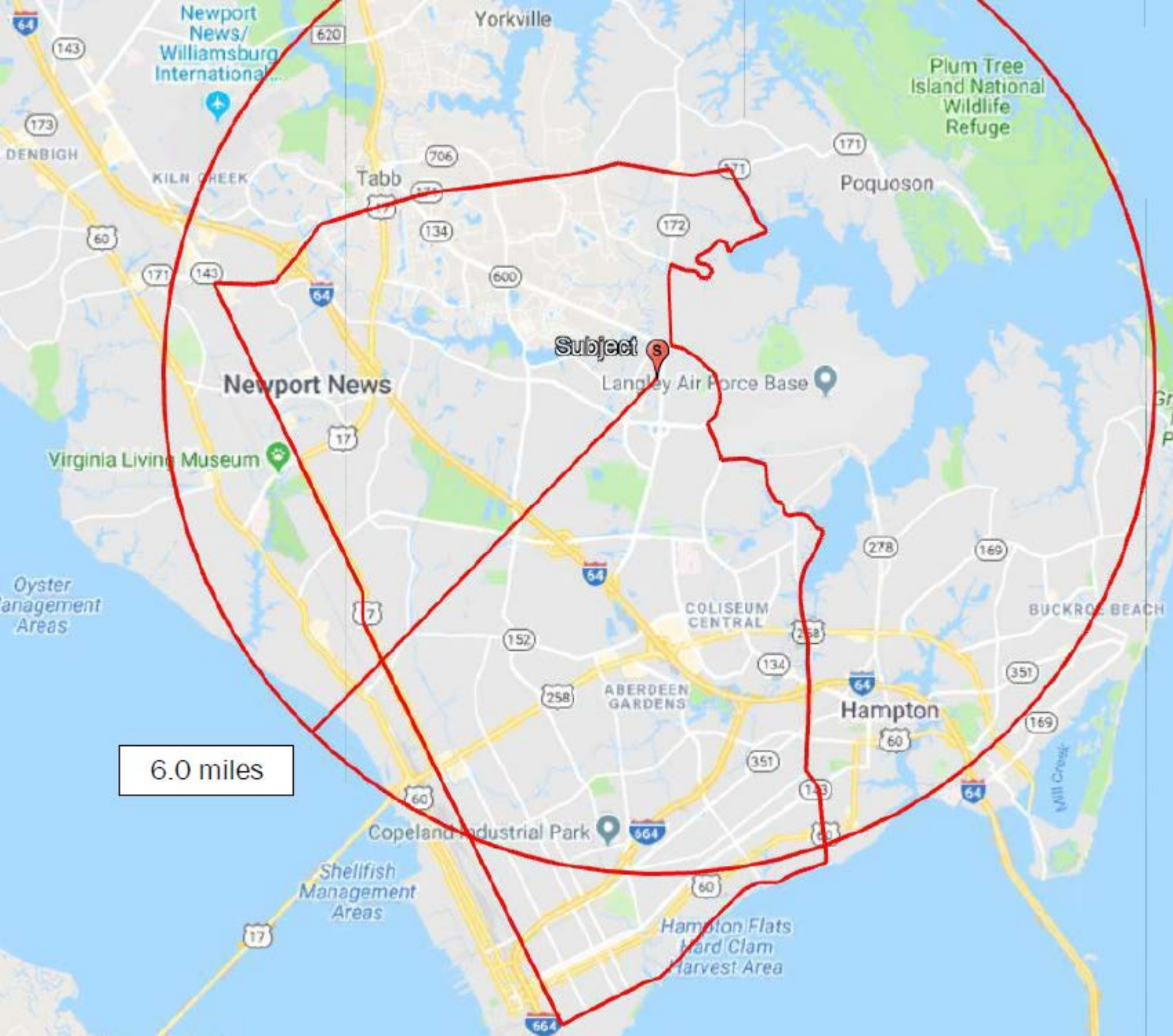
K.1

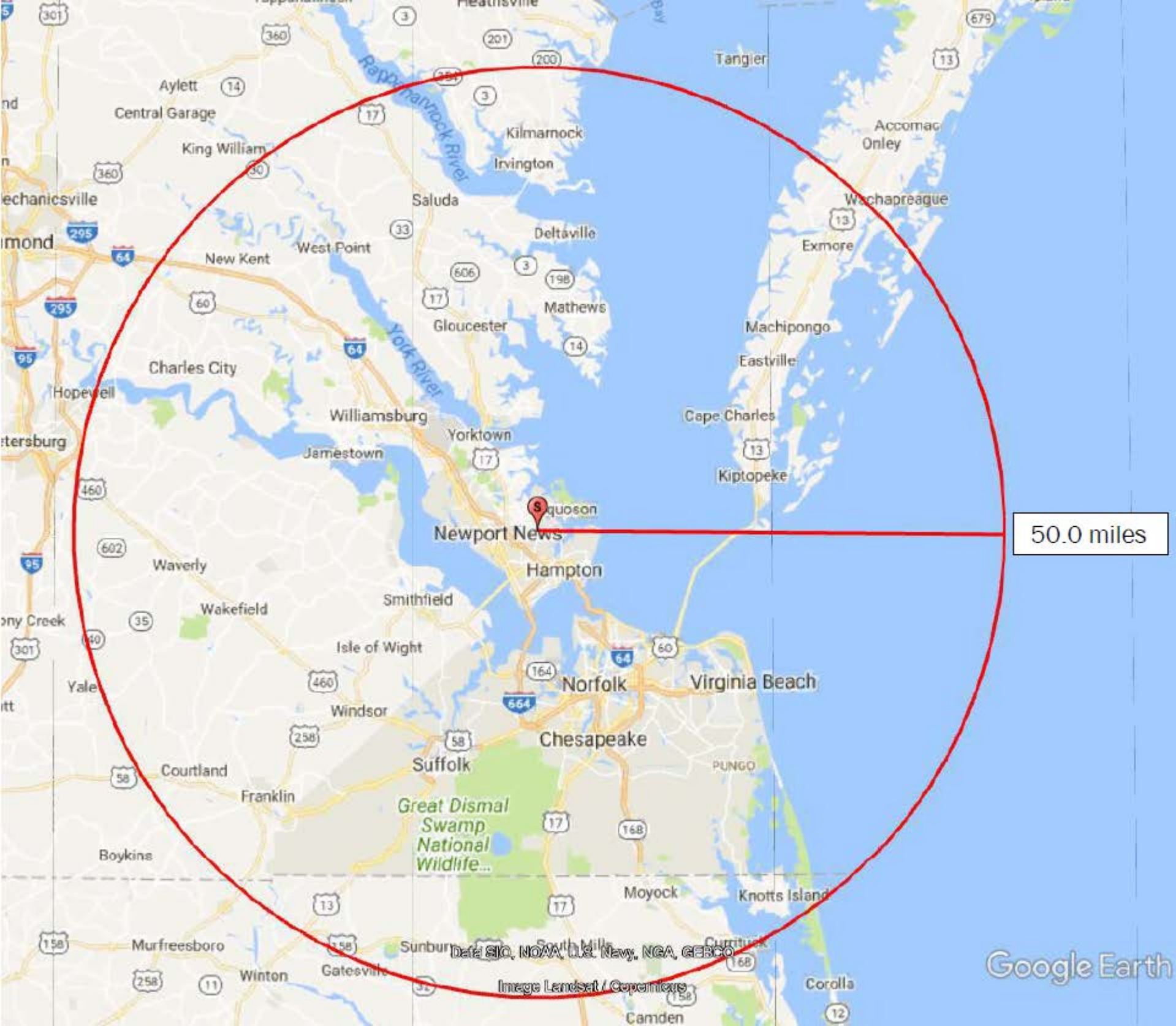
Revitalization Area Certification

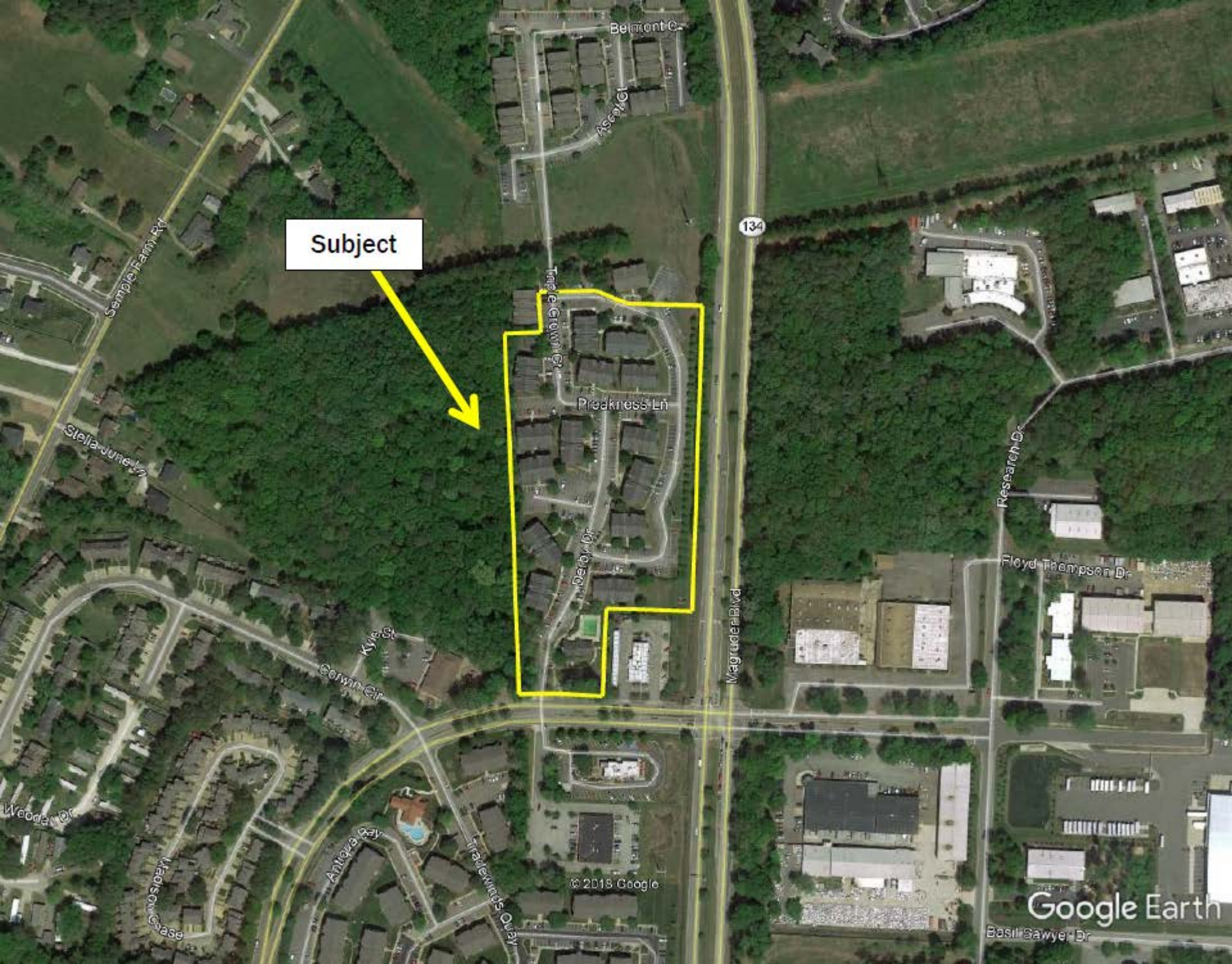
NOT APPLICABLE

K.2

Location Map


Newport News/ Williamsburg International
Yorkville
Plum Tree Island National Wildlife Refuge
DENBIGH
KILN CREEK
Tabb
Poquoson
Subject
Newport News
Langley Air Force Base
Virginia Living Museum
Oyster Management Areas
COLISEUM CENTRAL
BUCKROE BEACH
ABERDEEN GARDENS
Hampton
Copeland Industrial Park
Shellfish Management Areas
Hampton Flats Hard Clam Harvest Area
6.0 miles


50.0 miles
Newport News
Hampton
Norfolk
Virginia Beach
Chesapeake
Suffolk
Williamsburg
Yorktown
Jamestown
Charles City
Gloucester
Mathews
Kilmarnock
Irvington
Tangier
Accomac
Onley
Wachapreague
Exmore
Eastville
Machipongo
Cape Charles
Kiptopeke
Deltaville
Saluda
West Point
New Kent
King William
Aylett
Central Garage
Rappahannock River
York River
Waverly
Wakefield
Smithfield
Isle of Wight
Windsor
Courtland
Franklin
Great Dismal Swamp National Wildlife...
Boykins
Moyock
Knotts Island
Corolla
Currituck
Murfreesboro
Winton
Gatesville
Camden
PUNGO
Yale
Tappahannock
Heathsville
Hopewell
Petersburg
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image Landsat / Copernicus
Google Earth


Subject
Belmont Ct
Ascot Ct
Triple Crown Ct
Preakness Ln
Derby Dr
Magruder Blvd
134
Research Dr
Floyd Thompson Dr
Sample Farm Rd
Stella June Ln
Kyle St
Corwin Cir
Woodlark Dr
Antigua Bay
Tradewinds Quay
Hadson Crest
© 2018 Google
Google Earth
Basil Sawyer Dr

K.3

Surveyor's Certification of Proximity to Public Transportation

NOT AVAILABLE

L

PHA/Section 8 Notification Letter

NOT APPLICABLE

M

Locality CEO Response Letter

NOT APPLICABLE

N

Homeownership Plan

NOT APPLICABLE

O

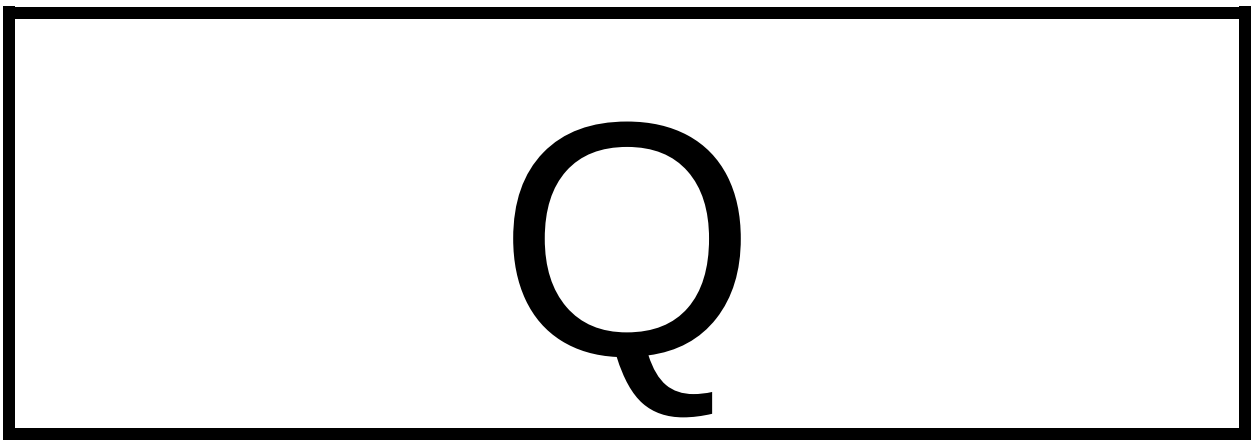
Plan of Development Certification Letter

NOT APPLICABLE

P

Copies of 8609s to Certify Developer Experience and Partnership agreements

NOT AVAILABLE



Documentation of Rental Assistance

NOT APPLICABLE

R

Documentation of Operating Budget

NOT AVAILABLE

S

Supportive Housing Certification

NOT APPLICABLE

T

Funding Documentation

NOT AVAILABLE

U

Documentation to Request Exception to Restriction-Pools with Little/No Increase in Rent Burdened Population

NOT APPLICABLE

V

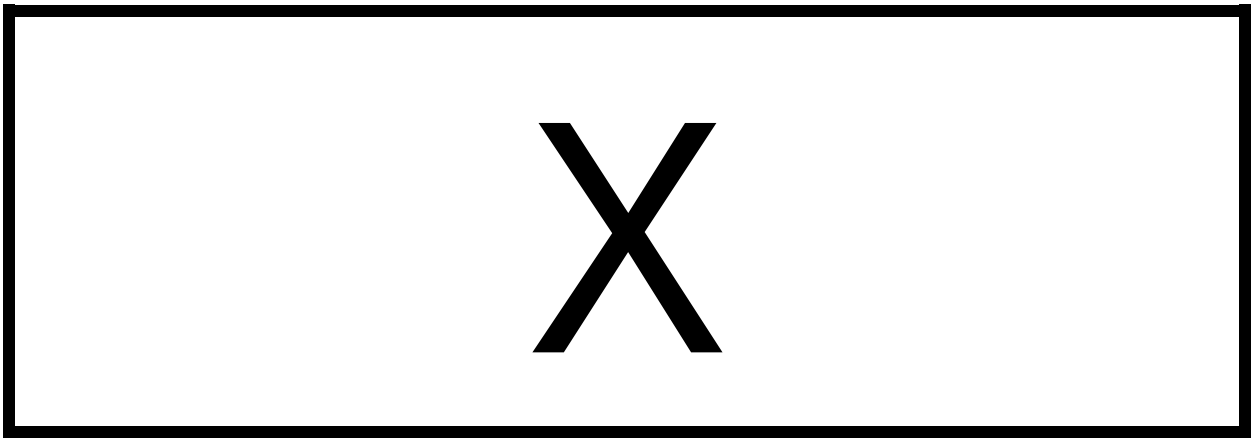
Nonprofit or LHA Purchase Option or Right of First Refusal

NOT APPLICABLE

W

(Reserved)

RESERVED



Marketing Plan

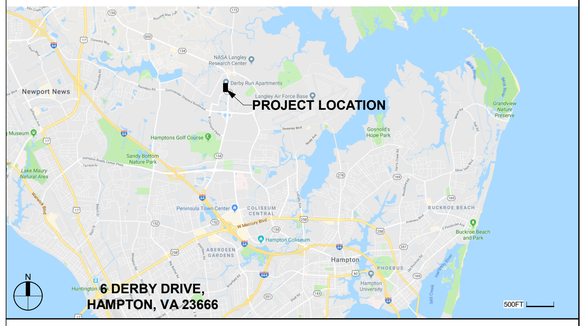
For units meeting accessibility requirements of HUD section 504

NOT AVAILABLE

DERBY RUN APARTMENTS I

6 DERBY DRIVE, HAMPTON, VA 23666

VICINITY MAP



SHEET LIST

NO.	SHEET TITLE	ISSUED	REVISED
GENERAL			
G1.0	TITLE SHEET	08/01/19	08/26/19
G2.1	OUTLINE SPECIFICATIONS	08/01/19	
G4.0	ACCESSIBLE UNIT REQUIREMENTS	08/01/19	
G4.1	ADA DIAGRAMS	08/01/19	
CIVIL			
C-1	COVER SHEET	08/01/19	
C-2	EXISTING CONDITIONS	08/01/19	
C-3	DEMOLITION PLAN	08/15/19	
C-4	SITE LAYOUT	08/15/19	
C-5	GRADING PLAN	08/15/19	
C-6	DETAILS	08/15/19	
ARCHITECTURE			
A0.1	ARCHITECTURAL SITE PLAN	08/01/19	08/17/19
A0.2	SITE DETAILS	08/01/19	
A0.3	AREA PLANS	08/01/19	08/26/19
A0.4	AREA PLANS	08/01/19	08/17/19
A1.01	DEMO - FLOOR PLAN - BLDG TYPE A	08/01/19	
A1.02	NEW - FLOOR PLAN - BLDG TYPE A	08/01/19	
A1.03	DEMO - FLOOR PLAN - BLDG TYPE B	08/01/19	
A1.04	NEW - FLOOR PLAN - BLDG TYPE B	08/01/19	
A1.05	DEMO - FLOOR PLAN - BLDG TYPE C	08/01/19	
A1.06	NEW - FLOOR PLAN - BLDG TYPE C	08/01/19	
A1.07	DEMO - FLOOR PLAN - BLDG TYPE D	08/01/19	
A1.08	NEW - FLOOR PLAN - BDLG TYPE D	08/01/19	
A2.01	NEW - BUILDING ELEVATIONS - BLDG TYPE A	08/01/19	08/17/19
A2.02	NEW - BUILDING ELEVATIONS - BLDG TYPE B	08/01/19	08/17/19
A2.03	NEW - BUILDING ELEVATIONS - BLDG TYPE C	08/01/19	08/17/19
A2.04	NEW - BUILDING ELEVATIONS - BLDG TYPE D	08/01/19	08/17/19
A2.05	NEW - BUILDING ELEVATIONS - CLUBHOUSE	08/01/19	
A4.1	ENLARGED 2BR UNIT PLANS & INTERIOR ELEV.	08/01/19	08/17/19
A4.1.2	GROUND FLOOR UNIT MODIFICATIONS	08/01/19	08/17/19
A4.2	ENLARGED 2BR HC UNIT PLANS & INTERIOR ELEV.	08/01/19	08/17/19
A4.3	ENLARGED 3BR UNIT PLANS & INTERIOR ELEV.	08/01/19	
A4.4	ENLARGED 3BR HC UNIT PLANS & INTERIOR ELEV.	08/01/19	
A4.5	ENLARGED CLUBHOUSE UNIT PLANS & INTERIOR ELEV.	08/01/19	
A6.0	SCHEDULES	08/01/19	08/17/19
A7.0	MILLWORK DETAILS	08/01/19	

BUILDING STATISTICS

PROJECT SUMMARY:

BUILT IN 1994, DERBY RUN APARTMENTS I IS AN EXISTING MULTI-FAMILY COMPLEX CONSISTING OF 160 UNITS IN 14 RESIDENTIAL TWO-STORY & THREE-STORY BUILDINGS, WITH AN ADDITIONAL CLUBHOUSE, SITUATED ON 8.73 ACRES.
ADDRESS: 6 DERBY DRIVE, HAMPTON, VA 23666
THE SCOPE OF THE PROPOSED RENOVATIONS WILL INCLUDE UPDATING ITEMS THAT HAVE NOT BEEN RECENTLY UPDATED INCLUDING KITCHEN AND BATH UPGRADES AND REMODELS, NEW WINDOWS, ROOF REPLACEMENT, AND GENERAL REPAIRS THROUGHOUT THE PROPERTY AS WELL AS ENERGY EFFICIENT HVAC SYSTEMS IN ALL UNITS. THE SCOPE OF WORK INCLUDES CONVERTING 8 EXISTING UNITS TO ACCESSIBLE UNITS (5%) AND EQUIPPING 4 EXISTING UNITS FOR THE AUDITORY/VISUAL IMPAIRED (2%). ADDITIONALLY, THE RENOVATIONS WILL COMPLY WITH THE VHDA MINIMUM DESIGN & CONSTRUCTION STANDARDS

UNIT MIX:

THIS PROJECT INCLUDES:

UNIT TYPES					
UNIT TYPE	BEDS	BATHS	GSF	NSF	UNIT TOTALS
2BR	2	2	998.8325	878.19	100
2BR HC	2	1	998.8325	878.19	4
3BR	3	2	1252.19	1105.68	52
3BR HC	3	2	1252.19	1105.68	4
TOTAL					160

PARKING SPACES	
STANDARD PARKING	312
ADA PARKING	15
MAINTANENCE VAN PARKING	1
TOTAL	328

BUILDING DATA												
			UNIT TYPES									
BLDG TYPE	BLDG UDENTIFICATION	NO. OF BLDGS	2BR	2BR (HC)	3BR	3BR (HC)	FLOORS	FIRST FLOOR GSF	SECOND FLOOR GSF	THIRD FLOOR GSF	BLDG TOTAL GSF	BLDG TOTAL NSF
BLDG TYPE A	1, 4, 7, 8, 10, 11, 13, 14	8	92	4	-	-	3	3995.33	3995.33	3995.33	95887.92	84402.24
BLDG TYPE B	6	1	8	-	-	-	2	3995.33	3995.33	-	7990.66	7033.52
BLDG TYPE C	2, 5, 9, 12	4	-	-	44	4	3	5008.76	5008.76	5008.76	60105.12	53072.64
BLDG TYPE D	3	1	-	-	8	-	2	5008.76	5008.76	-	10017.52	8845.44
TOTAL LEASABLE		14	-	-	-	-	-	-	-	-	174001.20	153353.80
CLUBHOUSE		1	-	-	-	-	1	-	-	-	2307.95	2200.77
MAINTENACE BULDING		1	-	-	-	-	1	-	-	-	900	800
PROPERTY TOTAL		15	100	4	52	4	-	-	-	-	177209.20	156345.60

SIGNATURES

PROJECT ARCHITECT	**DNA Workshop**	**OWNER**	**LRC - Willow View, LP**
ARCHITECT ADMINISTERING CONTRACT	**DNA Workshop**	**LENDER**	**xxx**
CONTRACTOR	**Empire Corporation**	**BONDING COMPANY**	**xxx**

PROJECT DIRECTORY

OWNER / REPRESENTATIVE:
LEDIC REALTY COMPANY,LLC
2 METROPLEX DRIVE, SUITE 235
BIRMINGHAM, AL 35209

ARCHITECT:
DYKE NELSON ARCHITECTURE
235 SOUTH 14TH STREET, STE A
BATON ROUGE, LA 70802
T: 225.224.3363

DYKE NELSON - PRINCIPAL
E: dyke@dna-workshop.com

AKHEIL SHAH- PROJECT MANAGER
E: akheil@dna-workshop.com

GRAPHIC SYMBOLS

- NORTH ARROW
- LEVEL NAME / ELEVATION — LEVEL & ELEVATION TAG
- C0.00 — KEYNOTE TAG
- CENTERLINE
- SPOT ELEVATION
- REVISION NUMBER
- #"/12" — RISE/RUN ROOF SLOPE
- # ON SHEET / INTERIOR ELEVATION TAG / SHEET #
- # ON SHEET / EXTERIOR ELEVATION TAG / SHEET #
- # ON SHEET / SHEET #
- CALLOUT TAG
- DOOR TAG
- WINDOW TAG
- WALL TAG
- ROOM NAME / ROOM NUMBER / ROOM AREA
- OCCUPANCY USE
- OCCUPANT TOTAL ? PERSONS — OCCUPANT TOTAL / ROOM SF / OCCUPANT LOAD

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
ALUM	ALUMINUM
ARCH	ARCHITECTURAL
BLDG	BUILDING
BOT	BOTTOM
CLR	CLEAR
CLG	CEILING
CLO	CLOSET
COL	COLUMN
CONC	CONCRETE
CORR	CORRIDOR
DIA	DIAMETER
DIM	DIMENSION
DN	DOWN
DWG	DRAWING
ELECT	ELECTRICAL
EQ	EQUAL
EXT	EXTERIOR
FA	FIRE ALARM
FE	FIRE EXTINGUISHER
FIN	FINISH
FURR	FURRING
FLR	FLOOR
GYP. BD.	GYPSUM BOARD
GWB	GYPSUM WALL BOARD
HR	HOUR
HT	HEIGHT
IN	INCH
MAT	MATERIAL
MTL	METAL
MBM	METAL BUILDING MANUFACTURER
N	NORTH
OC	ON CENTER
OD	OUTSIDE DIAMETER
PROP	PROPERTY
PTD	PAINTED
PTC	PRIOR TO CONSTRUCTION
RM	ROOM
SPEC	SPECIFICATION
STD	STANDARD
TYP	TYPICAL
TBD	TO BE DETERMINED
VER	VERIFY

GENERAL NOTES

1. THESE DRAWINGS ARE THE GRAPHIC AND PICTORIAL PORTION OF THE CONTRACT DOCUMENTS. THESE DRAWINGS CONVEY THE DESIGN INTENT, LOCATION AND DIMENSIONS OF THE WORK.
2. THE CONTRACTOR SHALL CAREFULLY STUDY AND COMPARE THESE DRAWINGS WITH OTHER PARTS OF THE CONTRACT DOCUMENTS, WHETHER APPEARING HEREIN OR ISSUED SEPARATELY, AND SHALL AT ONCE REPORT TO DNA ANY ERRORS, INCONSISTENCIES, OR OMISSIONS DISCOVERED.
3. ALL PORTIONS OF THE CONTRACT DOCUMENTS, WHETHER APPEARING HEREIN OR ISSUED SEPARATELY ARE INTENDED TO BE COMPLEMENTARY. WHAT IS CALLED FOR BY ANY PORTION THEREOF SHALL BE AS IF CALLED FOR BY ALL PORTIONS OF THE CONTRACT DOCUMENTS. ANY APPARENT OR OBVIOUS INCONSISTENCIES APPEARING WITHIN ANY PORTION OF THE CONTRACT DOCUMENTS SHALL BE BROUGHT TO THE ATTENTION OF DNA BY THE CONTRACTOR PRIOR TO PROCEEDING WITH WORK.
4. THESE DRAWINGS DO NOT INDICATE OR DESCRIBE ALL WORK REQUIRED FOR FULL PERFORMANCE AND COMPLETION OF THE CONTRACT REQUIREMENTS. ON THE BASIS OF THE GENERAL SCOPE INDICATED OR DESCRIBED HEREIN, THE CONTRACTOR SHALL FURNISH ALL ITEMS REQUIRED FOR PROPER EXECUTION AND COMPLETION OF THE WORK, WHETHER OR NOT SAID ITEMS AND/OR ASSOCIATED WORK ARE SPECIFICALLY IDENTIFIED HEREIN.
5. THE CONTRACTOR SHALL VERIFY THAT NO CONFLICTS EXIST IN LOCATIONS OF ALL MECHANICAL, TELEPHONE, ELECTRICAL, LIGHTING, PLUMBING, AND SPRINKLER EQUIPMENT (TO INCLUDE ALL ASSOCIATED PIPING, DUCTWORK, AND/OR CONDUIT) AND THAT ALL REQUIRED CLEARANCES FOR THE INSTALLATION AND MAINTENANCE OF THE ASSOCIATED WIRING AND EQUIPMENT CAN BE PROVIDED.
6. THERE SHALL BE NO SUBSTITUTIONS OF MATERIALS WHERE A MANUFACTURER IS SPECIFIED. WHERE THE TERM 'APPROVED ALTERNATE' IS USED, DNA SHALL DETERMINE THE SUITABILITY OF ANY ALTERNATE MATERIALS PROPOSED BY THE CONTRACTOR. ALTERNATE MATERIALS SHOULD ONLY BE SUBMITTED FOR REVIEW BY DNA WHERE AN IMPROVEMENT IN QUALITY OR AN ASSOCIATED COST SAVINGS CAN BE DEMONSTRATED. ALL ALTERNATE MATERIALS SUBMITTED MUST BE ACCOMPANIED BY FOUR (4) COPIES OF ALL MANUFACTURER'S SPECIFICATIONS PERTAINING TO SAID MATERIAL(S).
7. WHERE COMPONENTS OR MATERIALS ARE NOTED AS "BUILDING STANDARD", CONTRACTOR SHALL INSTALL ITEMS AS SPECIFIED BY THE PROJECT ARCHITECT AND/OR OWNER'S REPRESENTATIVES.

SUBMITTAL REQUIREMENTS

GENERAL

THE CONTRACTOR SHALL REVIEW, APPROVE, AND STAMP EACH ITEM WHICH IS SUBMITTED. BY REVIEWING, APPROVING, STAMPING, AND MAKING SAID SUBMITTALS, THE CONTRACTOR CERTIFIES THAT HE(SHE) HAS DETERMINED AND VERIFIED MATERIALS, FIELD MEASUREMENTS, AND FIELD CONSTRUCTION CRITERIA RELATED THERETO (OR THAT HE WILL DO SO); AND THAT HE HAS CHECKED AND COORDINATED THE INFORMATION CONTAINED WITHIN SUCH SUBMITTALS WITH THE REQUIREMENTS OF THE WORK AND OF THE CONTRACT DOCUMENTS.

THE CONTRACTOR SHALL NOT BE RELIEVED OF RESPONSIBILITY FOR ANY DEVIATION FROM THE REQUIREMENTS OF THE CONTRACT DOCUMENTS BY DNA'S REVIEW OF ANY OF THE AFOREMENTIONED SUBMITTALS. FURTHER, THE CONTRACTOR SHALL NOT BE RELIEVED FROM RESPONSIBILITY FOR ERRORS OR OMISSIONS CONTAINED WITHIN ANY SUBMITTAL BY DNA'S REVIEW OF SAID SUBMITTAL.

NOTWITHSTANDING ANY QUANTITIES INDICATED OR SPECIFICALLY STATED ON ANY SPECIFIC SUBMITTAL, THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL QUANTITIES OF MATERIALS OR EQUIPMENT REQUIRED TO PROPERLY COMPLETE THE WORK.

SHOP DRAWINGS WHICH ARE REQUIRED TO BE SUBMITTED:

1. SHALL BE DRAWN TO A SCALE SUFFICIENT FOR CLARITY AND COORDINATION
2. SHALL SHOW NECESSARY WORKING AND ERECTION DIMENSIONS AND NECESSARY DETAILS, SECTIONS, PLANS, AND ELEVATIONS
3. SHALL BE PROPERLY CROSS-REFERENCED TO THE APPROPRIATE PAGES OF THESE DRAWINGS TO CLEARLY DELINEATE ARRANGEMENT
4. SHALL ILLUSTRATE RELATIONSHIP TO OTHER WORK ASSOCIATED WITH THE PROJECT.

ANY SAMPLE REQUIRED TO BE SUBMITTED FOR REVIEW WILL BE RETURNED WHEN SO REQUESTED BY THE CONTRACTOR. CHARGES FOR SUBMISSION OF SAMPLES AND FOR THEIR RETURN SHALL BE BORNE BY THE CONTRACTOR.

CONTRACTOR SHALL CONSECUTIVELY NUMBER SUBMITTALS. ANY RE-SUBMITTALS SHALL RETAIN THE ORIGINAL IDENTIFICATION NUMBER FOLLOWED BY THE DESIGNATED REVISION NUMBER (IE. REV. 1, REV. 2, ETC.). CLEAR SPACE SHALL BE PROVIDED ON EACH ITEM SUBMITTED FOR CONTRACTOR'S AND PROJECT ARCHITECT'S STAMPS. WHERE CLEAR SPACE IS NOT AVAILABLE ON SAMPLES, SUBMIT WITH TAGS ATTACHED.

CONDITIONS AND QUALIFICATIONS

DNA'S REVIEW AND NON-REJECTION OF A SPECIFIC ITEM SHALL NOT BE CONSTRUED AS ACCEPTANCE OF AN ASSEMBLY OF WHICH THE ITEM IS A COMPONENT.

DNA'S REVIEW OF SUBMITTALS SHALL IN NO WAY IMPLY THAT DNA IS IN ANY WAY RESPONSIBLE FOR, THE FABRICATION PROCESS OR TECHNIQUES OF CONSTRUCTION. DNA WILL NOT CHECK, AND ASSUMES NO RESPONSIBILITY FOR, DIMENSIONS OR QUANTITITES ON REVIEWED SUBMITTALS, OR FOR COORDINATION OF ANY TRADES.

THE REVIEW OF SUBMITTALS SHALL NOT ACT TO PERMIT DEPARTURES FROM ADDITIONAL DETAILS OR INSTRUCTION PREVIOUSLY GIVEN.

SUBSTITUTIONS

CONTRACTOR SHALL SUBMIT FOR REVIEW ANY ITEM WHICH IS PROPOSED FOR SUBSTITUTION, OR WHICH DIFFERS IN ANY RESPECT FROM MATERIALS, SYSTEMS, AND EQUIPMENT WHICH IS SPECIFIED WITHIN THESE DRAWINGS.

SUBSTITUTIONS WILL ONLY BE CONSIDERED WHICH EITHER:
1. PROVIDE A HIGHER LEVEL OF QUALITY
2. SAVE THE OWNER MONEY OVER ENTIRE PROJECT (INCLUDING DNA'S REVIEW TIME), OR
3. IMPROVE THE PROJECT SCHEDULE.

REQUESTS FOR SUBSTITUTION MUST BE ACCOMPANIED BY THE FOLLOWING:
- COMPLETE TECHNICAL DATA AND PERFORMANCE SPECIFICATIONS
- SAMPLES OF THE ARTICLE PROPOSED FOR SUBSTITUTION (AS APPLICABLE)
- A STATEMENT SIGNED BY THE CONTRACTOR THAT THE PROPOSED SUBSTITUTION IS IN FULL COMPLIANCE WITH THE CONTRACT DOCUMENTS
- NOTIFICATION REGARDING THE EFFECT OF THE SUBSTITUTION ON OTHER WORK, ASSEMBLIES, PRODUCTS, OR SEPARATE CONTRACTS. ALSO NOTIFICATION IF ACCEPTANCE OF SUBSTITUTION COULD REQUIRE REVISION OF DRAWINGS OR DETAILS.

REQUESTS FOR SUBSTITUTIONS SHALL INCLUDE FOUR (4) COPIES THE ABOVE INFORMATION.

CONTRACTOR SHALL BE RESPONSIBLE FOR THE EXECUTION OF ANY CHANGES IN OTHER PARTS OF HIS(HER) WORK, OR THE WORK OF SUBCONTRACTORS OR OTHER TRADES, WHICH MAY BE CAUSED BY ACCEPTANCE OF THE SUBSTITUTION. SAID CHANGES IN WORK SHALL BE PROVIDED AT NO CHARGE TO THE OWNER.

ORIGINALLY SPECIFIED ITEMS SHALL BE FURNISHED UNLESS A SUBSTITUTION HAS BEEN FORMALLY ACCEPTED.

IT IS UNDERSTOOD THAT DUE TO CITY APPROVALS AND OWNER INSTRUCTIONS, CERTAIN SUBSTITUTIONS CANNOT BE APPROVED. THEREFORE, DNA RESERVES THE RIGHT TO REJECT ANY AND ALL REQUESTS FOR SUBSTITUTION.

WHEN MAKING A SUBSTITUTION CONTRACTOR SHALL BE FINANCIALLY RESPONSIBLE FOR ANY TIME EXPENDED IN ALTERING DRAWINGS TO REFLECT CHANGES IN THE PROJECT AS BY THE INCORPORATION OF THE SUBSTITUTED ARTICLE WITHIN THE WORK.

PROJECT SUMMARY

PROJECT NAME: **DERBY RUN APARTMENTS I**
PROJECT ADDRESS: **6 DERBY DRIVE, HAMPTON, VA 23666**
HUD PROJECT NAME: **DERBY RUN APARTMENTS I**
HUD PROJECT #: **051-11420**
PROPOSED USE: **RESIDENTIAL - MULTIFAMILY(EXISTING)**

BUILDING PLANNING:

OCCUPANCY(IBC): **R-2 (EXISTING)**
OCCUPANCY(NFPA): **R-2**
MIXED OCCUPANCY: **N/A**
REQ'D FIRE SEPARATION: **EXISTING**

MEANS OF EGRESS

200'-0" MAX TRAVEL DISTANCE TO EXIT
20'-0" MAX DEAD END CORRIDOR LENGTH
44" MIN CORRIDOR WIDTH
30'-0" MAX COMMON PATH OF TRAVEL
32" MIN CLEAR OPENING OF EXIT DOORS
2 MIN NUMBER OF EXITS

PLUMBING REQUIREMENTS: OCCUPANT LOAD: **N/A**
TOILETS (MIN FIXTURES REQ'D):
MEN: **N/A** WOMEN: **N/A**
LAVATORIES (MIN FIXTURES REQ'D):
MEN: **N/A** WOMEN: **N/A**
DRINKING FOUNTAINS (MIN FIXTURES REQ'D): **N/A**

TYPE OF CONSTRUCTION:

CONSTRUCTION TYPE (IBC): **N/A**
CONSTRUCTION TYPE (NFPA): **N/A**

APPLICABLE CODES:

BUILDING CODE:	**USBC (2018) &IBC (2018)**
RESIDENTIAL CODE:	**N/A**
LIFE SAFETY CODE:	**NFPA 101 (2012) (EXISTING)**
ACCESSIBILITY CODE:	**ADAAG (2010) , ANSI 117.1 (2009)**
STRUCTURAL CODE:	**N/A**
MECHANICAL CODE:	**IMC (2015), VIRGINIA**
ELECTRICAL CODE:	**N/A**
PLUMBING CODE:	**VIRGINIA STATE PLUMBING CODE, 2015 ED**
GAS CODE:	**N/A**
BOILER CODE:	**N/A**
ADDITIONAL CODE:	**FHA**
ADDITIONAL CODE:	**N/A**

FIRE PROTECTION REQUIREMENTS:

N/A AUTOMATIC SPRINKLERS
YES MANUAL EXTINGUISHERS
L OCCUPANCY HAZARD (LOW, MED, HIGH)
N/A MAX FLOOR AREA PER EXTINGUISHER
N/A MAX TRAVEL DISTANCE PER EXTINGUISHER

DNAworkshop
DYKE NELSON ARCHITECTURE 235 SOUTH 14TH ST. BATON ROUGE, LA 70802 DNA-WORKSHOP.COM (225) 224 3363

DERBY RUN APARTMENTS I
6 DERBY DRIVE, HAMPTON, VA 23666

REVISIONS		
1	08/17/19	D3G/HUD
2	08/26/19	D3G/HUD

JOB NUMBER: 19-007
ISSUED: 08/01/19
ISSUED FOR:
PERMITTING

COMMONWEALTH OF VIRGINIA
JOSEPH DYKE NELSON
No. 0401017200
ARCHITECT

TITLE SHEET

G1.0

PHASE: CD

OUTLINE SPECIFICATIONS *(BASED ON 2019 MDCR W/ ADDITIONAL NOTES)*

SITE WORK

1. Identify areas that require grading to drain water away from buildings and areas where adjoining grades are higher than finished floor of buildings:
   a. Provide a minimum distance of 6 inches between finished grade or mulch beds, and the bottom of siding and window sills.
   b. Provide a minimum of 5% slope away from foundation walls, for a minimum distance of 10 feet.
   c. Provide alternate solutions acceptable to VHDA when required grades, slopes, or other site conditions make the above requirements infeasible.

2. Provide seamless gutters and downspouts for all buildings, or an internal drainage system. When discharging on grades steeper than 20%, or less than 1%, water from gutters and downspouts is to be piped underground to a storm sewer system, or to daylight at grades that will avoid soil erosion. Avoid water drainage over sidewalks.

3. Extend concrete dumpster pads at least 12 feet into the asphalt so that the load bearing wheels of trucks rest on concrete while servicing the dumpsters.
   a. Thickness of concrete is to be a minimum of 6 inches with reinforcement.
   b. Dumpsters and/or compactors accessed via an accessible route are to meet accessibility requirements.
   c. Install a privacy screen on at least three sides of all dumpster and/or compactor pads.

4. Concrete that is cracked, crumbling, spalling, heaving or settling, or may be a safety issue is to be repaired or replaced. Provide a solution acceptable to VHDA if any of these conditions exist. Sidewalks at new locations to comply with new construction guidelines.

5. Asphalt that has cracking, alligatoring, or a deteriorating sub-base is to be repaired or replaced. Provide a solution acceptable to VHDA if any of these conditions exist. Paving at new locations to comply with new construction guidelines.

6. Remove all dead bushes, trees, tree-stumps, and their above-ground roots. Remove all portions of tree branches that overhang roofs and all branches that come within 10 feet of roofs.

7. Grade to avoid standing water. Provide a smoothly graded transition from disturbed to undisturbed areas. All areas which have dead grass are to be tilled. Seed and straw, and/or landscape all bare and disturbed areas. Finish grade with clean topsoil. Provide ground cover materials or sod for slopes steeper than 20%. Provide foundation plantings in the front of all buildings. Clean site and dispose of all construction debris. Grass must be established prior to project closeout.

ARCHITECTURAL

1. Install waterproofing up to finished grades for all perimeter walls of finished and unfinished spaces where evidence of water, moisture, or mildew is present. Waterproofing may be installed on the exterior or interior sides of the wall. The waterproofing system is to have a minimum 10-year manufacturer's warranty.

2. All debris and wood are to be removed from crawl spaces.
   a. Install sump pump or drain tile discharging to daylight for any area accumulating water.
   b. Install a minimum 6 mil vapor barrier at floor with seams overlapped 12 inches. Edges and seams to be taped. Provide adequate crawl space ventilation.

3. Remove all abandoned and non-operable equipment, devices and accessories. VHDA may approve abandoned material that is secured, sealed and concealed.

4. Structural deficiencies are to be identified and corrected. If requested by VHDA, corrective measures to be designed, inspected, and certified by a structural engineer.

5. Install minimum of R-19 insulation in unconditioned crawl spaces and basements and R-38 insulation in attics.

6. When replacing drywall at an exterior wall or replacing exterior sheathing, provide wall insulation at affected areas per the latest adopted edition of the International Energy Conservation Code.

7. Roof inspection reports are required for all roofs more than 5 years old. Report to include age and remaining life of roofs and areas that need repairs. Replace all roofs with a remaining life of less than 5 years. Repair or replace all roofs with damage or leaks.

8. When replacing pitched roofs:
   a. Repair or replace all damaged sheathing, rafters, and/or trusses.
   b. Replace all 3/8 inch sheathing with a minimum of 15/32-inch plywood or 15/32 inch OSB. Install sheathing with clips. ZIP System roof sheathing or similar products are not accepted. *(Note: Roof Sheathing is existing and not part of the rehab scope. Contractor to verify thickness of existing sheathing and notify owner and architect of any discrepancies. Typical.)*
   c. Replace all existing attic vents and pipe collars. Replace rusted or damaged flashing. Replace all existing sealant.
   d. Roof shingles are to be a minimum 25 year, anti-fungal product, and are to be nailed (not stapled). Do not install new shingles over existing shingles. Replace existing ridge vents.
   e. Install drip edge on all sides of the roof.

   f. Install ice barrier extending from eave's edge to a point 24 inches beyond the exterior wall cladding.
   g. Provide roof ventilation per the latest USBC for new construction.

9. When replacing flat roofs:
   a. Remove and dispose of existing roofing and above deck insulation, damaged vents and other items not in good condition.
   b. Provide a minimum R-25 continuous insulation above the roof deck or provide a minimum R-38 insulation in the attic space.
   c. New roofing is to have a minimum 20-year manufacturer's warranty.
   d. Provide roof ventilation per the latest USBC for new construction.

10. Install walk pads that provide access to all rooftop condenser units.

11. If equipment is installed on a roof, provide easily reachable access from an interior common area.

12. Stairs to apartment units where stair halls are not enclosed are to be protected from weather by design features. Install an awning, a roof overhang at the second floor level, or a roof at the stair hall entrance. Provide a minimum overhang of 5 feet from first riser. All buildings in a development are to have similar design features. Historic buildings may be exempt.

13. Exterior wooden trim, brickmold, sills, fascia, rake boards, and columns are to be clad with vinyl, vinyl coated aluminum, or similar materials. Use materials designed for cladding with a minimum thickness of 0.019 inch and provide a stiffening crimp for trim and fascia boards are more than 8 inches wide. Replace all damaged wood prior to cladding. VHDA recommends the use of composite/manufactured materials instead of wood for exterior use. Exceptions may be considered for historic buildings.

14. When repainting existing or installing new exterior steel products; powder coat, galvanize or provide an exterior steel paint that can achieve a minimum 10-year material warranty. Prepare surfaces per warranty requirements. Prime and paint steel prior to placement in concrete.

15. When replacing exterior railings, handrails, guard rails, posts and pickets use vinyl, aluminum, or steel instead of wood.

16. When replacing siding:
   a. New siding is to have solid backing of plywood, OSB, gypsum, or similar material. Siding is to be installed over an independent drainage plane, such as Tyvek® or equal.
      EXCEPTION: Exterior wall sheathing systems with integrated drainage planes may be used when observation reports are provided by the manufacturer and the following conditions are met:
      1. Pre-installation
         a. General Contractor to hold pre-installation meeting with architect and manufacturer prior to installation. Manufacturer's observation reports to include documentation of meeting.
         b. Manufacturers' flashing details including windows, doors, joints and penetrations must be maintained on site.
         c. Store materials to meet manufacturer's requirements.

      2. Installation
         a. The integral drainage plane must be preserved. Use manufacturer's approved products including tape, tape gun and roller.
         b. When weather conditions warrant, follow manufacturer's requirements for inclement weather installation and storage of materials.
         c. Manufacturer's representative to review the final installation to confirm all requirements are met **prior** to installation of exterior cladding. Manufacturer's observation reports documenting installation acceptance is required and must be maintained on site.
   a. Do not install new siding over materials such as vinyl siding, Thermo-ply®, or other flexible materials.
   b. Material such as T1-11, wood siding, or hardboard lap-siding may be used as backing for new siding, provided it is in good condition.
   c. Repair, replace, and re-nail all sections of damaged siding or sheathing to provide a uniform and flat surface.
   d. Fasten siding to framing with nails penetrating a minimum ¾ of an inch into studs.
   e. Install mounting blocks for all penetrations in siding such as electrical, plumbing, HVAC, and ductwork etc.

17. All new panel type siding to be installed over vertical furring to allow adequate drainage and ventilation, or provide siding product with integrated vented rain screen.

18. The use of foil faced sheathing is prohibited.

19. Repair masonry walls having cracks and/or settlement. Replace damaged brick and point-up deteriorated mortar to match existing. Replace rowlocks for window sills that do not have a slope to drain water away from building. Prime and paint all metal lintels which are corroded, or not already painted. Remove abandoned items from brick and power wash/clean exterior of buildings.

20. Replace all damaged windows.

21. Replace single glazed windows with insulated glass.
   a. When window replacement is not permitted in historic buildings, repair or replace existing windows and install triple track operable storm sashes, with screens, over existing single glazed windows.
   b. When conditions make storm sashes not feasible, provide an alternative solution acceptable to VHDA.

22. When replacing windows and/or sliding glass doors:
   a. Provide minimum ½ inch thick insulated glass.
   b. Provide minimum 10 year warranties for material and breakage of seal.
   c. Provide thermal break for aluminum frames.
   d. Provide new construction windows when replacing siding.
   e. Provide back dam flashing at sill.
   f. Install and flash per manufacturer's specifications. Perform initial replacement with Construction Control Officer.

23. All windows are to have blinds, shutters, or other similar products, and sliding glass doors are to have vertical blinds. Replace all blinds that are damaged and/or do not match in color. *(Note: Does not apply to existing full lite patio doors. These doors are equipped with existing binds to remain.)*

24. Repair or replace all damaged or dented doors, jambs and hardware.
   a. When replacing exterior doors, except sliding glass doors, replacement doors are to be insulated fiberglass or insulated metal. Wooden door jambs and molding require composite material, such as FrameSaver® or equal, at their lowest points.
   b. Solid core wood doors may be used where entrances are located in interior conditioned corridors.

25. All entry doors to apartment units, except entry doors located in conditioned corridors, are to have weather stripping and threshold to provide a tight seal around the door and to minimize heat loss/gain due to air infiltration.

26. Replace all damaged Gypcrete, or similar material, floor sheathing and floor joists.

27. Install an area approximately 3 feet by 4 feet using materials such as VCT, sheet vinyl, hardwood flooring, or tile at the interior of all entrance doors, except for doors entered through carpeted interior hallways. *(Note: Applies to Unit entry doors only. not to be installed at balcony doors that can only be accessed from unit interior.)*

28. Repair or replace all damaged or mismatched flooring. On a room by room basis, all flooring must match in color and design.

29. Resilient flooring such as, but not limited to, sheet vinyl and VCT is to be installed over minimum nominal ¼ inch underlayment grade plywood, or similar underlayment material. Ceramic tile or similar flooring is to be installed over minimum nominal ¼ inch cementitious board or similar underlayment material. Flooring may be installed over concrete provided concrete is finished smooth and uniform. When installed over Gypcrete, or a similar material, apply manufacturer approved sealer.

30. Carpets are to have the minimum number of seams. Seams are not to be located in heavy traffic areas. T-seams are not acceptable except in closets. Remove shoe molding/quarter-round molding before installing carpet.

31. Provide a pass-through opening with counter space when kitchen and dining/living areas are separated by a wall.

32. Interior finishes: doors, moldings, paint, and drywall.
   a. Replace all interior bifold, pocket, or sliding doors with side hinged doors.
   b. Repair or replace all damaged doors and trim.
   c. All doors, door trim, and door hardware in a unit are to match in design and finish.
   d. Install or undercut doors a minimum of 3/4 inch clear to prevent dragging and to provide ventilation. *(Note: Applies only to new doors where existing interior doors are being replaced. A waiver will be submitted shall it be found that existing doors do not meet these requirements. Contractor to verify)*
   e. Paint bottoms, tops, and all other sides of new doors.
   f. All base and base moldings in a unit are to be solid wood and are to match in design and finish. EXCEPTION: Ceramic or stone baseboard is acceptable at matching flooring.
   g. Repair flaws in drywall such as, but not limited to, holes, failing tape joints, cracks and nail pops. Replace all drywall that has mold, mildew, or signs of moisture.
      1. When drywall replacement is required, match adjacent type and thickness.

      2. Nail pops and settling drywall must be re-screwed to framing.
      3. Repairs, including previous repairs, are to match the adjacent surface and the unit's intended finish.

33. Repair damaged or compromised draft stopping and/or fire stopping. *(Note: Existing draft stops are assumed to be in good condition and replacement is not anticipated.. Contractor to verify thickness of existing insulation and notify owner and architect of any discrepancies. Typical.)*

34. Concealed solid dimensional wood blocking (2x material) is to be provided for all new handrails, grab bars and wall mounted cabinets and accessories.
      EXCEPTION: Toggle bolts may be used at wall mounted accessories.

35. Replacement or repairs of tub and shower surrounds built of ceramic tile, marble, or similar materials are to be installed over minimum ½ inch cementitious board.

36. When replacing kitchen cabinets and/or bathroom vanities all new cabinets are to comply with *Virginia Housing Development Authority's Minimum Cabinet Requirements*.
   a. Cabinets and/or vanities that are not being replaced are to be approved by VHDA.
   b. All cabinets are to be factory/manufacturer assembled.
   c. All exposed portions of cabinetry must have factory applied finish.
   d. Kitchen cabinets and bathroom vanities are to abut the side walls or provide a minimum spacing of 12 inches between wall and cabinets. Wall cabinets are to abut the ceiling/soffits or provide minimum of 12 inches between cabinet and ceiling/soffits.
   e. Kitchen wall cabinets are to be screwed to blocking with a minimum of four washer head cabinet screws; two in each upper and lower nailing strip for each wall cabinet.
   f. Plastic laminate countertops are to be post formed or have back splashes that are factory attached to the countertop and sealed.
   g. A side splash is to be installed where countertops abut walls.
   h. Install a cleanable surface, such as plastic laminate, metal, or ceramic tile to the side wall next to the cooking range when it is located directly adjacent to a wall.
   i. Remove and replace all drywall that has mold. Repair or replace all damaged drywall.
   j. Holes in cabinet backs for plumbing are to be drilled, and completely covered by escutcheon plates.

37. APPLIANCES
   a. Replace all damaged and or dented appliances and all appliances which are more than 8 years old. All kitchen appliances in an apartment unit are to match in color.
   b. Provide 30-inch-wide range in all units except studio/efficiency apartments and one bedroom elderly apartments, which may have a minimum 20-inch-wide range. Provide range hoods or combination range hood-microwaves over the cooking ranges. Provide maximum 24-inch-wide range hood for all 20-inch-wide ranges.
   c. Dishwashers are required in all units. Provide 24-inch-wide dishwashers except for studio/efficiency apartments, which may have 18-inch-wide dishwashers.
   d. All refrigerators are to be frost free. The refrigerators are to have separate doors for freezer and refrigerator compartments. Minimum sizes of refrigerators are to be 12 cubic feet for studio/efficiency apartments, 14 cubic feet for 1 and 2 bedroom apartments, and 16 cubic feet for 3 and 4 bedroom apartments.
   e. When present, laundry equipment and connections shall be installed in a closet with doors. New locations may not be in a bedroom.

      Exception: Studio and one bedroom apartments may utilize a bedroom closet for laundry equipment provided equipment does not impede on tenant storage, an exhaust fan with humidistat is installed in the closet, and a jumper duct is provided to communicate with return air location.

38. Provide a handrail on at least one side of common corridors for age restricted housing serving residents 55 years or older.

MECHANICAL

1. All units are to have a Heating, Ventilation, and Air Conditioning (HVAC) system. Sizes of HVAC equipment, ducts and diffusers are to be designed per heat gain/loss calculations. All apartments are to have ducted HVAC systems except as noted in #3 below.

2. When installing a new HVAC system including, but not limited to, traditional split systems, ducted mini-split or self-contained "packaged systems" (similar to Magic-Pak and First Co):
   a. Replace both air-handlers and condensers at the same time.
   b. R-410A refrigerant is required in all new HVAC equipment.
   c. Verify if refrigerant lines are appropriate for new HVAC unit size and type. Lines not being replaced are to comply with all of the requirements of the manufacturer for using existing lines. Submit a letter from the manufacturer that states the use of existing lines will not reduce performance and/or warranty of the heat pumps or other air conditioning systems.
   d. Condensate and refrigerant lines not located in the mechanical closet are to be concealed within the wall, ceiling, or floor systems.
   e. Fire-caulk all penetrations in fire partitions and ceilings.
   f. Seal air duct penetrations in unheated spaces.
   g. When adding and/or replacing ductwork, air supply diffusers are to be located near windows in living rooms, dens, and bedrooms.

EXCEPTION: The mechanical engineer may locate diffusers at alternate locations with VHDA's prior approval based on supporting calculations.

   h. Provide a separate ducted return for each floor of townhouse units.
   i. Provide premanufactured air filters.
   j. Replace all diffusers and thermostats.
   k. Air supply diffusers are to be located in living rooms, dens, bedrooms, kitchens, and full baths.
   l. Replace condenser pads that are damaged. Pads are to be concrete, solid vinyl, or similar materials. Level all condenser units.
   m. Heat pumps to include auxiliary heat.

3. Ductless Heat Pumps (mini-splits) may be used in efficiencies, 1 bedrooms or elderly housing development.
   a. All mini-splits are to discharge condensate to grade through a pipe concealed within the exterior wall system.
   b. Provide separate mini-split wall mounted unit for each bedroom, den or living room.
   c. Provide separate wired wall mounted thermostat for each mini-split wall mounted unit.
   d. Provide a heater with a thermostat or timer controlled heat lamp for all full baths.

4. All exhaust ducts are to discharge to the exterior of the building, and terminate into vent caps. Vent caps to be of a quality that will minimize repair and replacement.

5. Clean existing HVAC ducts and plenums. Verify duct sizes and air flows (cubic feet per minute at supply diffusers) are appropriate for HVAC system. Replace all supply and return vent covers and diffusers. Seal all duct penetrations in unheated spaces. All existing ductwork located in crawl spaces, attics, or any unconditioned space, is to be properly insulated. Clean, service, and repair all HVAC units not being replaced.

6. All bathroom fans are to be in good working condition, cleaned, and ducted out to the exterior. Install fans in all bathrooms, including those with windows.

7. Electric baseboard heating and electric forced air heating shall not be used as the primary heating method.

PLUMBING

1. Identify all water supply material types. Water supply is to have adequate pressure.
   a. Replace all interior, exterior, and underground PB (Polybutylene) pipes such as "Quest" and "Big Blue" with current code accepted materials.
   b. Replace all galvanized pipes with CPVC, copper, plastic or other approved materials.

2. Video and jet all sewer lines connecting buildings with the public sewer. Identify pipe material types and repair or replace all corroded, damaged, or settled underground sewer lines. Provide report of video findings to VHDA and include repair/replacement costs. *(Note: To be done by owner outside of rehab scope.)*

3. Identify all sanitary pipe material types and replace all galvanized lines and traps with PVC.

4. All wet plumbing pipe to be solid wall construction (Cellular core pipe not permitted).

5. All floor drains and indirect waste receptors to receive trap primer or code approved drain trap seal device.

6. When replacing water heaters, installations are to comply with latest adopted edition of the *International Plumbing Code for New Construction*. Refer to Code for pan and drain specifications.

7. Clothes washing machines or connections for clothes washing machines are to have an IntelliFlow A2C- WB automatic washing machine water shutoff valve with leak sensor, or approved equal, or have a pan with a drain connected to the sewer system per applicable plumbing code.

8. When installing new wall-hung sinks, provide concealed arm type carrier.

9. All new tubs/showers and shower diverters are to have internal shut-off-valves or external shut-off- valves with access panels.

10. Bathtubs, showers, and surrounds which will not be replaced, are to be refinished or repaired. Remove mold and stains, clean, and re-caulk all tubs, showers, and surrounds. The bottoms of all new bathtubs and showers are to have slip resistant/textured finish.

11. Bathrooms which include a **new** roll-in shower are to have ceramic or similar tile flooring. Roll-in showers are to be either:

   a. Ceramic or similar tile floor with water proofing membrane extending a minimum 8" up walls. A minimum of 3'-0" of the bathroom floor is to slope back towards the shower drain at 2%, with a zero height transition between the bathroom floor and the shower floor, **- or –**
   b. Premanufactured with a secondary floor drain located outside of the shower. The bathroom floor shall have a 2% slope towards the secondary floor drain. Provide silicone joint between bathroom and shower floor.
      1. Seal around existing accessible and all new plumbing penetrations in floors, walls and ceilings.

ELECTRICAL

1. Size electric panels and service per load calculations.

2. Electrical panels with fuses are to be replaced with circuit breakers.

3. Use appropriate connectors for connecting aluminum wiring to electrical outlet and switches.

4. All switches, outlets and cover plates that are painted, damaged or worn, are to be replaced and are to match in color and design.

5. Provide ground fault outlets near vanities in all bathrooms.

6. All wiring for the interior and exterior of the building is to be concealed within the walls, ceiling or floor systems. Cable TV, internet and/or telephone wiring exposed within individual apartment units may be accepted when fastened to the edges of baseboards and/or door casings and not crossing any portion of floors, doorways or openings. Exposed electrical service to the building is to be in conduit and run vertically to the meter without horizontal runs.

7. When replacing kitchen cabinets and counter tops, electrical outlets for countertop, ranges, refrigerators, dishwashers, and other appliances are to comply with the latest applicable requirements of the *National Electric Code for New Construction*.

8. Provide fluorescent light fixtures or LED light fixtures in all public common areas such as offices, multipurpose rooms, laundry rooms, hallways, and stairs.

9. Kitchens are to have a minimum of one light fixture 4 feet long with either LED or two 32 watt fluorescent bulbs, or lighting fixture(s) that provide a minimum illumination of 30 foot candles distributed across all countertops.

10. Provide a minimum of one electric smoke detector with battery backup for garden units and a minimum of one electric smoke detector with battery backup for each floor for townhouses.

11. Exterior fixtures are to be LED, fluorescent, metal halide, high or low pressure sodium, or mercury vapor. Tenant controlled exterior lighting is exempt. Provide exterior lighting to illuminate all parking areas, dumpster pads, building entrances and mailboxes with a minimum of one-foot candle of illumination. Provide illumination so that building numbers and apartment numbers are legible at night.

12. Seal around existing accessible and all new electrical penetrations.

DNAworkshop
DYKE NELSON ARCHITECTURE [225] 224 3363
235 SOUTH 14TH ST. BATON ROUGE, LA 70802 DNA-WORKSHOP.COM

DERBY RUN APARTMENTS I
6 DERBY DRIVE, HAMPTON, VA 23666

REVISIONS

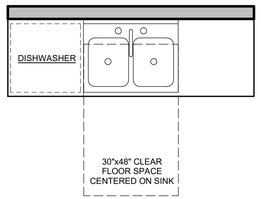
JOB NUMBER: 19-007
ISSUED: 08/01/19
ISSUED FOR:
PERMITTING

COMMONWEALTH OF VIRGINIA
JOSEPH DYKE NELSON
No. 0401017290
ARCHITECT

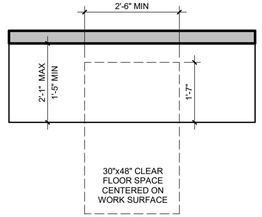
OUTLINE SPECIFICATIONS

G2.1

PHASE: CD



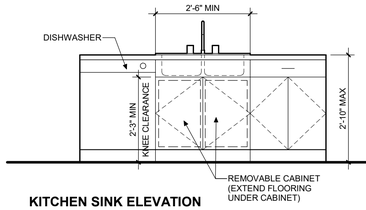
KITCHEN SINK PLAN



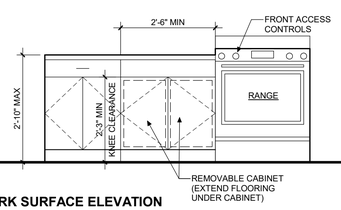
WORK SURFACE PLAN

NOTES

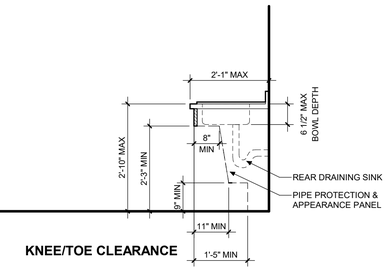
1. GENERIC KITCHEN LAYOUT USED TO ILLUSTRATE UFAS REQUIREMENTS; NOT REPRESENTATIVE OF ACTUAL KITCHENS.
2. TYPE "A" ACCESSIBLE KITCHENS TO MEET UFAS 4.34 AND ICC/ANSI A117.1-2009 SECTION 1003.12
3. TYPE "A" ACCESSIBLE KITCHEN AREAS IN DWELLING UNITS ARE DESIGNED WITH CLEAR FLOOR SPACES IN ACCORDANCE WITH UFAS AND ICC/ANSI REQUIREMENTS (BASED ON APPROACH)
4. PROVIDE REMOVABLE CABINET UNDER 30" WIDE (MIN) WORK SURFACE AND KITCHEN SINK. EXTEND FLOORING UNDER THESE AREAS.
5. EXPOSED PIPES UNDER SING SHALL BE PROTECTED OF INSULATED AGAINST CONTACT. NO SHARP/ABRASIVE SURFACES ALLOWED.
6. PROVIDE RANGE/OVEN WITH FRONT PANEL CONTROLS.
7. REFRIGERATORS/FREEZERS SHALL HAVE AT LEAST 50% OF THE FREEZER SPACE WITHIN 54" MAX ABOVE FLOOR.



KITCHEN SINK ELEVATION

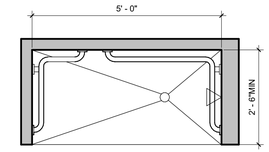


WORK SURFACE ELEVATION



KNEE/TOE CLEARANCE

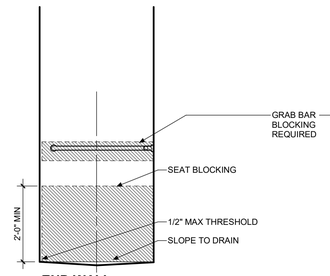
1 ACCESSIBLE KITCHENS
1/2" = 1' - 0" *FOR TYPE "A" DWELLING UNITS*



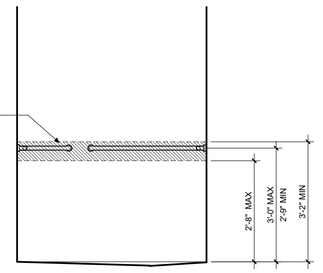
SHOWER PLAN

NOTES

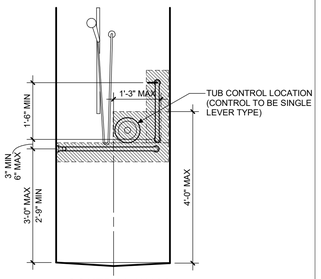
1. TYPE "A" ACCESSIBLE TRANSFER-TYPE SHOWERS TO MEET UFAS 4.34.5.5 AND ICC/ANSI A117.1-2009 SECTION 1003.11.9 AND 608.
2. GRAB BARS ARE NOT REQUIRED, PROVIDED REINFORCEMENT IS PROVIDED IN WALLS TO PERMIT INSTALLATION OF GRAB BARS.
3. GRAB BARS IF PROVIDED SHALL BE 1 1/2" DIAMETER W/ 1 1/2" CLEARANCE FROM WALL
4. ACCESSIBLE SHOWER AREAS IN DWELLING UNITS ARE DESIGNED WITH CLEAR FLOOR SPACES IN ACCORDANCE W/ UFAS AND ICC/ANSI REQUIREMENTS (BASED ON APPROACH).
5. SHOWER CONTROL TO BE LEVER TYPE.
6. PROVIDE SHOWER SPRAY UNIT WITH 60" LONG MINIMUM, THAT CAN BE USED AS A FIXED SHOWER HEAD AND AS A HAND-HELD SHOWER FIXED HEAD MUST BE MOUNTED 48" MAX. ABOVE FLOOR.
7. SHOWER TO DELIVER WATER THAT IS THERMAL SHOCK PROTECTED TO 120°F MAX
8. SHOWER SEAT IS NOT REQUIRED, PROVIDED REINFORCEMENT IS PROVIDED IN WALL TO PERMIT INSTALLATION OF SEAT.



END WALL

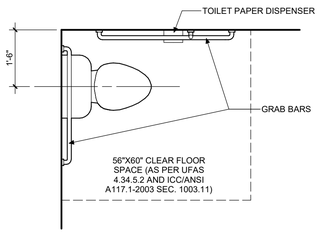


BACK WALL



CONTROL WALL

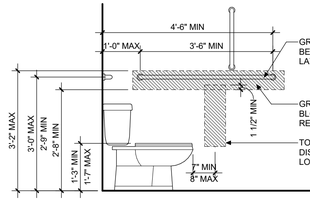
2 ACCESSIBLE SHOWERS (ROLL-IN)
1/2" = 1' - 0" *FOR TYPE "A" DWELLING UNITS*



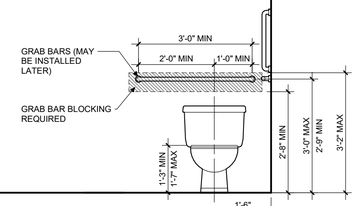
WATER CLOSET PLAN

NOTES

1. TYPE "A" ACCESSIBLE WATER CLOSETS TO MEET UFAS 4.43.5.2 AND ICC/ANSI A117.1-2009 SECTION 1003.11.7.
2. GRAB BARS ARE NOT REQUIRED, PROVIDED REINFORCEMENT IS PROVIDED IN WALLS TO PERMIT INSTALLATION OF GRAB BARS.
3. GRAB BARS (IF PROVIDED) SHALL BE 1 1/2" DIAMETER W/ 1 1/2" CLEARANCE FROM WALL.
4. TYPE "A" ACCESSIBLE TOILET AREAS IN DWELLING UNITS ARE DESIGNED WITH CLEAR FLOOR SPACES IN ACCORDANCE WITH UFAS AND ICC/ANSI REQUIREMENTS (BASED ON APPROACH).
5. FLUSH CONTROLS TO BE LEVER TYPE AND TO BE MOUNTED AT 44" AFF MAXIMUM. LEVER MUST BE ON THE WIDE OR OPEN SIDE OF THE FIXTURE.

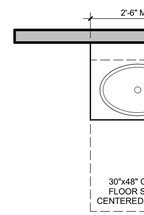


WATER CLOSET SIDE ELEVATION



WATER CLOSET FRONT ELEVATION

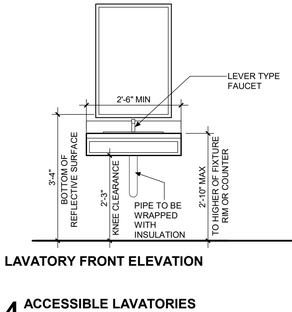
3 ACCESSIBLE WATER CLOSETS
1/2" = 1' - 0" *FOR TYPE "A" DWELLING UNITS*



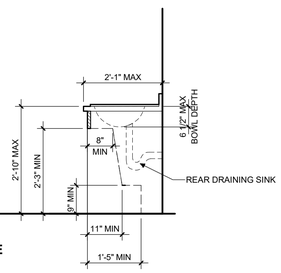
LAVATORY PLAN APPROACH OPTION

NOTES

1. TYPE "A" ACCESSIBLE LAVATORY TO MEET UFAS 4.34.5.3 AND ICC/ANSI A117.1-2009 SECTION 1003.11.5 AND 606.
2. TYPE "A" ACCESSIBLE LAVATORY AREAS IN DWELLING UNITS ARE DESIGNED WITH CLEAR FLOOR SPACES IN ACCORDANCE WITH UFAS AND ICC/ANSI REQUIREMENTS (BASED ON APPROACH).
3. EXPOSED PIPES UNDER LAVATORY SHALL BE PROTECTED OR INSULATED AGAINST CONTACT. NO SHARP/ABRASIVE SURFACES ALLOWED.

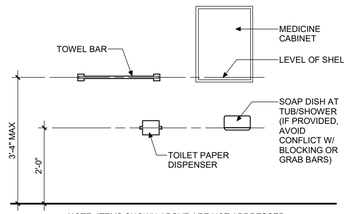


LAVATORY FRONT ELEVATION



KNEE/TOE CLEARANCE

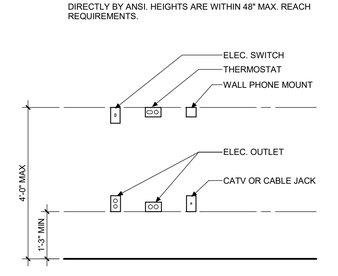
4 ACCESSIBLE LAVATORIES
1/2" = 1' - 0" *FOR TYPE "A" DWELLING UNITS*



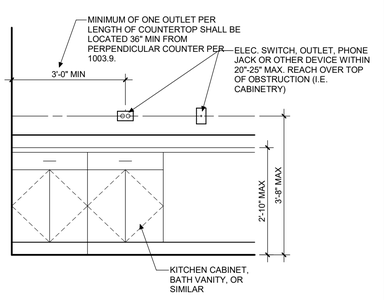
NOTE: ITEMS SHOWN ABOVE ARE NOT ADDRESSED DIRECTLY BY ANSI. HEIGHTS ARE WITHIN 48" MAX. REACH REQUIREMENTS.

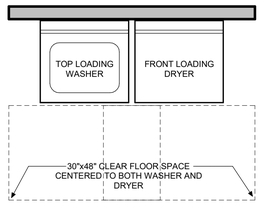
NOTES

1. MOUNTING HEIGHTS ARE BASED ON OBSTRUCTED AND UNOBSTRUCTED REACH REQUIREMENTS AS OUTLET IN UFAS 4.34.2(9) AND ICC/ANSI A117.1-2009 SECTION 308 & 309.
2. MOUNTING HEIGHTS SHOWN HEREIN ARE FOR ALL OPERABLE PARTS, CONTROLS, DEVICES, ETC. WHICH REQUIRE THE USE OF A SINGLE HAND TO ACCESS/OPERATE.
3. HEIGHT REQUIREMENTS SHOWN HEREIN DO NOT APPLY TO SPECIAL EQUIPMENT OR ELECTRICAL/COMMUNICATION SYSTEM RECEPTACLES NOT NORMALLY INTENDED FOR USE BY CCCUPANTS.
4. OPERABLE PARTS SHALL BE OPERABLE WITH ONE HAND AND SHALL NOT REQUIRE TIGHT GRASPING OR TWISTING OF THE WRIST.



5 ACCESSIBLE MOUNTING HEIGHTS
1/2" = 1' - 0" *FOR TYPE "A" DWELLING UNITS*

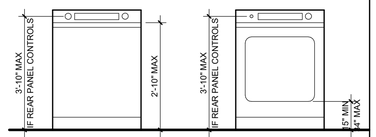




WASHER/DRYER PLAN

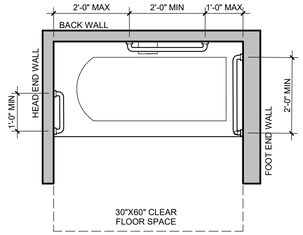
NOTES

1. TYPE "A" ACCESSIBLE LAUNDRY EQUIPMENT TO MEET UFAS 4.34.7 AND ICC/ANSI A117.1-2009 SECTION 1003.10 AND 611.
2. TYPE "A" ACCESSIBLE LAUNDRY AREAS ARE DESIGNED WITH CLEAR FLOOR SPACES IN ACCORDANCE WITH ICC/ANSI REQUIREMENTS (BASED ON APPROACH).
3. WASHER AND DRYER MAY BE EITHER TOP LOADING OR FRONT LOADING. USE HEIGHT REQUIREMENTS AS SHOWN HEREIN.
4. HEIGHT OF REAR PANEL CONTROLS ASSUMES 24" MAX. REACH OVER TOP OF MACHINE AS PER ICC/ANSI A117.1-2009 SECTION 309.

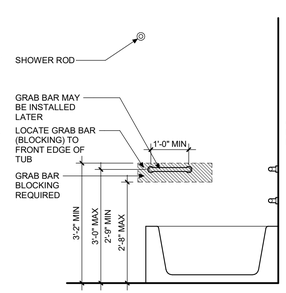


TOP LOADING MACHINE FRONT LOADING MACHINE

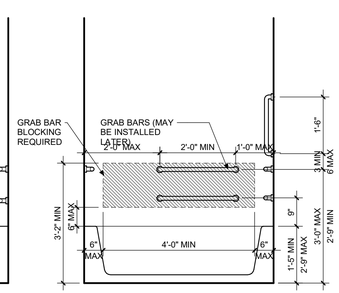
6 ACCESSIBLE LAUNDRY EQUIPMENT
1/2" = 1' - 0"



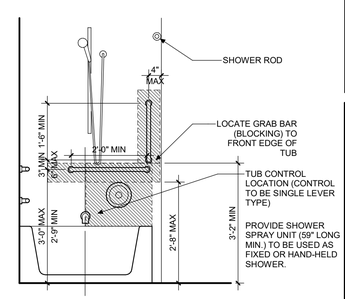
ACCESSIBLE BATHTUB PLAN



HEAD END WALL



BACK WALL



FOOT END WALL

7 ACCESSIBLE BATHTUBS W/O PERMANENT SEATS
1/2" = 1' - 0"

*** NOTE: THESE ARE TYPICAL DIAGRAMS THAT APPLY ONLY TO DESIGNATED UNITS. SEE SITE PLAN FOR LOCATIONS.**

NOTES

1. GRAB BARS ARE NOT REQUIRED, PROVIDED REINFORCEMENT IS PROVIDED IN WALLS TO PERMIT INSTALLATION OF GRAB BARS.
2. GRAB BARS IF PROVIDED SHALL BE 1 1/2" DIAMETER W/ 1 1/2" CLEARANCE FROM WALL, AND SECURELY FASTENED TO BLOCKING
3. TYPE "A" ACCESSIBLE BATHING AREAS IN DWELLING UNITS ARE DESIGNED WITH CLEAR FLOOR SPACES IN ACCORDANCE W/ ICC/ANSI REQUIREMENTS (BASED ON APPROACH).
4. BATHROOM FIXTURES TO BE LEVER TYPE.
5. TUB/SHOWER TO DELIVER WATER THAT IS THERMAL SHOCK PROTECTED TO 120 F MAX

HANDICAP CODE TYPE A UNIT

1. ALL HARDWARE TO BE LEVER TYPE HARDWARE. ANY LOCKING MECHANISM TO BE ACCESSIBLE PUSH BOTTOM TYPE PER ANSI 1003.5.
2. REFLECTIVE SURFACE OF MIRROR TO BE MAXIMUM HEIGHT 40"AFF.
3. TOILET PAPER DISPENSER TO BE LOCATED 7" MINIMUM AND 9" MAXIMUM IN FRONT OF THE WATER CLOSET MEASURED TO THE CENTERLINE OF THE DISPENSER. THERE SHALL BE A CLEARANCE OF 1 1/2" MINIMUM BELOW THE GRAB BAR.
4. ALL THRESHOLDS TO BE 1/2" MAXIMUM CHANGE IN LEVEL FROM TOP OF THRESHOLD TO FINISHED FLOOR OR PATIO SURFACE.
5. TOILET CENTERLINES TO BE 18" FROM WALL MEASURED FROM FACE OF DRYWALL
6. RANGE, WASHER AND DRYER TO HAVE FRONT CONTROLS, RANGE HOOD TO HAVE CONTROLS OR SWITCH IN ACCESSIBLE REACH.
7. REFRIGERATOR TO HAVE 50% OF FREEZER 54" AFF MAX.
8. EXTEND FLOOR FINISH UNDER REMOVABLE CABINETS.
9. TOILET FLUSH CONTROLS SHALL BE LOCATED ON THE OUTSIDE OF THE TANK ON THE SIDE WHICH IS AWAY FROM THE WALL.
10. AT SHOWERS AND TUBS PROVIDE OFFSET CONTROLS, HANDHELD SHOWER HOSE, AND SLIDE BAR PER ANSI 1003.11.8.
11. WINDOW CONTROLS MUST BE MAXIMUM 48" AFF.
12. 32" CLEAR OPENING AT ALL PASSAGE DOORS. PROVIDE 36" DOORS.
13. TOWEL BARS AT 48" AFF.
14. PROVIDE BLOCKING FOR VERTICAL GRAB BAR AT SHOWER AND TUB.
15. PROVIDE ONE OUTLET 44" AFF. ON EACH WALL OF KITCHEN THAT IS A DISTANCE GREATER THAN 36" FROM PERPENDICULAR WALL.
16. PROVIDE ONE PORTION OF ROD AND SHELF IN EACH CLOSET AT 48" AFF.

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DERBY RUN APARTMENTS I

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DYKE NELSON ARCHITECTURE

REVISIONS

JOB NUMBER: 19-007

ISSUED: 08/01/19

ISSUED FOR:

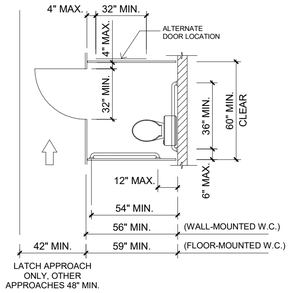
PERMITTING

COMMONWEALTH OF VIRGINIA
JOSEPH DYKE NELSON
No. 0401017290
ARCHITECT

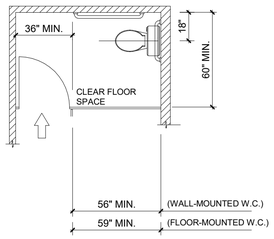
ACCESSIBLE UNIT REQUIREMENTS

G4.0

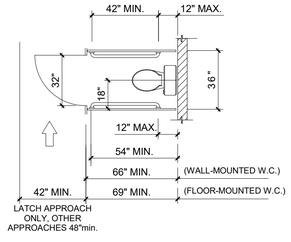
PHASE: CD



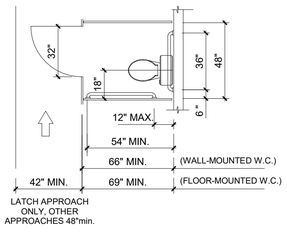
(A) STANDARD STALL



(A-1) STANDARD STALL (END OF ROW)

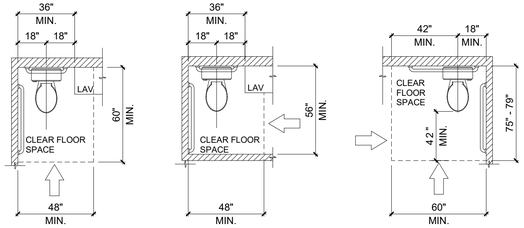


(B) ALTERNATE STALLS



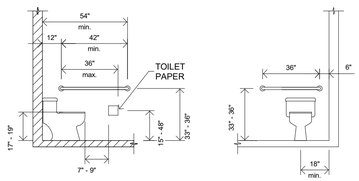
TOILET STALL DETAILS

1/4"=1'-0"



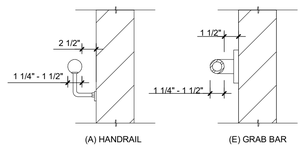
WATER CLOSET CLEAR FLOOR SPACE

1/4"=1'-0"



WATER CLOSET GRAB BAR SPACING

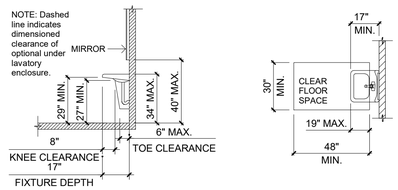
1/4"=1'-0"



(A) HANDRAIL (E) GRAB BAR

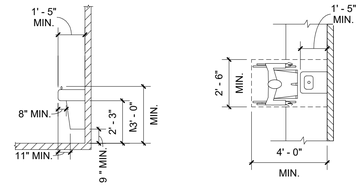
HANDRAIL AND GRAB BAR SIZE AND SPACING

1/4"=1'-0"



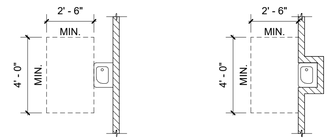
LAVATORY CLEARANCES AND CLEAR FLOOR SPACE

1/4"=1'-0"



(A) SPOUT HEIGHT AND KNEE CLEARANCE

(B) CLEAR FLOOR SPACE

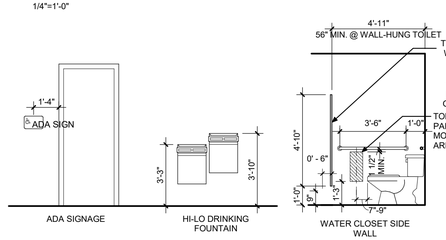


(C) FREE-STANDING FOUNTAIN OR COOLER

(D) BUILT-IN FOUNTAIN OR COOLER

DRINKING FOUNTAINS AND WATER COOLERS

1/4"=1'-0"



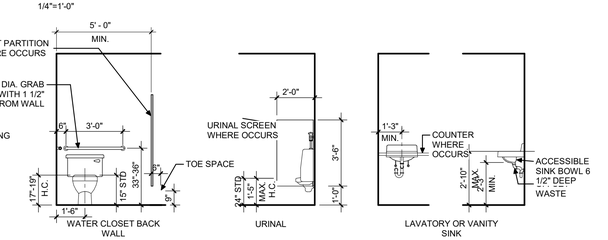
ADA SIGNAGE

HI-LO DRINKING FOUNTAIN

WATER CLOSET SIDE WALL

MANEUVERING CLEARANCES AT DOOR

1/4"=1'-0"



WATER CLOSET BACK WALL

URINAL

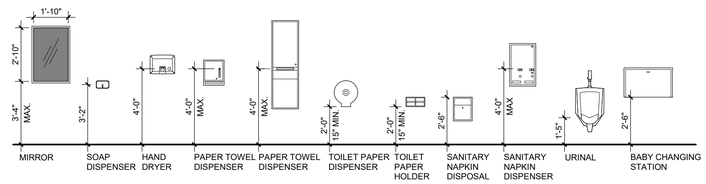
LAVATORY OR VANITY SINK

TYP. ACCESSORY MOUNTING HEIGHTS

1/4"=1'-0"

TYP. PLUMBING FIXTURES AND ACCESSORY MOUNTING HEIGHTS

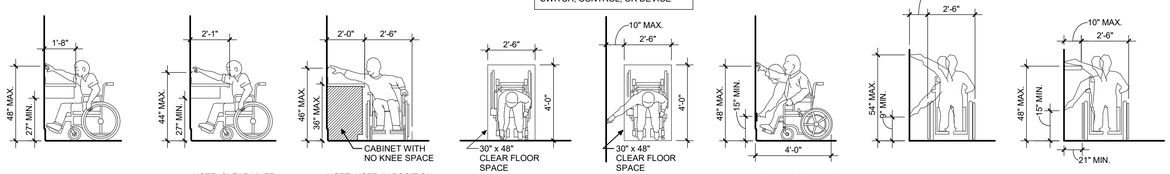
1/4"=1'-0"



TYP. TOILET ACCESSORY MOUNTING HEIGHTS

1/4"=1'-0"

NOTE: 30"X48" CLEAR FLOOR SPACE SHALL BE CENTERED ON OPERABLE SWITCH, CONTROL, OR DEVICE



FORWARD REACH

NOTE: CLEAR KNEE SPACE SHOULD BE AS DEEP AS THE REACH DISTANCE

FORWARD REACH

NOTE: USER IN POSITION PARALLEL TO CABINET FOR A SIDE REACH TO CONTROL OR OUTLET

SIDE REACH

NOTE: USER IS PERPINDICULAR TO WALL FOR A FORWARD REACH

FORWARD REACH

NOTE: USER IS PARALLEL TO WALL FOR A SIDE REACH

SIDE REACH

NOTE: NO OBSTRUCTION TO INTERFERE WITH REACH

FORWARD REACH

NOTE: PARALLEL APPROACH

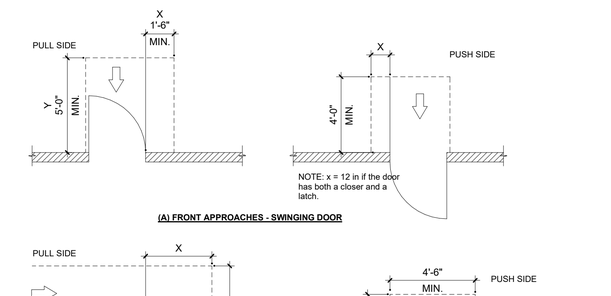
SIDE REACH

NOTE: PARALLEL APPROACH

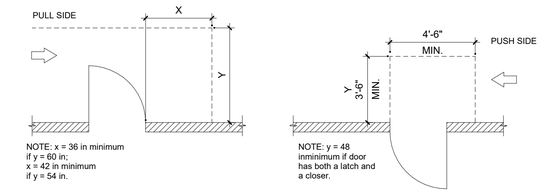
SIDE REACH @ SHELF

WHEELCHAIR REAR DIMENSIONS AND CLEARANCES

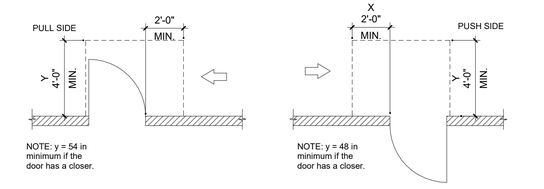
1/4"=1'-0"



(A) FRONT APPROACHES - SWINGING DOOR

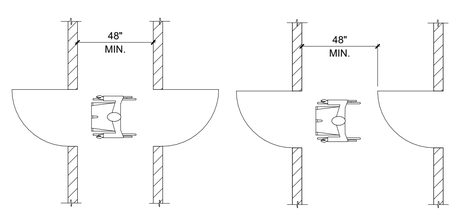


(B) HING-SIDE APPROACHES - SWINGING DOOR



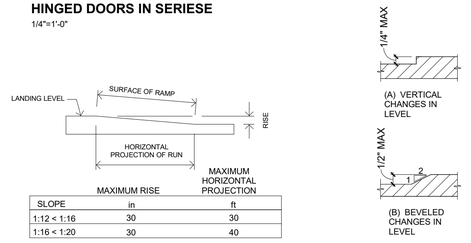
(C) LATCH-SIDE APPROACHES - SWINGING DOOR

NOTE: All doors in alcoves shall comply with the clearances for front approaches.



HINGED DOORS IN SERIESE

1/4"=1'-0"



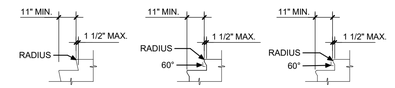
SLOPE	in	ft
1:12 < 1:16	30	30
1:16 < 1:20	30	40

RAMP DIMENSIONS AND COMPONENTS

1/4"=1'-0"

CHANGES IN LEVEL

1/4"=1'-0"



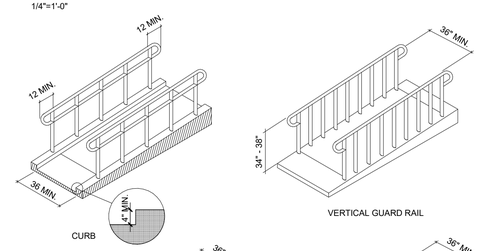
(A) FLUSH RISER

(B) ANGLED NOSING

(C) ROUNDED NOSING

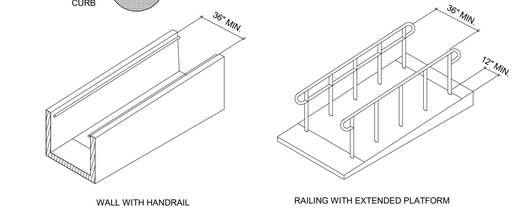
USABLE TREAD WIDTH AND EXAMPLES OF ACCEPTABLE NOSINGS1

1/4"=1'-0"



CURB

VERTICAL GUARD RAIL

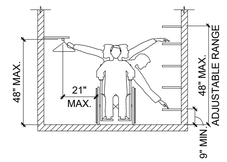


WALL WITH HANDRAIL

RAILING WITH EXTENDED PLATFORM

HANDRAIL EXTENSIONS AND EDGE PROTECTION

1/4"=1'-0"



STORAGE SHEVLES AND CLOSETS

1/4"=1'-0"

DERBY RUN APARTMENTS I

6 DERBY DRIVE, HAMPTON, VA 23666

DYKE NELSON ARCHITECTURE 235 SOUTH 14TH ST. BATON ROUGE, LA 70802 DNA-WORKSHOP.COM [225] 224 3363

DNAworkshop

REVISIONS

JOB NUMBER: 19-007

ISSUED: 08/01/19

ISSUED FOR:

PERMITTING

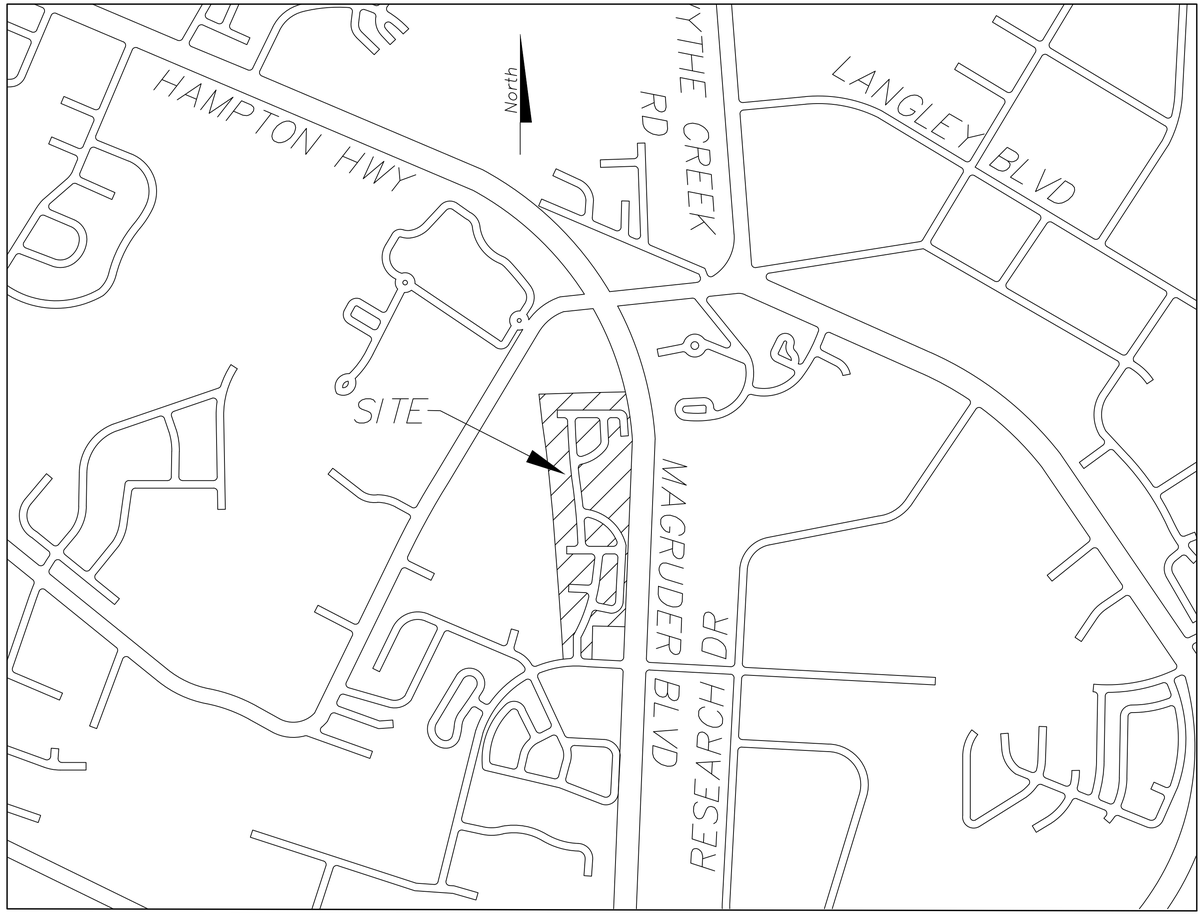
COMMONWEALTH OF VIRGINIA
JOSEPH DYKE NELSON
No. 0401017290
ARCHITECT

ADA DIAGRAMS

G4.1

PHASE: CD

DERBY RUN APARTMENTS
SITE IMPROVEMENTS
6 DERBY DRIVE
HAMPTON, VIRGINIA



VICINITY MAP, SCALE: 1" = 500'

GRAPHIC SCALE

500 0 250 500 1000

(IN FEET)

1 inch = 500 ft.

1. CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS PRIOR TO CONSTRUCTION INCLUDING UNDERGROUND UTILITY CONNECTION POINTS, RECEIVING PIPE SIZES, INVERTS, AND PIPE MATERIALS FOR UNDERGROUND STRUCTURES, CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY UPON FINDING A DIFFERENCE IN FIELD CONDITIONS AND WHAT IS DEPICTED ON THE PLANS.
2. CONTRACTOR SHALL ENGAGE MISS UTILITY OR A PRIVATE UTILITY LOCATION SERVICE TO MARK ALL UNDERGROUND UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
3. CONTRACTOR SHALL COORDINATE ALL UTILITY CONNECTIONS, RELOCATIONS, NEW SERVICES, AND TEMPORARY SERVICES WITH THE UTILITY OWNER PRIOR TO BEGINNING WORK.
4. ALL SIDEWALKS AND HANDICAP ACCESS RAMPS SHALL MEET ADA REQUIREMENTS. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCY BETWEEN DESIGN INFORMATION AND ADA REQUIREMENTS PRIOR TO CONSTRUCTION.

SHEET INDEX

SITE SUMMARY & NOTES:

1. USE: APARTMENTS
2. ZONING: R-M
3. PROPERTY ID #: 6000964
4. SITE ADDRESS: 6 DERBY DRIVE
   HAMPTON, VA 23666
5. SITE AREA: 8.73 ACRES
6. RECEIVING WATERS: NORTHWEST BRANCH BACK RIVER
7. VAHU6: CB22

GENERAL EROSION AND SEDIMENT CONTROL NOTES

ES-1: UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND VIRGINIA REGULATIONS 9VAC 25-840-40 EROSION AND SEDIMENT CONTROL REGULATIONS

ES-2: THE PLAN APPROVING AUTHORITY MUST BE NOTIFIED ONE WEEK PRIOR TO THE PRE-CONSTRUCTION CONFERENCE, ONE WEEK PRIOR TO THE COMMENCEMENT OF LAND DISTURBING ACTIVITY, AND ONE WEEK PRIOR TO THE FINAL INSPECTION.

ES-3: ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING.

ES-4: A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.

ES-5: PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THESE PLANS (INCLUDING, BUT NOT LIMITED TO, OFF-SITE BORROW OR WASTE AREAS), THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION CONTROL PLAN TO THE OWNER FOR REVIEW AND APPROVAL BY THE PLAN APPROVING AUTHORITY.

ES-6: THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE PALN APPROVING AUTHORITY.

ES-7: ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.

ES-8: DURING DEWATERING OPERATIONS, WATER WILL BE PUMPED INTO AN APPROVED FILTERING DEVICE.

ES-9: THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EACH RUNOFF-PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.

STATE AGENCIES SHALL MAKE A CONTINUING REVIEW AND EVALUATION OF THE METHOD USED AND THE OVERALL EFFECTIVENESS OF THE EROSION CONTROL PLAN. THE APPROVED EROSION AND SEDIMENT CONTROL PLAN MAY BE AMENDED BY THE PLAN APPROVING AUTHORITY IF ON-SITE INSPECTION INDICATES THAT THE APPROVED CONTROL MEASURES ARE NOT EFFECTIVE IN CONTROLLING EROSION AND SEDIMENTATION OR BECAUSE OF CHANGED CIRCUMSTANCES THE PLAN CAN NOT BE CARRIED OUT.

PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT (UNDISTURBED) FOR LONGER THAN 14 DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE YEAR.

DEVELOPER NAME: LEDIC REALTY COMPANY, LLC
ADDRESS: 2 METROPLEX DR., SUITE 235
BIRMINGHAM, AL 35209
CONTACT PERSON: MR. WADE WOOD
PHONE NO.: (205) 871-7157
EMAIL: wade.wood@ledic.com

LEGEND

ROAD AND DRAINAGE

- CULVERT OR STORM SEWER (WITH STRUCTURE NO.)
- EXISTING CULVERT OR STORM SEWER PIPE
- DROP INLET & STRUCTURE NO.
- PROPOSED MANHOLE
- EXISTING MANHOLE
- PAVED DITCH
- JUTE MESH OR SODDED DITCH
- EARTH DITCH - GRASS LINED
- 100 EXISTING CONTOUR
- 100 PROPOSED CONTOUR
- X 100.00 EXISTING SPOT ELEVATIONS
- + 100.00 T/C 100.00 PROPOSED SPOT ELEVATIONS (T/C = TOP OF CURB)
- B1 BENCH MARK & REFERENCE NO.
- Stop VDOT STANDARD STOP SIGN

SEWER

- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- SANITARY SEWER SERVICE CONNECTIONS
- 3 120400.00 150500.00 MANHOLE NO. W/ STATION OR COORDINATE LOCATION

WATER

- EXISTING WATERLINE
- PROPOSED WATERLINE
- PROPOSED WATERLINE SERVICE CONNECTION
- GATE VALVE
- FIRE HYDRANT ASSEMBLY
- TEE OR TAPPING SLEEVE
- CROSS
- BLIND CAP
- REDUCER
- BORE CROSSING

EROSION CONTROL

EROSION CONTROL DEVICES AS PER VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK

STD. & SPEC.	
CE 3.02	CONSTRUCTION ENTRANCE
SF 3.05	SILT FENCE
IP 3.07	INLET PROTECTION
DD 3.09	TEMPORARY DIVERSION DIKE
ST 3.13	TEMPORARY SEDIMENT TRAP
CD 3.20	ROCK CHECK DAM

Townes
SITE ENGINEERING
9850 Lori Road, Suite 201
Chesterfield, Virginia 23832
Phone:(804) 748-9011 Fax: (804) 748-2590
Company Website: www.cctownes.com
ASK US HOW

COMMONWEALTH OF VIRGINIA
JASON P. WILKINS
Lic. No. 041215
08/15/2019
PROFESSIONAL ENGINEER

DERBY RUN APARTMENTS
SITE IMPROVEMENTS
6 DERBY DRIVE
HAMPTON, VIRGINIA

COVER SHEET

VHDA REVIEW SET

REVISIONS

DATE	ITEM

DATE
08 / 15 / 2019

SCALE
AS SHOWN

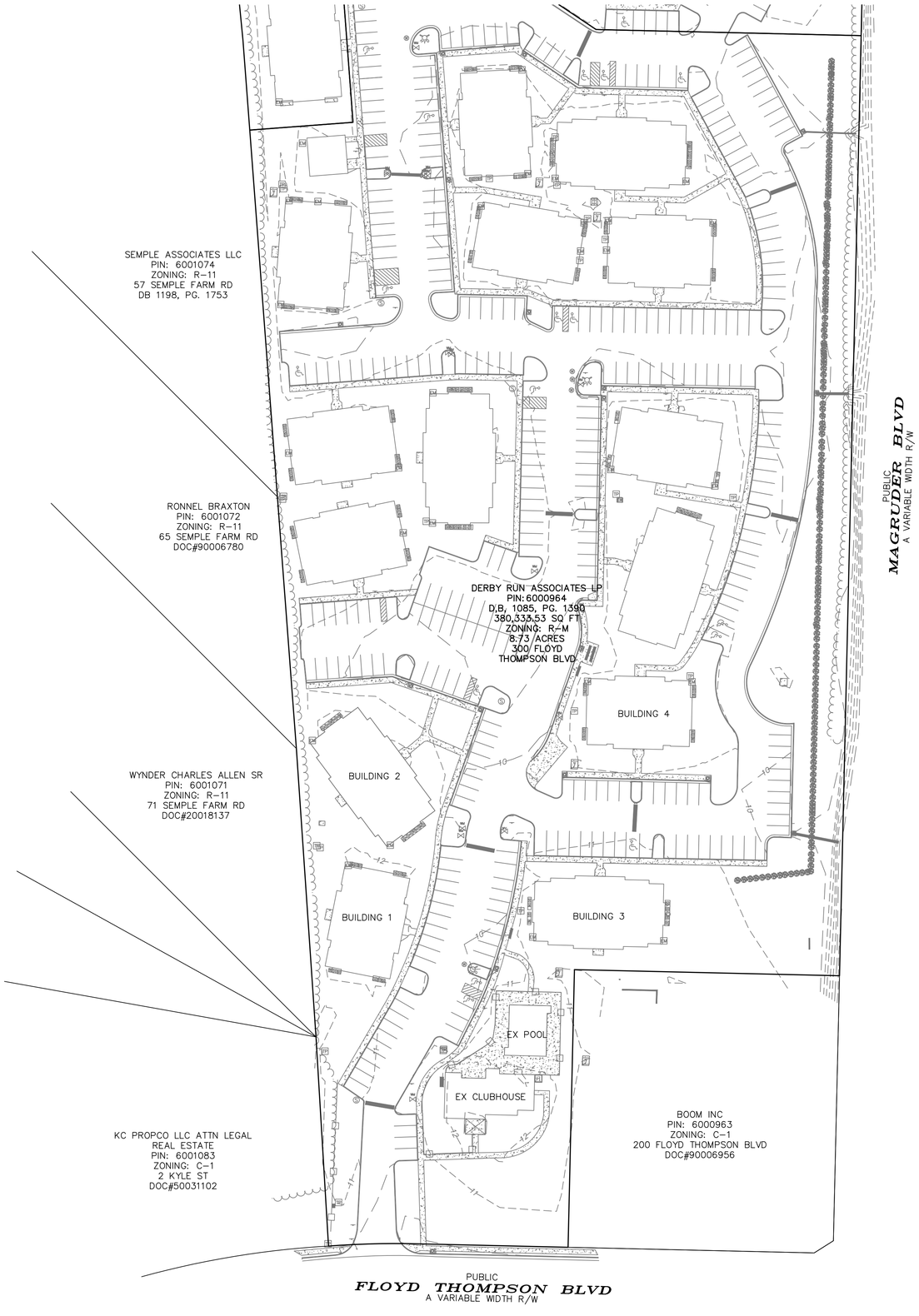
PROJECT MANAGER
JASON P. WILKINS, P.E.

DESIGNED BY
AUSTIN H. GOYNE, E.I.T.

CHECKED BY

PROJ.#
20190114

SHEET #
C-1



GRAPHIC SCALE

40 0 20 40 80

(IN FEET)
1 inch = 40 ft.

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COMMONWEALTH OF VIRGINIA
JASON P. WILKINS
Lic. No. 041215
08/15/2019
PROFESSIONAL ENGINEER

DERBY RUN APARTMENTS
SITE IMPROVEMENTS
6 DERBY DRIVE
HAMPTON, VIRGINIA

EXISTING CONDITIONS

VHDA REVIEW SET

REVISIONS

DATE	ITEM

DATE
08 / 15 / 2019

SCALE
1" = 40'

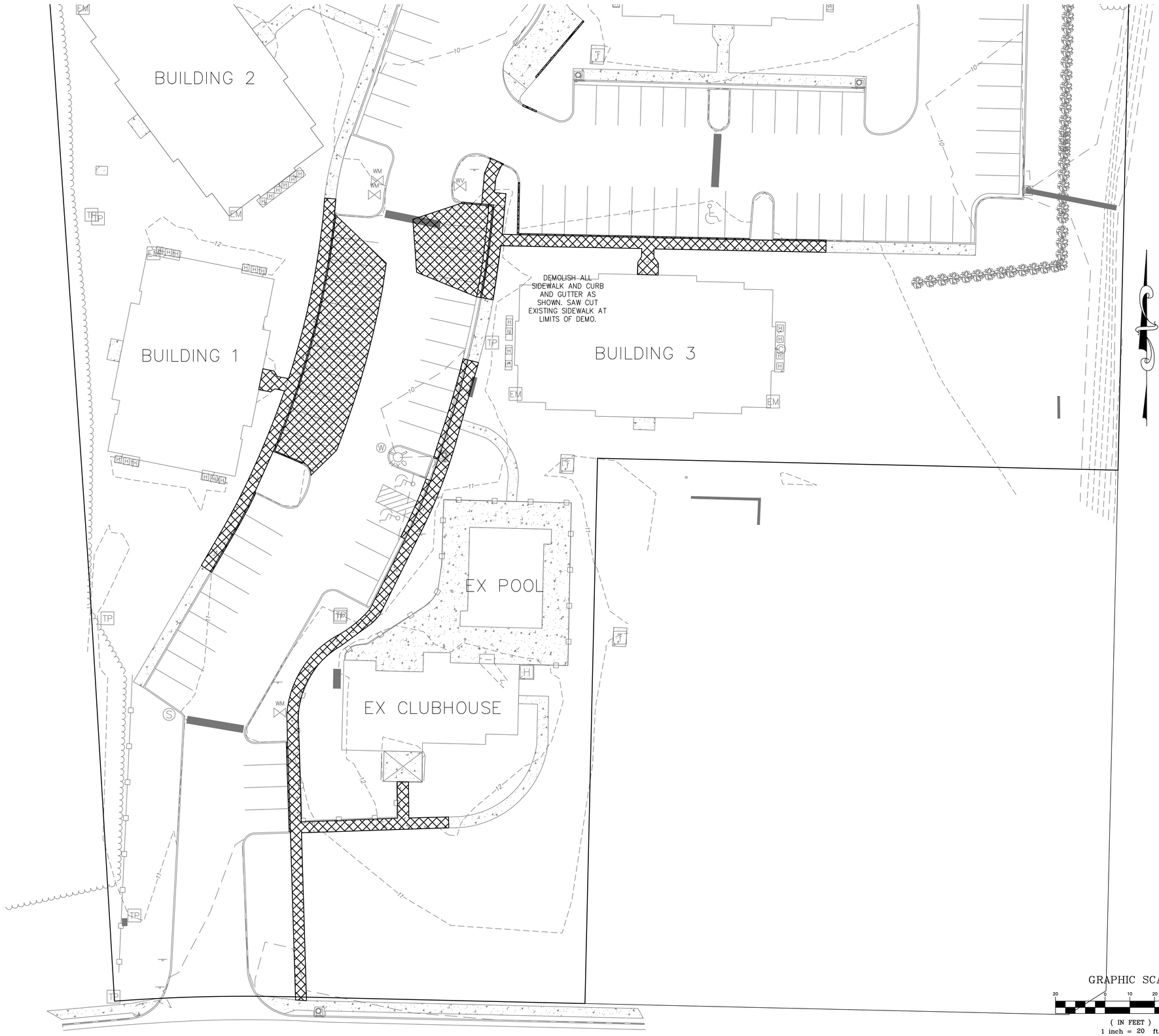
PROJECT MANAGER
JASON P. WILKINS, P.E.

DESIGNED BY
AUSTIN H. GOYNE, E.I.T.

CHECKED BY

PROJ.#
20190114

SHEET #
C-2



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ASK US HOW

COMMONWEALTH OF VIRGINIA
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08/15/2019
PROFESSIONAL ENGINEER

DERBY RUN APARTMENTS SITE IMPROVEMENTS

6 DERBY DRIVE
HAMPTON, VIRGINIA

DEMOLITION PLAN

VHDA REVIEW SET

REVISIONS

DATE	ITEM

DATE
08 / 15 / 2019

SCALE
1" = 20'

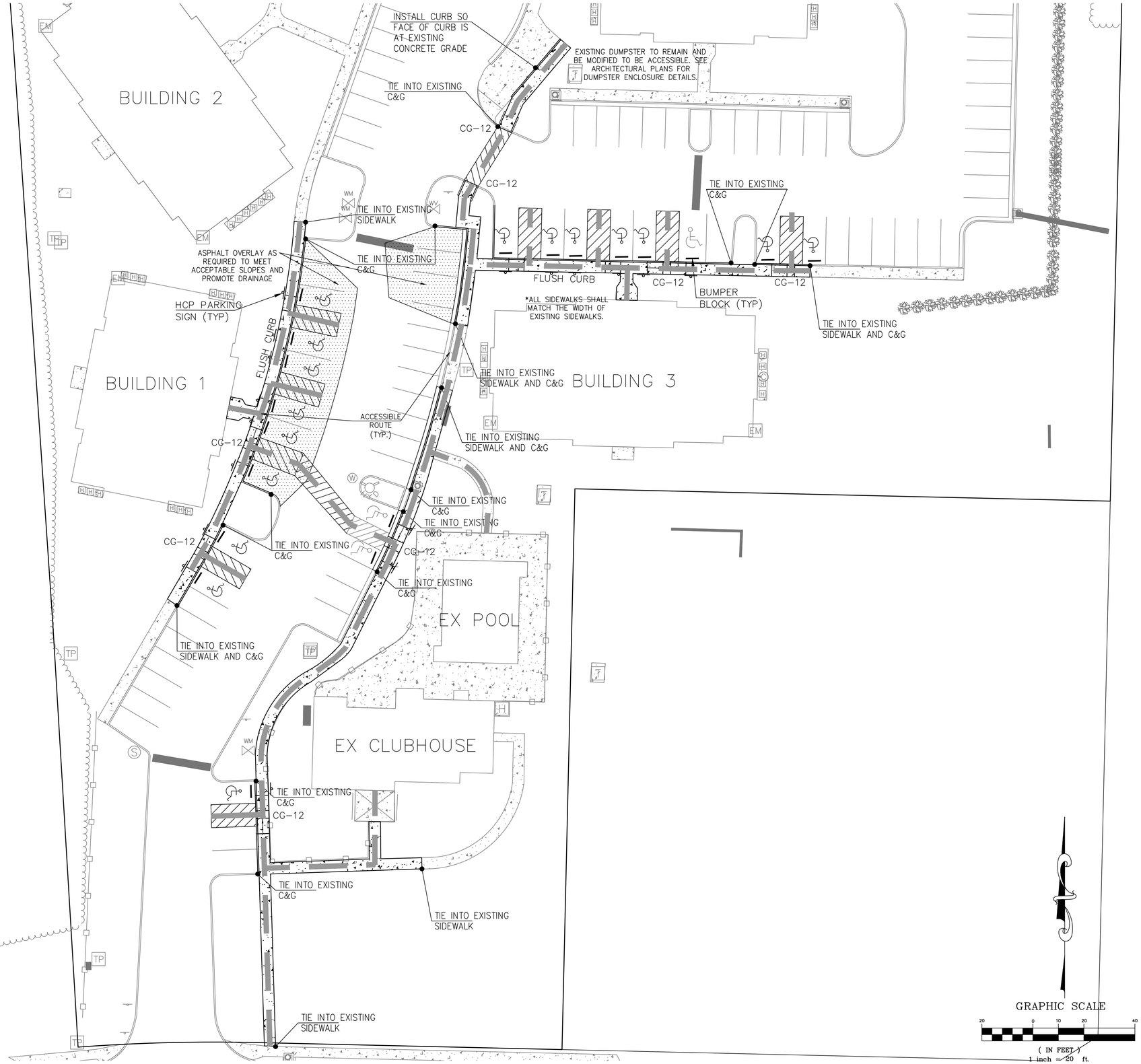
PROJECT MANAGER
JASON P. WILKINS, P.E.

DESIGNED BY
AUSTIN H. GOYNE, E.I.T.

CHECKED BY

PROJ.#
20190114

SHEET #
C-3



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COMMONWEALTH OF VIRGINIA
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Lic. No. 041215
08/15/2019
PROFESSIONAL ENGINEER

DERBY RUN APARTMENTS
SITE IMPROVEMENTS
6 DERBY DRIVE
HAMPTON, VIRGINIA

SITE LAYOUT

VHDA REVIEW SET

REVISIONS

DATE	ITEM

DATE
08 / 15 / 2019

SCALE
1" = 20'

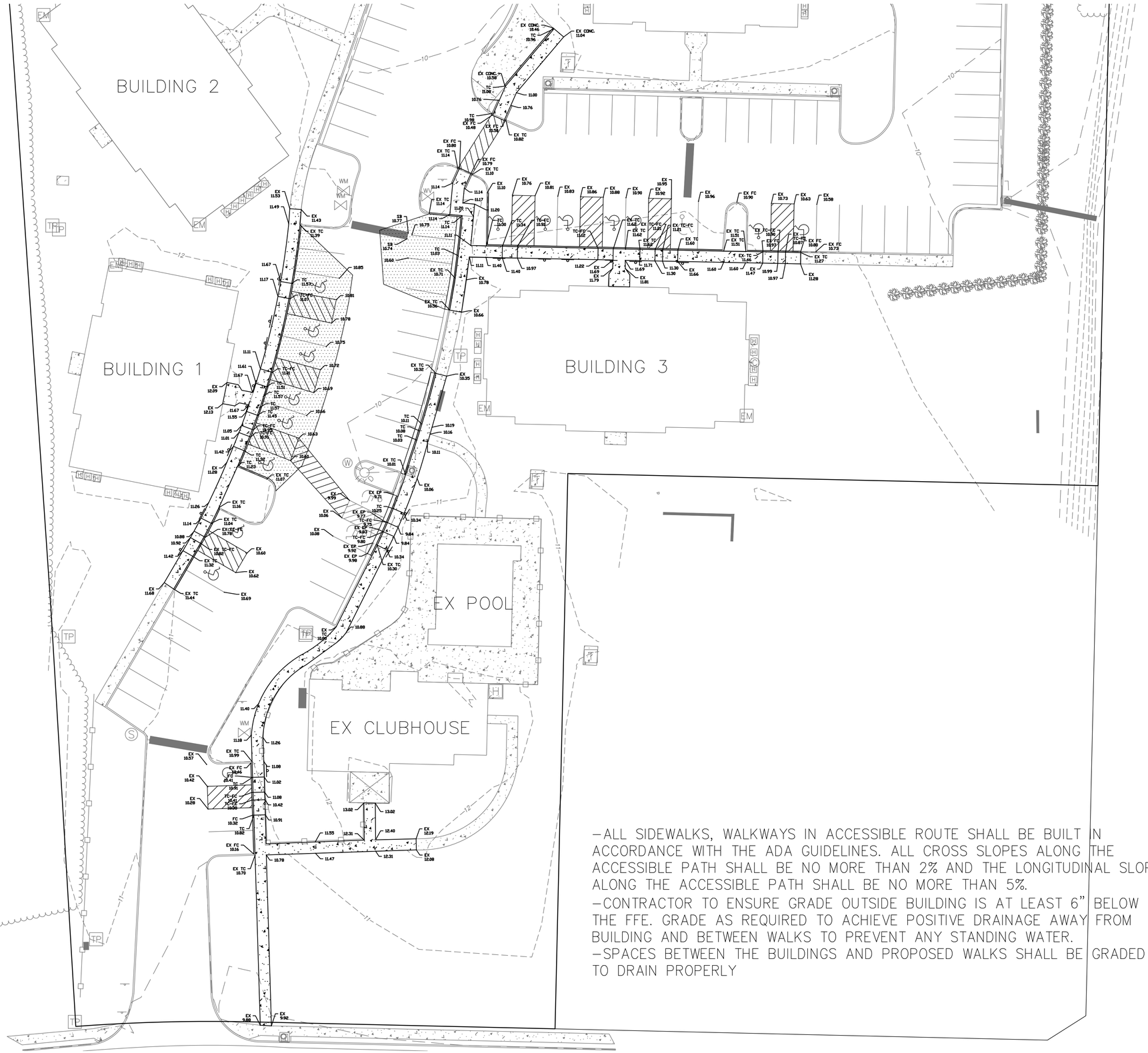
PROJECT MANAGER
JASON P. WILKINS, P.E.

DESIGNED BY
AUSTIN H. GOYNE, E.I.T.

CHECKED BY

PROJ.#
20190114

SHEET #
C-4



-ALL SIDEWALKS, WALKWAYS IN ACCESSIBLE ROUTE SHALL BE BUILT IN ACCORDANCE WITH THE ADA GUIDELINES. ALL CROSS SLOPES ALONG THE ACCESSIBLE PATH SHALL BE NO MORE THAN 2% AND THE LONGITUDINAL SLOPE ALONG THE ACCESSIBLE PATH SHALL BE NO MORE THAN 5%.

-CONTRACTOR TO ENSURE GRADE OUTSIDE BUILDING IS AT LEAST 6" BELOW THE FFE. GRADE AS REQUIRED TO ACHIEVE POSITIVE DRAINAGE AWAY FROM BUILDING AND BETWEEN WALKS TO PREVENT ANY STANDING WATER.

-SPACES BETWEEN THE BUILDINGS AND PROPOSED WALKS SHALL BE GRADED TO DRAIN PROPERLY

GRAPHIC SCALE

20 0 10 20 40

(IN FEET)

1 inch = 20 ft.

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ASK US HOW

COMMONWEALTH OF VIRGINIA
JASON P. WILKINS
Lic. No. 041215
08/15/2019
PROFESSIONAL ENGINEER

DERBY RUN APARTMENTS
SITE IMPROVEMENTS
6 DERBY DRIVE
HAMPTON, VIRGINIA

GRADING PLAN

VHDA REVIEW SET

REVISIONS

DATE	ITEM

DATE
08 / 15 / 2019

SCALE
1" = 10'

PROJECT MANAGER
JASON P. WILKINS, P.E.

DESIGNED BY
AUSTIN H. GOYNE, E.I.T.

CHECKED BY

PROJ.#
20190114

SHEET #
C-5

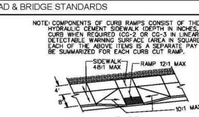
2016 ROAD & BRIDGE STANDARDS

CG-12

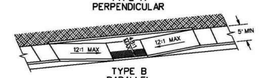
GENERAL NOTES:

1. THE DETECTABLE WARNING SHALL BE PROVIDED BY TRUNCATED DOMES.
2. DETECTABLE WARNING SHALL BE FROM THE MATERIALS APPROVED LIST FOR DETECTABLE WARNING SURFACE. THE CONTRACTOR SHALL SUBMIT TO THE REQUIREMENTS OF THE SPECIAL PROVISION FOR CG-12 DETECTABLE WARNING SURFACE, AND SHALL BE SUBMITTED TO THE STANDARDS AND SPECIAL DESIGN SECTION FOR APPROVAL.
3. SLOPING SIDES OF CURB RAMP MAY BE POURED MONOLITHICALLY WITH RAMP FLOOR OR BY USING PERMISSIBLE CONSTRUCTION JOINT WITH REQUIRED BARS.
4. IF RAMP FLOOR IS PRECAST, HOLES MUST BE PROVIDED FOR DOWEL BARS SO THAT ADJOINING FLARED SIDES CAN BE CAST IN PLACE AFTER PLACEMENT OF PRECAST RAMP FLOOR. PRECAST CONCRETE SHALL BE CLASS A-4.
5. REQUIRED BARS ARE TO BE NO.5 X 8'-0 PLACED 1'-CENTER TO CENTER ALONG BOTH SIDES OF RAMP FLOOR, MID-DEPTH OF RAMP FLOOR. MINIMUM CONCRETE COVER 1½".
6. CURB / CURB AND GUTTER SLOPE TRANSITIONS ADJACENT TO CURB RAMPS ARE INCLUDED IN PAYMENT FOR CURB / CURB AND GUTTER.
7. CURB RAMPS ARE TO BE LOCATED AS SHOWN ON THE PLANS OR, AS DIRECTED BY THE ENGINEER, THEY ARE TO BE PROVIDED AT INTERSECTIONS WHEREVER AN ACCESSIBLE ROUTE WITHIN THE RIGHT OF WAY OF A HIGHWAY FACILITY CROSSES A CURB REGARDLESS OF WHETHER SIDEWALK IS EXISTING, PROPOSED, OR NOT PROPOSED. CURB RAMPS ARE NOT TO BE LOCATED WHERE PROHIBITED AS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER, AND SHOULD NOT BE LOCATED BEHIND VEHICLE STOP LINES, EXISTING LIGHT POLES, FIRE HYDRANTS, DROP INLETS, ETC. ACCESSIBLE ROUTES PROVIDE A CONTINUOUS UNOBSTRUCTED, STABLE, FIRM AND SLIP RESISTANT PATH CONNECTING ALL ACCESSIBLE ELEMENTS OF A FACILITY THAT CAN BE APPROACHED, ENTERED AND USED BY PEDESTRIANS.
8. RAMPS MAY BE PLACED ON RADIAL OR TANGENTIAL SECTIONS PROVIDED THAT THE CURB OPENING IS PLACED WITHIN THE LIMITS OF THE CROSSWALK AND THE RAMP SLOPE AT THE CONNECTION OF THE CURB OPENING IS PERPENDICULAR TO THE CURB.
9. TYPICAL CONCRETE SIDEWALK IS 4" THICK. WHEN THE ENTRANCE RADII CANNOT ACCOMMODATE THE TURNING REQUIREMENTS OF ANTICIPATED HEAVY TRUCK TRAFFIC, REFER TO STANDARD CG-13, COMMERCIAL ENTRANCE HEAVY TRUCK TRAFFIC FOR CONCRETE DEPTH.
10. WHEN CURB RAMPS ARE USED IN CONJUNCTION WITH A SHARED USE PATH, THE MINIMUM WIDTH SHALL BE THE WIDTH OF THE SHARED USE PATH.
11. WHEN ONLY ONE CURB RAMP IS PROVIDED FOR TWO CROSSINGS (DIAGONAL), A 4'x4' LANDING AREA SHALL BE PROVIDED TO MANEUVER A WHEELCHAIR INTO THE CROSSWALK WITHOUT GOING INTO THE TRAVELWAY. THIS 4'x 4' LANDING AREA MAY INCLUDE THE GUTTER PAN.
12. ALL CASES WHERE CURB RAMPS INTERSECT A RADIAL SECTION OF CURB AT ENTRANCES OR STREET CONNECTIONS THE DETECTABLE WARNING SURFACE SHALL BE PLACED ON A RADIAL SURFACE AS MODIFIED AS RECOMMENDED BY THE MANUFACTURER TO MATCH THE BACK OF CURB.

NOTE: COMPONENTS OF CURB RAMPS CONSIST OF THE FOLLOWING: HYDRAULIC CEMENT CONCRETE SIDEWALK (SQUARE YARDS) DETECTABLE WARNING SURFACE (SQUARE FEET IN NUMERICAL AREA) DETECTABLE WARNING SURFACE (AREA IN SQUARE YARDS) EACH OF THE ABOVE ITEMS IS A SEPARATE PAY ITEM AND SHOULD BE SUMMARIZED FOR EACH CURB CUT RAMP.

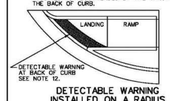


TYPE A
PERPENDICULAR

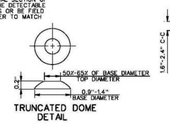


TYPE B
PARALLEL

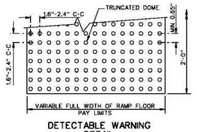
TYPE C
PARALLEL & PERPENDICULAR



DETECTABLE WARNING
INSTALLED ON A RADIUS



TRUNCATED DOME
DETAIL



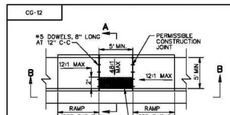
DETECTABLE WARNING
DETAIL

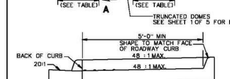
VDOT ROAD AND BRIDGE STANDARDS		CG-12 DETECTABLE WARNING SURFACE (GENERAL NOTES) VIRGINIA DEPARTMENT OF TRANSPORTATION	SPECIFICATION REFERENCE
SHEET 1 OF 5	REVISION DATE 07/15		105 502
203.05			

2016 ROAD & BRIDGE STANDARDS

2016 ROAD & BRIDGE STANDARDS

CG-12





SECTION A-A

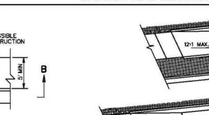
SECTION B-B

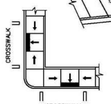
NOTES: FOR GENERAL NOTES ON THE DETECTABLE WARNING SURFACE, SEE SHEET 1 OF 5.

THE REQUIRED LENGTH OF A PARALLEL RAMP IS LIMITED TO 15 FEET, REGARDLESS OF THE SLOPE.

TYPE B PARALLEL APPLICATION

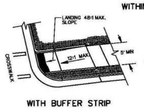
ROADWAY GRADE IN PERCENT	MINIMUM RAMP LENGTH IN FEET	
	4" CURB	6" CURB
0	4	5
1	5	7
2	5	8
3	6	9
4	8	12
5	10	15
6	14	15



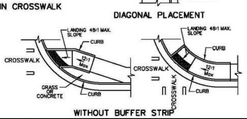


TYPICAL PLACEMENT
AT INTERSECTION
WITHIN CROSSWALK

DIAGONAL PLACEMENT



WITH BUFFER STRIP



WITHOUT BUFFER STRIP

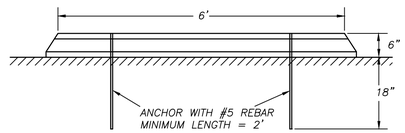
VDOT ROAD AND BRIDGE STANDARDS		CG-12 DETECTABLE WARNING SURFACE TYPE B (PARALLEL) APPLICATION VIRGINIA DEPARTMENT OF TRANSPORTATION	SPECIFICATION REFERENCE
SHEET 3 OF 5	REVISION DATE 07/15		105 502
203.07			

2016 ROAD & BRIDGE STANDARDS

NOTE:
HANDICAPPED SPACES SHALL BE IDENTIFIED BY ABOVE GRADE SIGNS AS RESERVED FOR PHYSICALLY HANDICAPPED PERSONS. PROVIDE (1) 12"x18" SIGN AT EACH HANDICAPPED PARKING SPACE INDICATED ON THE SITE PLAN. SIGN WILL BE ALUMINUM (PAINTED BLUE) WITH WHITE LETTERS AND INTERNATIONAL WHEELCHAIR SYMBOL. THE LOWER EDGE OF THE SIGNS SHALL BE AT LEAST FOUR (4) FEET ABOVE-GRADE, BUT NO HIGHER THAN SEVEN (7) FEET ABOVE-GRADE.

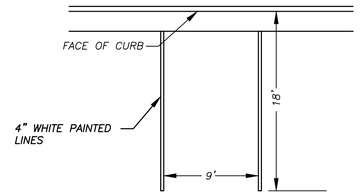
HANDICAPPED PARKING SIGN

NOT TO SCALE



ANCHORING FOR PRECAST BUMPER BLOCKS

NOT TO SCALE

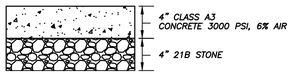


TYPICAL PARKING SPACE DETAIL

NOT TO SCALE

SIDEWALK DETAIL

NOT TO SCALE



CONCRETE SIDEWALK SECTION

NOT TO SCALE

Townes
SITE ENGINEERING
9850 Lori Road, Suite 201
Chesterfield, Virginia 23832
Phone:(804) 748-9011 Fax: (804) 748-2590
Company Website: www.cctownes.com
ASK US HOW

COMMONWEALTH OF VIRGINIA
JASON P. WILKINS
Lic. No. 041215
08/15/2019
PROFESSIONAL ENGINEER

DERBY RUN APARTMENTS
SITE IMPROVEMENTS
6 DERBY DRIVE
HAMPTON, VIRGINIA

DETAILS

VHDA REVIEW SET

REVISIONS

DATE	ITEM

DATE
08 / 15 / 2019

SCALE
NOT TO SCALE

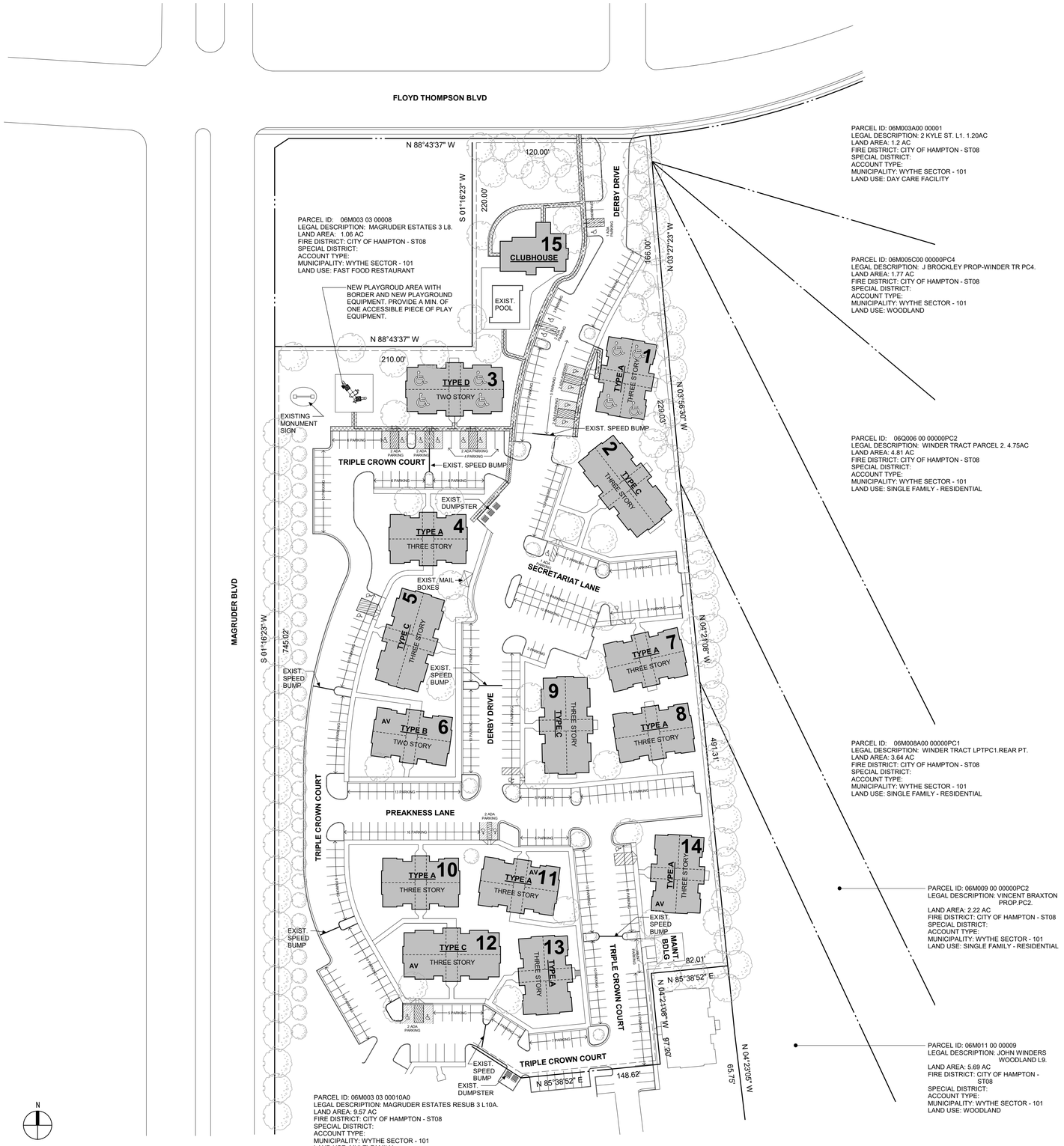
PROJECT MANAGER
JASON P. WILKINS, P.E.

DESIGNED BY
AUSTIN H. GOYNE, E.I.T.

CHECKED BY

PROJ.#
20190114

SHEET #
C-6



1 ARCHITECTURAL SITE PLAN - NEW
1" = 60'-0"

SITE INFORMATION	
SIZE:	8.73 ACRES
ZONING:	M-R MULTI-FAMILY RESIDENTIAL DISTRICT
DISTRICT:	1B
SPI:	YES

GENERAL SITE NOTES

1. ALL DIMENSIONS ARE TO FACE OF FRAMING, UNLESS NOTED OTHERWISE.
2. CONTRACTOR TO VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
3. IN THE CASE OF CONFLICT, CONTRACTOR TO NOTIFY ARCHITECT.
4. CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS AND COORDINATE WITH NEW. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT.
5. SIDEWALKS: REMOVE & REPLACE/REPAIR EXISTING DAMAGED CONCRETE SIDEWALKS. REPLACE DAMAGED CURBING AND REPLACE WITH LIKE PROFILE (APPROX. 6,000SF TOTAL). PROVIDE CURB CUTS AND REPLACE AS NEEDED FROM NEW ACCESSIBLE PARKING SPACES TO ACCESSIBLE UNITS.
6. PARKING: HANDICAP PARKING SPACES AT NEW LOCATIONS.
7. PLAYGROUND EQUIPMENT: NEW PLAYGROUND EQUIPMENT AND BORDER WITH MULCH.
8. FINISH GRADING: LOTS TO BE RE-GRADED TO DRAIN STORM WATER DIRECTLY AWAY FROM BUILDINGS AND SITE AMENITIES. ALLOWANCE HAS BEEN INCLUDED IN SCOPE (UP TO $35,000).
9. CONTRACTOR TO SEAL COAT AND STRIPE ENTIRE PARKING LOT AND DRIVES.
10. REMOVE AND REPLACE EXISTING CURB RAMPS AT EXISTING LOCATIONS. PROVIDE NEW CURB RAMPS TO MEET CROSS SLOPE REQUIREMENTS.
11. REPAIR ONE (1) CONCRETE SIDEWALK FOUND TO BE NON COMPLIANT NOTED IN PCNA REPORT FROM EXISITING HC PARKING SPOT TO BUILDING BREEZEWAY. RE: REPORT.

SITE LEGEND

- HANDICAPPED UNITS
- AV — AUDITORY / VISUALLY IMPAIRED UNITS
- AREA OF SIDEWALKS TO BE REMOVED & REPLACED/ REPAIRED
- AREA OF HANDICAP PARKING SPACE TO RECEIVE CONCRETE OVERLAY
- DESIGNATED ACCESSIBLE ROUTE - CONTRACTOR TO REPAIR / REPLACE/ PROVIDE NEW SIDEWALKS, CURB CUTS, ETC. AS REQUIRED
- NEW DEPRESSED SIDEWALK AND ACCESSIBLE RAMP
- EXISTING TREES

NOTE: REFERENCE CIVIL ACCESSIBILTY PLANS FOR ALL ACCESSIBLE ROUTES AND HANDICAP PARKING

PARKING SPACES	
STANDARD PARKING	312
ADA PARKING	15
MAINTANENCE VAN PARKING	1
TOTAL	328

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DYKE NELSON ARCHITECTURE 235 SOUTH 14TH ST. BATON ROUGE, LA 70802 DNA-WORKSHOP.COM [225] 224 3363

REVISIONS

1 08/17/19 D3G/HUD

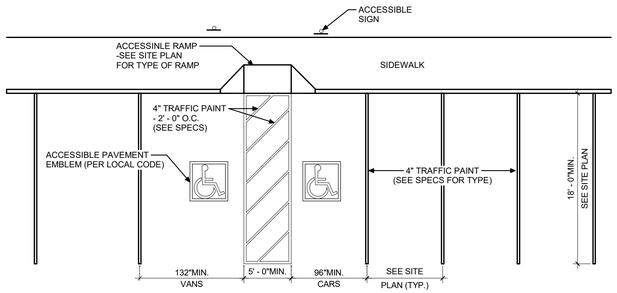
JOB NUMBER: 19-007
ISSUED: 08/01/19
ISSUED FOR:
PERMITTING

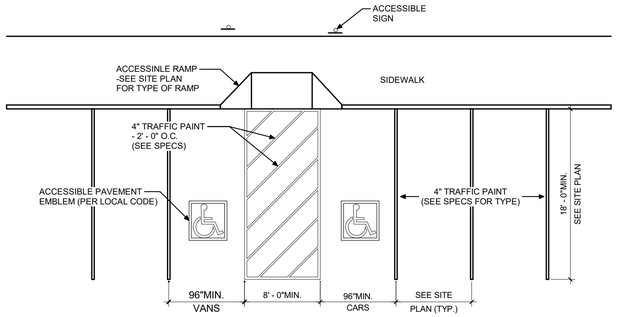
COMMONWEALTH OF VIRGINIA
JOSEPH DYKE NELSON
No. 0401017290
ARCHITECT

ARCHITECTURAL SITE PLAN

A0.1

PHASE: CD





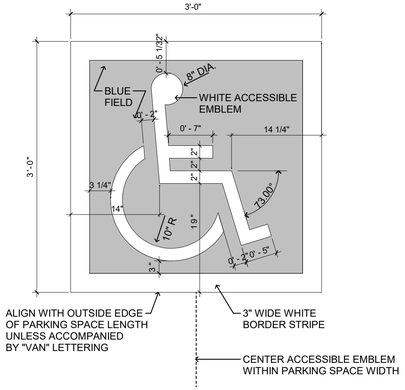
ALTERNATE "B"

ALL DIMENSIONS ARE TO CENTERLINE OF STRIPE UNLESS OTHERWISE NOTED. COLOR OF ALL ACCESSIBLE TRAFFIC PAINT SHALL BE PER LOCAL CODE (WHITE, YELLOW, ETC.)

208.2.4 VAN PARKING SPACES:

FOR EVERY SIX OR FRACTIONAL OF SIX PARKING SPACES REQUIRED BY 208.2 TO COMPLY WITH 502, AT LEAST ONE SHALL BE A VAN PARKING SPACE COMPLYING WITH 502.

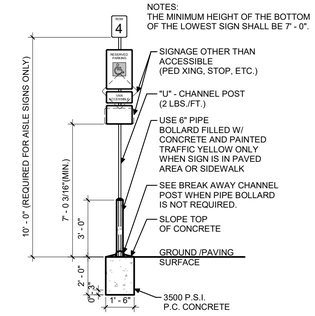
1 VAN ACCESSIBLE PARKING STRIPING
NTS



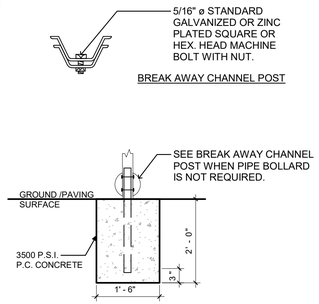
NOTE: LOCAL CODE MAY REQUIRE A WHITE FIELD WITH BLUE EMBLEM OR ANOTHER COLOR ARRANGEMENT. THE CONTRACTOR SHALL VERIFY THE REQUIRED PAINT COLOR WITH LOCAL OFFICIAL PRIOR TO PAINTING PAVEMENT MARKINGS.

LOCAL AND/OR STATE CODE WILL TAKE PRECEDENCE FOR EMBLEM SIZE, COLOR AND LOCATION.

2 ACCESSIBLE PAVEMENT EMBLEM
NTS

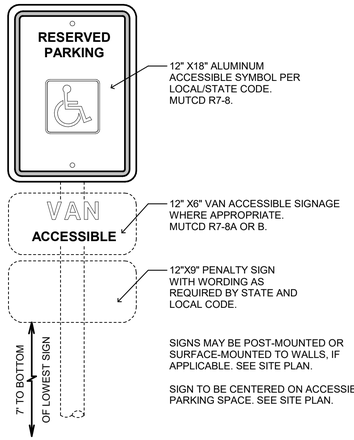


SIGN BASE IN PAVEMENT

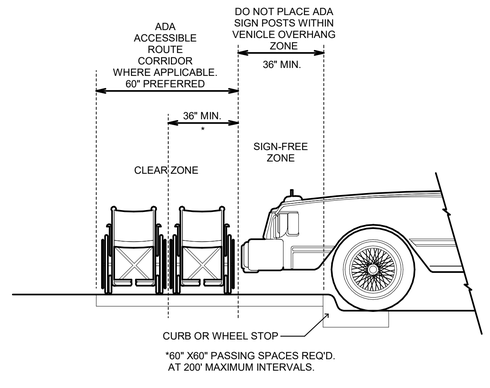


SIGN BASE IN LAWN OR LANDSCAPED AREAS

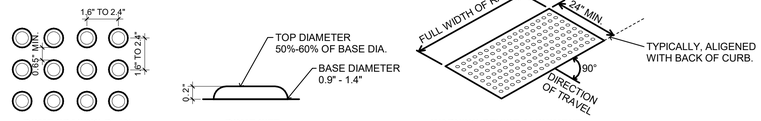
3 SIGN POST INSTALLATION
NTS



4 ACCESSIBLE SIGN / PLACEMENT LIMITS
NTS



5 DETECTABLE WARNING SURFACE
NTS



NOTES:
1. DETECTABLE WARNING SURFACES SHALL CONSIST OF TRUNCATED DOMES ALIGNED IN A SQUARE OR RADIAL GRID PATTERN AND SHALL COMPLY WITH ADA 705 GUIDELINES.

2. DETECTABLE WARNING SURFACES SHALL CONTRAST VISUALLY WITH ADJACENT GUTTER, STREET OR HIGHWAY, OR PEDESTRIAN ACCESS ROUTE SURFACE, EITHER LIGHT-ON-DARK OR DARK-ON-LIGHT.

NOTES:

1. CONTRACTOR IS ADVISED TO BE CONSCIOUS OF VARIOUS PAVEMENT CROSS SLOPES, ESPECIALLY AT INTERSECTIONS AND PARKING LOTS.

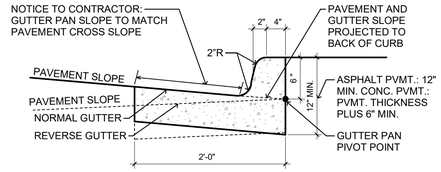
2. THE CONTRACTOR SHALL APPLY A TACK COAT TO THE FACE OF THE CONCRETE GUTTER WHERE THE GUTTER CONTACTS ASPHALT.

3. CONCRETE FOR CURB AND GUTTER TO BE CLASS A, 3000 PSI, 5.5 BAG MIX WITH 4-7% AIR ENTRAINMENT.

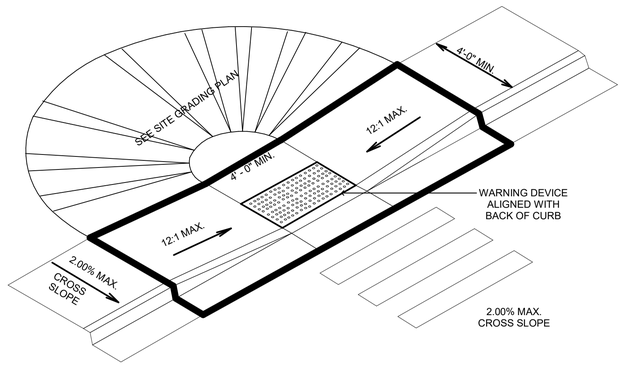
4. ALL CURB AND GUTTER SHALL HAVE A BROOMED FINISH UNLESS OTHERWISE SPECIFIED.

5. SAW CUT JOINTS AT 15' O.C. SEAL WITH ONE PART COLD APPLIED SILICONE JOINT SEALER OR OTHER APPROVED SEALANT. ALL JOINTS TO BE SEALED PRIOR TO FINAL ASPHALT PLACEMENT.

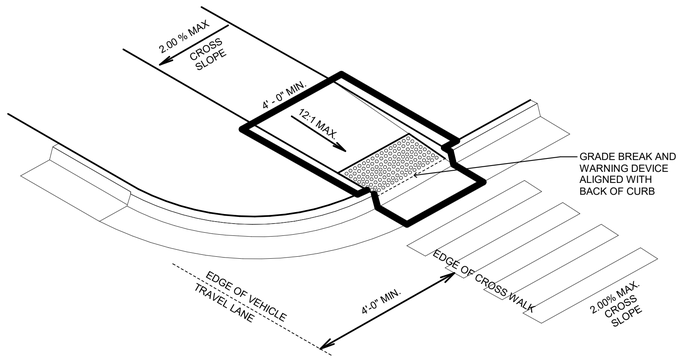
6. PROVIDE 1/2" PREFORMED EXPANSION JOINT MATERIAL (ASPHALT IMPREGNATED FIBERBOARD OR OTHER APPROVED MATERIAL) AT STATIONARY STRUCTURES, (DROP INLETS, END OF CURBS, DRIVEWAYS - SEE DETAIL) OR AS DIRECTED BY ENGINEER.



6 TYPICAL CURB SECTION
NTS



7 DEPRESSED SIDEWALK AND ACCESSIBLE RAMP
NTS



8 SINGLE ACCESSIBLE RAMP - SMALLER RADIUS WITH CURBED SIDES
NTS

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DYKE NELSON ARCHITECTURE 235 SOUTH 14TH ST. BATON ROUGE, LA 70802DNA-WORKSHOP.COM [225] 224 3363

REVISIONS

JOB NUMBER: 19-007

ISSUED: 08/01/19

ISSUED FOR:

PERMITTING

COMMONWEALTH OF VIRGINIA
JOSEPH DYKE NELSON
No. 0401017290
ARCHITECT

SITE DETAILS

A0.2

PHASE: CD

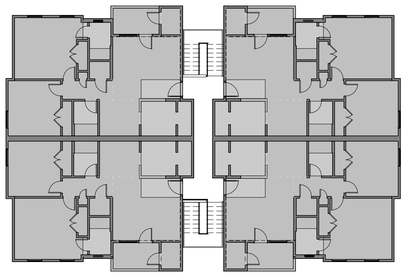
BUILDING DATA

BLDG TYPE	BLDG UDENTIFICATION	NO. OF BLDGS	UNIT TYPES 2BR	2BR (HC)	3BR	3BR (HC)	FLOORS	FIRST FLOOR GSF	SECOND FLOOR GSF	THIRD FLOOR GSF	BLDG TOTAL GSF	BLDG TOTAL NSF
BLDG TYPE A	1, 4, 7, 8, 10, 11, 13, 14	8	92	4	-	-	3	3995.33	3995.33	3995.33	95887.92	84402.24
BLDG TYPE B	6	1	8	-	-	-	2	3995.33	3995.33	-	7990.66	7033.52
BLDG TYPE C	2, 5, 9, 12	4	-	-	44	4	3	5008.76	5008.76	5008.76	60105.12	53072.64
BLDG TYPE D	3	1	-	-	8	-	2	5008.76	5008.76	-	10017.52	8845.44
TOTAL LEASABLE		14	-	-	-	-	-	-	-	-	174001.20	153353.80
CLUBHOUSE		1	-	-	-	-	1	-	-	-	2307.95	2200.77
MAINTENACE BULDING		1	-	-	-	-	1	-	-	-	900	800
PROPERTY TOTAL		15	100	4	52	4	-	-	-	-	177209.20	156345.60

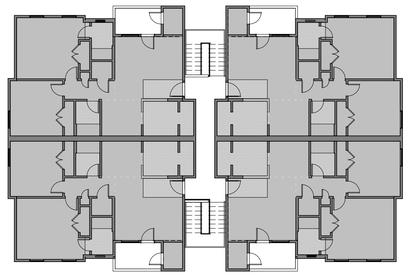
2

UNIT TYPES

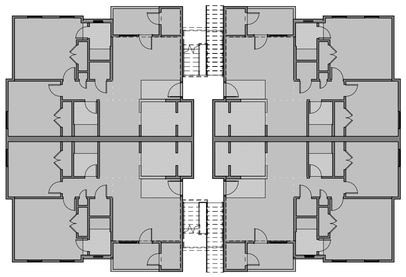
UNIT TYPE	BEDS	BATHS	GSF	NSF	UNIT TOTALS
2BR	2	2	998.8325	878.19	100
2BR HC	2	1	998.8325	878.19	4
3BR	3	2	1252.19	1105.68	52
3BR HC	3	2	1252.19	1105.68	4
TOTAL					160



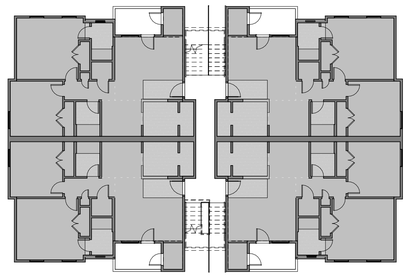
THIRD FLOOR
3995.33 GSF



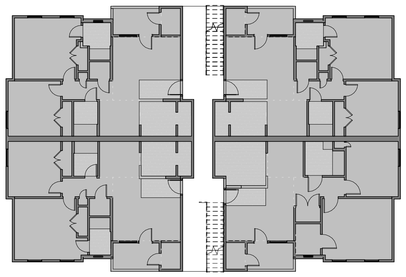
THIRD FLOOR
3469.19 NSF



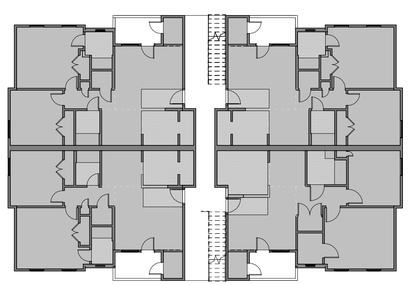
SECOND FLOOR
3995.33 GSF



SECOND FLOOR
3469.19 NSF



FIRST FLOOR
3995.33 GSF



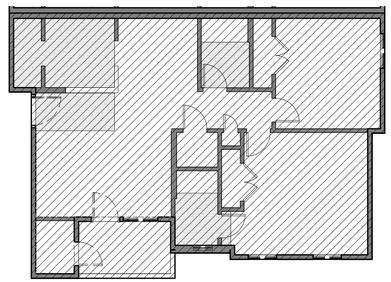
FIRST FLOOR
3469.19 NSF

1 BLDG TYPE A - AREA PLAN TOTAL: 11985.99 GSF
1/16" = 1'-0"

2 BLDG TYPE A - AREA PLAN TOTAL: 10488.57 NSF
1/16" = 1'-0"

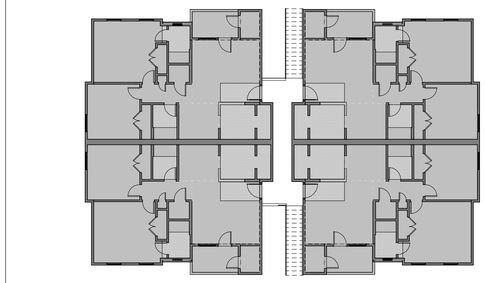
TYPICAL FLOOR PLAN (2ND & 3RD FLOOR)
ALL DIMENSIONS SHOWN ARE EXISTING AND TO BE VERIFIED ON JOB SITE

6 2 BEDROOM UNIT - AREA PLAN 878.19 NSF
1/8" = 1'-0"



TYPICAL FLOOR PLAN (2ND & 3RD FLOOR)
ALL DIMENSIONS SHOWN ARE EXISTING AND TO BE VERIFIED ON JOB SITE

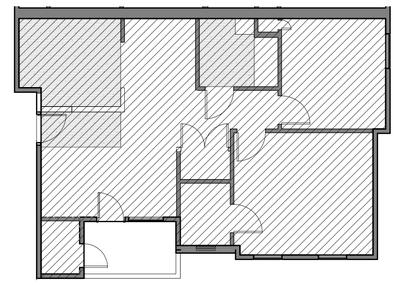
5 2 BEDROOM UNIT - AREA PLAN 998.83 GSF
1/8" = 1'-0"



SECOND FLOOR
3995.33 GSF

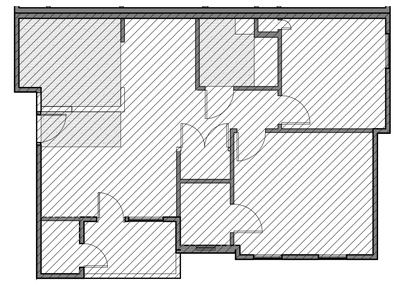
FIRST FLOOR
3995.33 GSF

3 BLDG TYPE B - AREA PLAN TOTAL: 7990.66 GSF
1/16" = 1'-0"



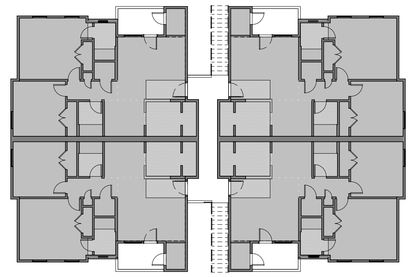
HANDICAP ACCESSIBLE FLOOR PLAN (1ST FLOOR)
ALL DIMENSIONS SHOWN ARE EXISTING AND TO BE VERIFIED ON JOB SITE

8 2 BEDROOM UNIT (HC) - AREA PLAN 878.19 NSF
1/8" = 1'-0"

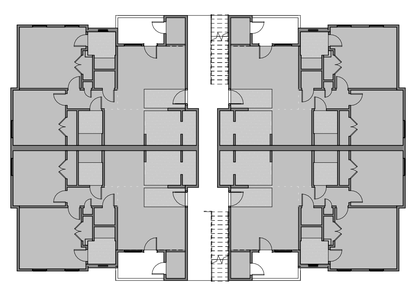


HANDICAP ACCESSIBLE FLOOR PLAN (1ST FLOOR)
ALL DIMENSIONS SHOWN ARE EXISTING AND TO BE VERIFIED ON JOB SITE

7 2 BEDROOM UNIT (HC) - AREA PLAN 998.83 GSF
1/8" = 1'-0"



SECOND FLOOR
3469.19 NSF



FIRST FLOOR
3469.19 NSF

4 BLDG TYPE B - AREA PLAN TOTAL: 6938.38 NSF
1/16" = 1'-0"

DERBY RUN APARTMENTS I

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REVISIONS

1	08/17/19	D3G/HUD
2	08/26/19	D3G/HUD

JOB NUMBER: 19-007

ISSUED: 08/01/19

ISSUED FOR:

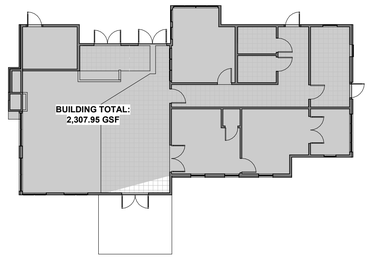
PERMITTING

COMMONWEALTH OF VIRGINIA
JOSEPH DYKE NELSON
No. 0401017290
ARCHITECT

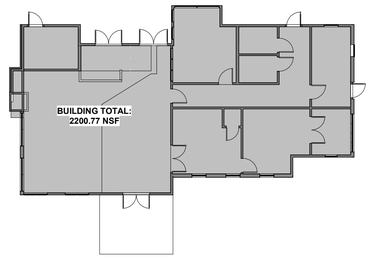
AREA PLANS

A0.3

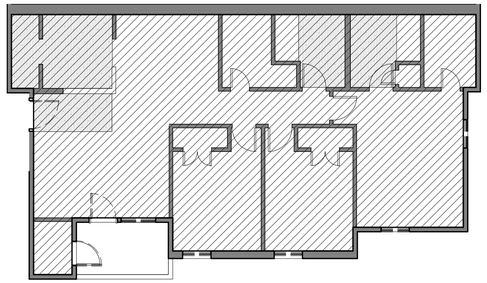
PHASE: CD



9 CLUBHOUSE - AREA PLAN 2307.95 GSF
1/16" = 1'-0"

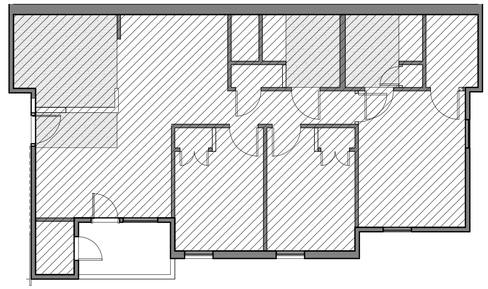


10 CLUBHOUSE - AREA PLAN 2200.77 NSF
1/16" = 1'-0"



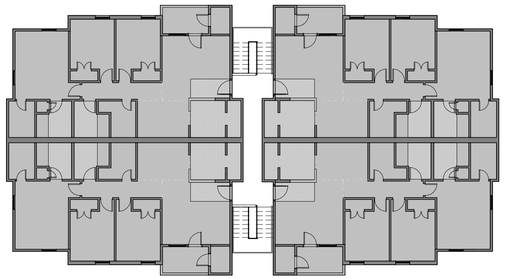
TYPICAL FLOOR PLAN
ALL DIMENSIONS SHOWN ARE EXISTING AND TO BE VERIFIED ON JOB SITE

6 3 BEDROOM UNIT - AREA PLAN 1105.68 NSF
1/8" = 1'-0"

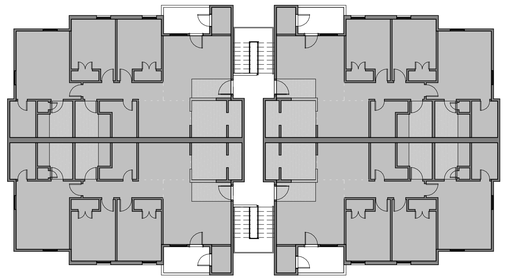


HANDICAP ACCESSIBLE FLOOR PLAN (1ST FLOOR)
ALL DIMENSIONS SHOWN ARE EXISTING AND TO BE VERIFIED ON JOB SITE

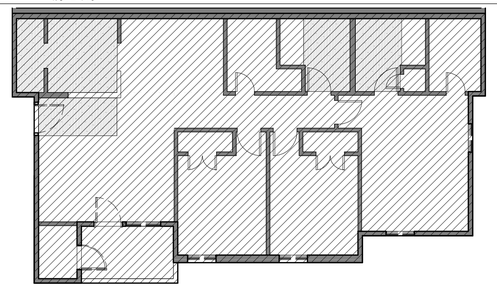
8 3 BEDROOM UNIT (HC) - AREA PLAN 1105.68 NSF
1/8" = 1'-0"



THIRD FLOOR
5008.76 GSF

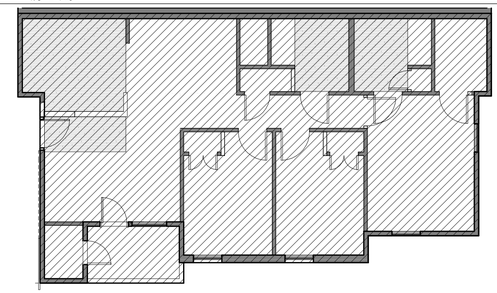


THIRD FLOOR
4422.70 NSF



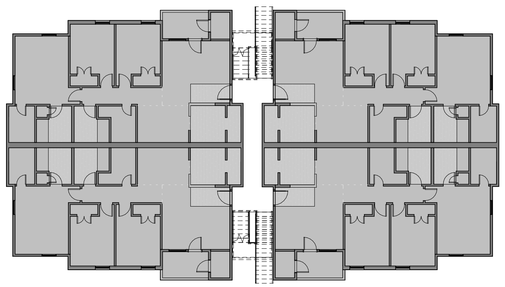
TYPICAL FLOOR PLAN
ALL DIMENSIONS SHOWN ARE EXISTING AND TO BE VERIFIED ON JOB SITE

5 3 BEDROOM UNIT - AREA PLAN 1252.19 GSF
1/8" = 1'-0"

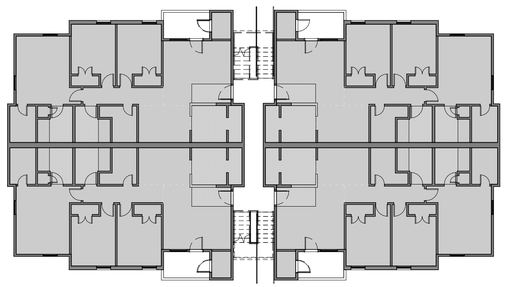


HANDICAP ACCESSIBLE FLOOR PLAN (1ST FLOOR)
ALL DIMENSIONS SHOWN ARE EXISTING AND TO BE VERIFIED ON JOB SITE

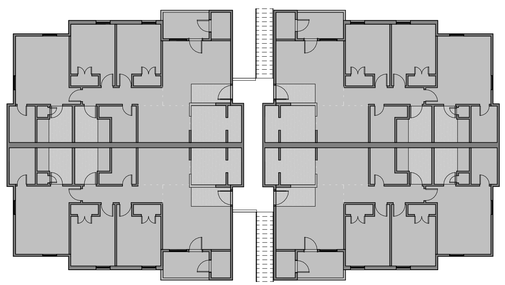
7 3 BEDROOM UNIT (HC) - AREA PLAN 1252.19 GSF
1/8" = 1'-0"



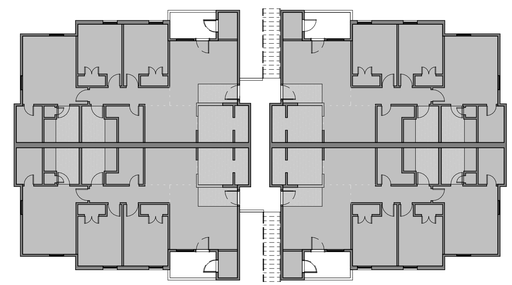
SECOND FLOOR
5008.76 GSF



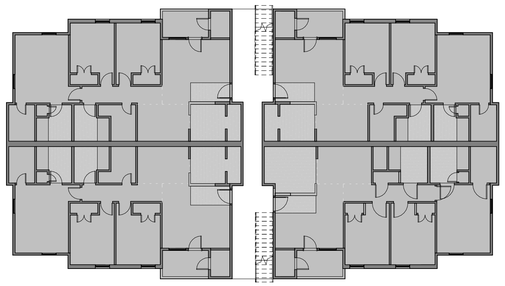
SECOND FLOOR
4422.70 NSF



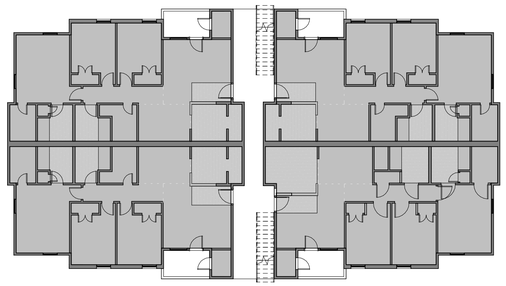
SECOND FLOOR
5008.76 GSF



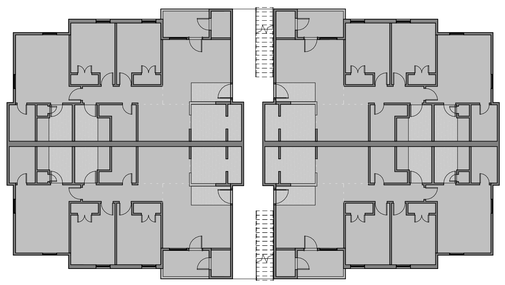
SECOND FLOOR
4422.70 NSF



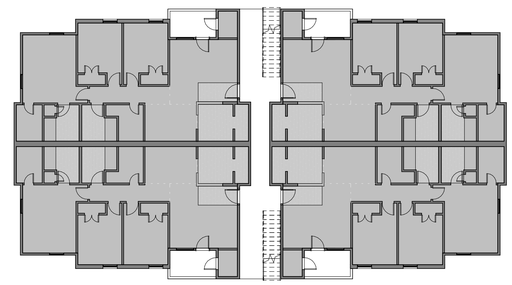
FIRST FLOOR
5008.76 GSF



FIRST FLOOR
4422.70 NSF



FIRST FLOOR
5008.76 GSF



FIRST FLOOR
4422.70 NSF

1 BLDG TYPE C - AREA PLAN TOTAL: 15026.28 GSF
1/16" = 1'-0"

2 BLDG TYPE C - AREA PLAN TOTAL: 13268.10 NSF
1/16" = 1'-0"

3 BLDG TYPE D - AREA PLAN TOTAL: 10017.52 GSF
1/16" = 1'-0"

4 BLDG TYPE D - AREA PLAN TOTAL: 8841.40 NSF
1/16" = 1'-0"

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6 DERBY DRIVE, HAMPTON, VA 23666

DYKE NELSON ARCHITECTURE 235 SOUTH 14TH ST. BATON ROUGE, LA 70802 DNA-WORKSHOP.COM [225] 224 3363

REVISIONS

1 08/17/19 D3G/HUD

JOB NUMBER: 19-007

ISSUED: 08/01/19

ISSUED FOR:

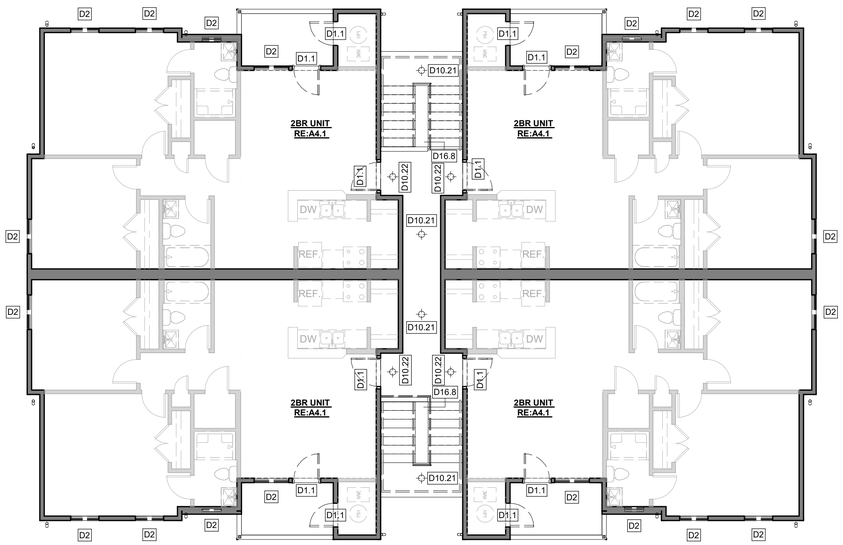
PERMITTING

COMMONWEALTH OF VIRGINIA
JOSEPH DYKE NELSON
No. 0401017290
ARCHITECT

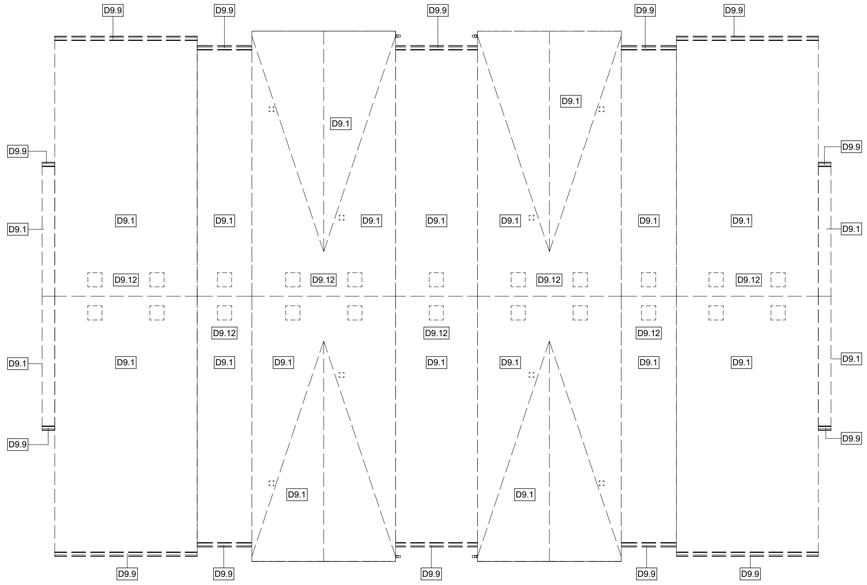
AREA PLANS

A0.4

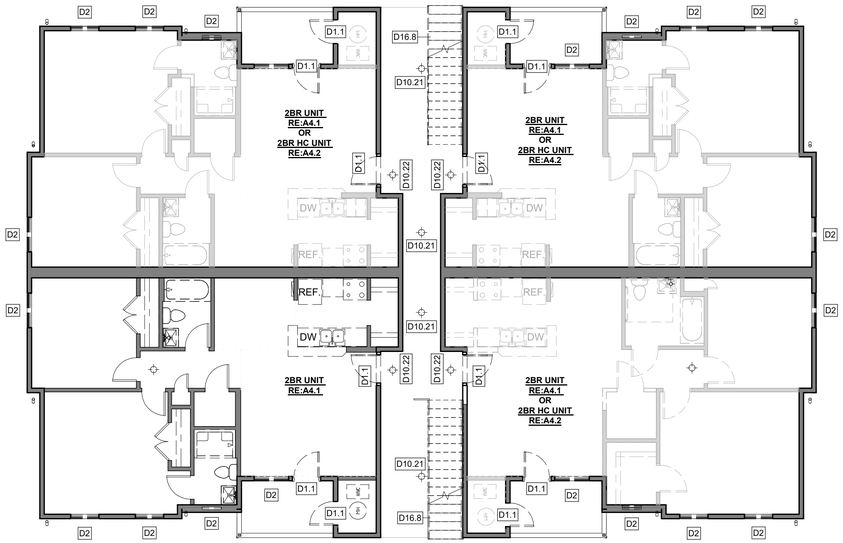
PHASE: CD



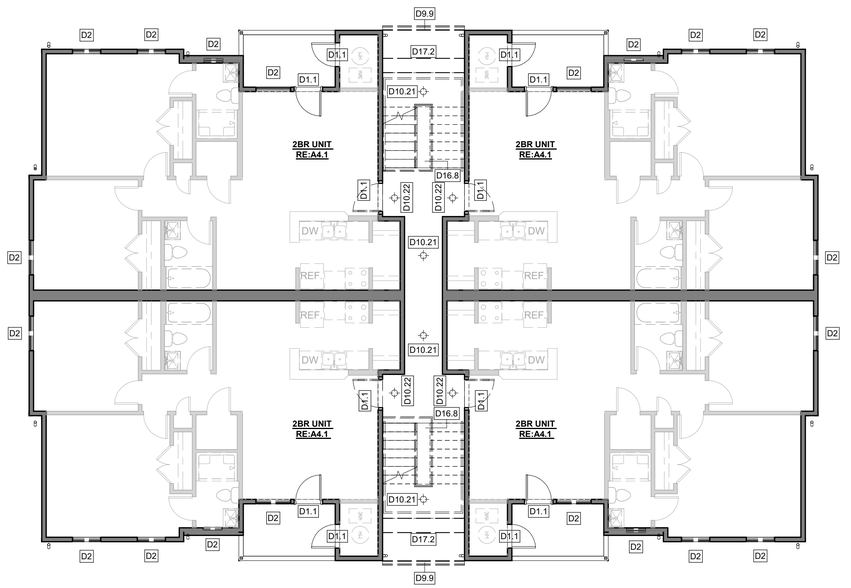
3 BLDG TYPE A - THIRD FLOOR - DEMO - TYP.
1/8" = 1'-0"



4 BLDG TYPE A - ROOF - DEMO - TYP.
1/8" = 1'-0"



1 BLDG TYPE A - FIRST FLOOR - DEMO - TYP.
1/8" = 1'-0"



2 BLDG TYPE A - SECOND FLOOR - DEMO - TYP.
1/8" = 1'-0"

GENERAL NOTES

1. ALL DIMENSIONS ARE TO FACE OF FINISH, UNLESS NOTED OTHERWISE.
2. CONTRACTOR TO VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
3. IN THE CASE OF CONFLICT, CONTRACTOR TO NOTIFY ARCHITECT.
4. CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS AND COORDINATE WITH NEW. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT.
5. CONTRACTOR SHALL PATCH AND SEAL EXISTING CEILING, WALLS, FLOORS, AND ROOF TO MATCH EXISTING AND SHALL MAKE WATERTIGHT.
6. CONTRACTOR TO REFERENCE SHEET G4.0 & G4.1 FOR ACCESSIBILITY REQUIREMENTS
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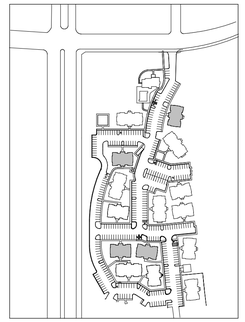
8. LOTS TO BE RE-GRADED TO DRAIN STORM WATER DIRECTLY AWAY FROM BUILDINGS AND SITE AMENTIES. ALLOWANCE HAS BEEN INCLUDED IN SCOPE (UP TO $35,000).
9. ALL WATER FROM ROOF AND GUTTER SYSTEM MUST BE PIPED AWAY FROM BUILDINGS
10. SEAL AT ALL EXTERIOR DOORS, WINDOWS, PLUMBING, AND ELECTRICAL PENETRATIONS TO PREVENT MOISTURE AND AIR LEAKAGE.

KEYED NOTES - DEMOLITION

Mark	Description
D1.1	REMOVE EXISTING DOOR AND FRAME
D2	REMOVE WINDOW AND FRAME
D9.1	REMOVE EXISTING SHINGLES
D9.9	REMOVE GUTTER AND DOWNSPOUT
D9.12	REMOVE DAMAGED ROOF VENT
D10.21	REMOVE EXISTING BREEZEWAY LIGHT FIXTURE
D10.22	REMOVE EXISTING UNIT EXTERIOR LIGHT FIXTURE
D16.8	REMOVE EXISTING STAIR HANDRAILS
D17.2	REMOVE EXISTING CANOPY OVER BREEZEWAY STAIRS



KEY PLAN - BLDG TYPE A
1,4,7,8,10,11,13,14

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6 DERBY DRIVE, HAMPTON, VA 23666

DYKE NELSON ARCHITECTURE

REVISIONS

JOB NUMBER: 19-007

ISSUED: 08/01/19

ISSUED FOR:

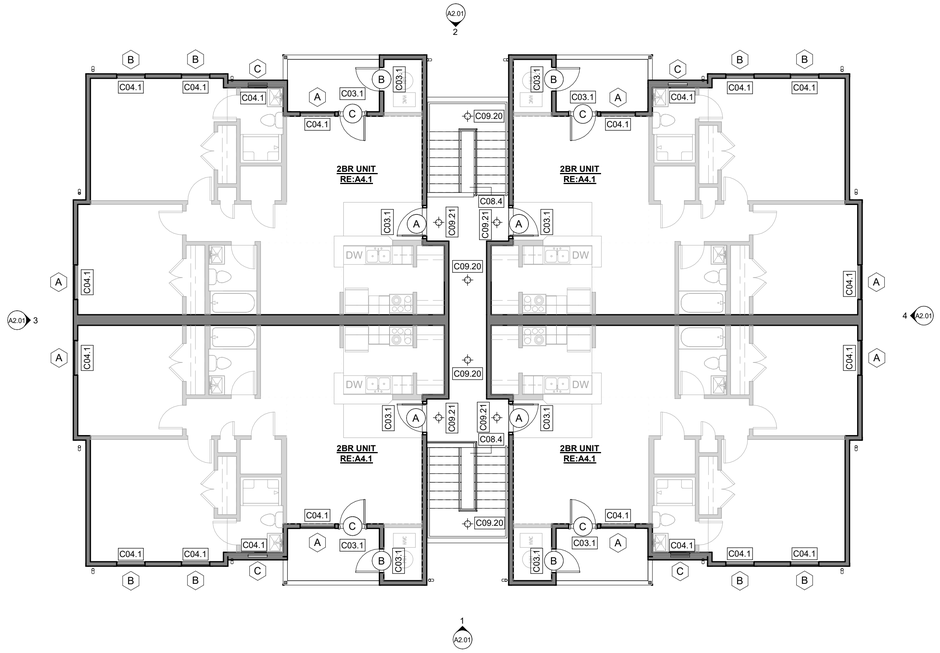
PERMITTING

COMMONWEALTH OF VIRGINIA
JOSEPH DYKE NELSON
No. 0401017290
ARCHITECT

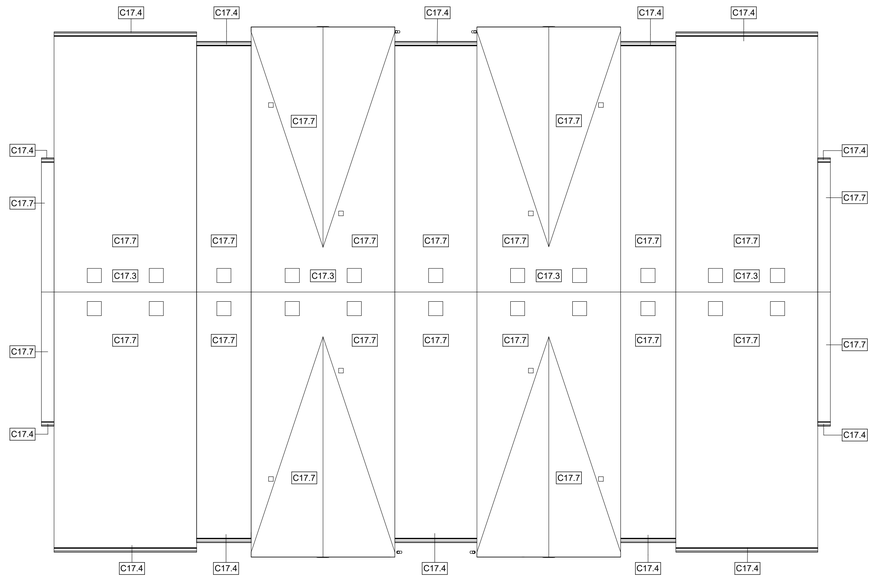
DEMO - FLOOR PLAN - BLDG TYPE A

A1.01

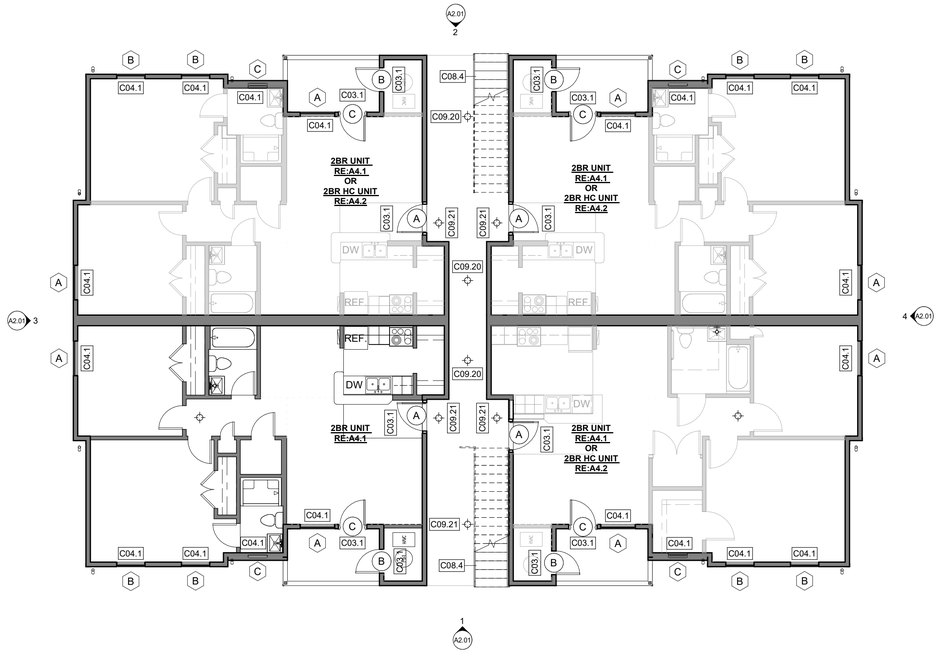
PHASE: CD



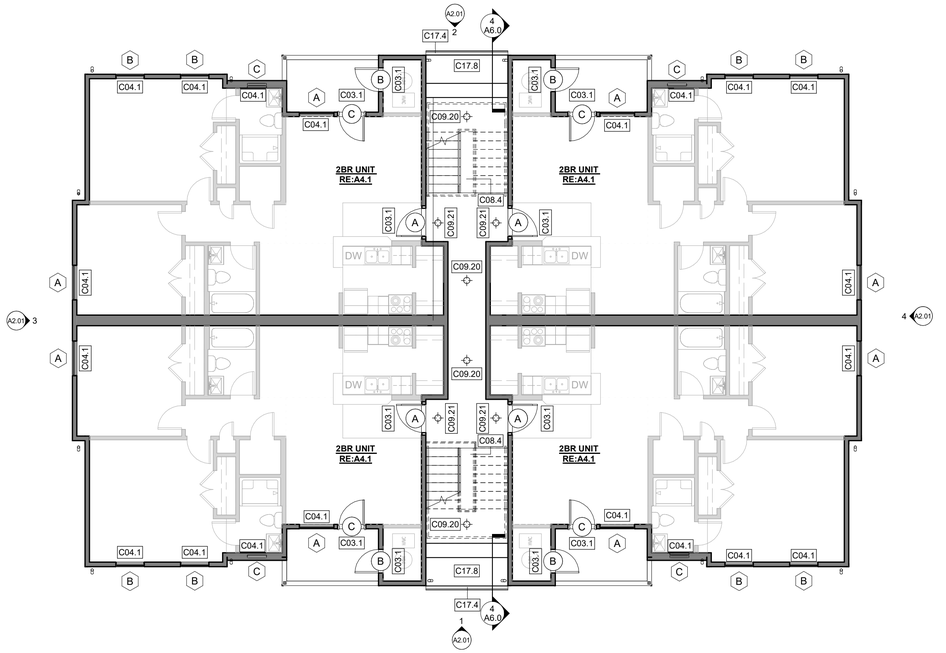
3 BLDG TYPE A - THIRD FLOOR - NEW - TYP.
1/8" = 1'-0"



4 BLDG TYPE A - ROOF - NEW - TYP.
1/8" = 1'-0"



1 BLDG TYPE A - FIRST FLOOR - NEW - TYP.
1/8" = 1'-0"



2 BLDG TYPE A - SECOND FLOOR - NEW - TYP.
1/8" = 1'-0"

GENERAL NOTES

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2. CONTRACTOR TO VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
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4. CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS AND COORDINATE WITH NEW. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT.
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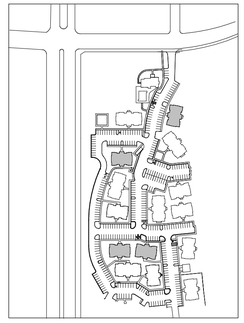
7. ALL REPAIRS & COMPONENT REPLACEMENTS TO BE IN INSTALLED IN ACCORDANCE WITH APPLICABLE BUILDING CODES
8. LOTS TO BE RE-GRADED TO DRAIN STORM WATER DIRECTLY AWAY FROM BUILDINGS AND SITE AMENTIES. ALLOWANCE HAS BEEN INCLUDED IN SCOPE (UP TO $35,000).
9. ALL WATER FROM ROOF AND GUTTER SYSTEM MUST BE PIPED AWAY FROM BUILDINGS
10. SEAL AT ALL EXTERIOR DOORS, WINDOWS, PLUMBING, AND ELECTRICAL PENETRATIONS TO PREVENT MOISTURE AND AIR LEAKAGE.

KEYED NOTES - NEW CONSTRUCTION

C03.1	NEW METAL DOOR AND WOOD FRAME, INCLUDING NEW HARDWARE AND KNOCKER, PAINTED
C04.1	NEW VINYL WINDOW AS SCHEDULED TO REPLACE EXISTING; PROVIDE NEW WINDOW TREATMENT, TYP. ALL.
C08.4	NEW METAL HANDRAILS, TYP. ALL; REPLACE THREE RISERS AND TRENDS PER STAIR
C09.20	NEW BREEZEWAY LIGHT FIXTURE, RE:ELECTRICAL
C09.21	NEW UNIT EXTERIOR LIGHT FIXTURE, RE:ELECTRICAL
C17.3	INSTALL NEW ROOF VENT TO REPLACE DAMAGED ROOF VENT
C17.4	INSTALL NEW GUTTERS AND DOWNSPOUTS; TYP. ALL
C17.7	REMOVE AND REPLACE ALL FELT, FLASHING, DRIP EDGE, SHINGLES, BOOTS, AND RIDGE VENTS, AND REPLACE WITH NEW. REPAIR ALL DAMAGED VINYL SOFFITS. NEW SHINGLES TO BE ANTI-FUNGAL, COMPOSITION SHINGLES W/ 30-YR WARRANTY
C17.8	NEW CANOPY OVER BREEZEWAY STAIRS, RE:4/A6.0



KEY PLAN - BLDG TYPE A
1,4,7,8,10,11,13,14

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DERBY RUN APARTMENTS I

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DYKE NELSON ARCHITECTURE

REVISIONS

JOB NUMBER: 19-007

ISSUED: 08/01/19

ISSUED FOR:

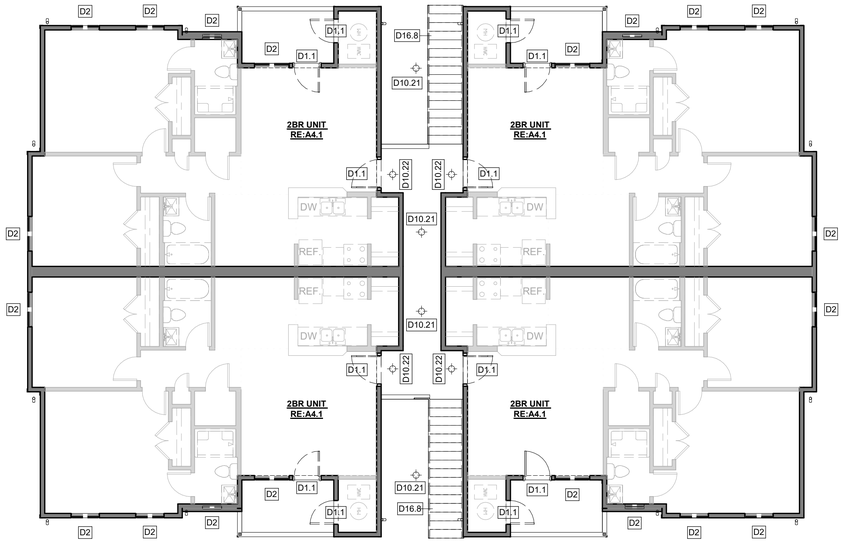
PERMITTING

COMMONWEALTH OF VIRGINIA
JOSEPH DYKE NELSON
No. 0401017290
ARCHITECT

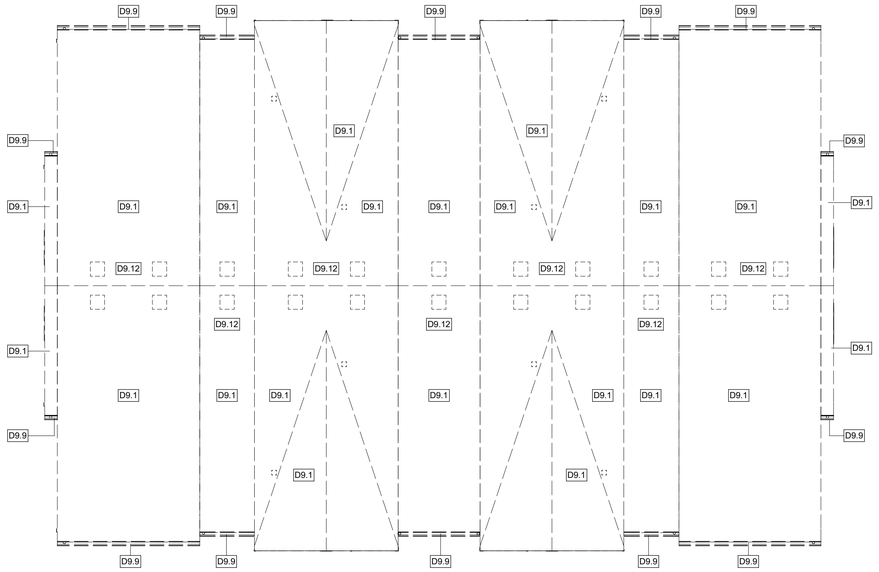
NEW - FLOOR PLAN - BLDG TYPE A

A1.02

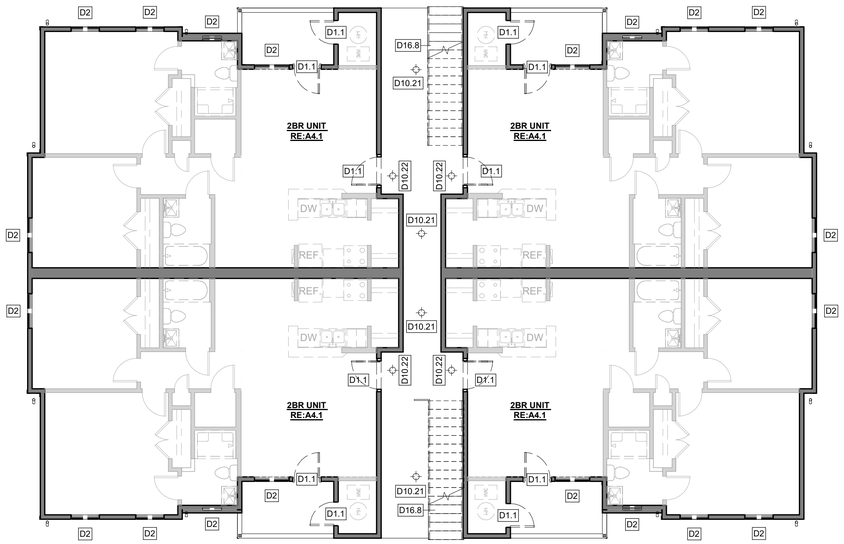
PHASE: CD



2 BLDG TYPE B - SECOND FLOOR - DEMO - TYP.
1/8" = 1'-0"



3 BLDG TYPE B - ROOF - DEMO - TYP.
1/8" = 1'-0"



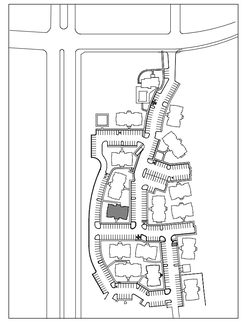
1 BLDG TYPE B - FIRST FLOOR - DEMO - TYP.
1/8" = 1'-0"

GENERAL NOTES

1. ALL DIMENSIONS ARE TO FACE OF FINISH, UNLESS NOTED OTHERWISE.
2. CONTRACTOR TO VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
3. IN THE CASE OF CONFLICT, CONTRACTOR TO NOTIFY ARCHITECT.
4. CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS AND COORDINATE WITH NEW. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT.
5. CONTRACTOR SHALL PATCH AND SEAL EXISTING CEILING, WALLS, FLOORS, AND ROOF TO MATCH EXISTING AND SHALL MAKE WATERTIGHT.
6. CONTRACTOR TO REFERENCE SHEET G4.0 & G4.1 FOR ACCESSIBILITY REQUIREMENTS
7. ALL REPAIRS & COMPONENT REPLACEMENTS TO BE IN INSTALLED IN ACCORDANCE WITH APPLICABLE BUILDING CODES
8. LOTS TO BE RE-GRADED TO DRAIN STORM WATER DIRECTLY AWAY FROM BUILDINGS AND SITE AMENTIES. ALLOWANCE HAS BEEN INCLUDED IN SCOPE (UP TO $35,000).
9. ALL WATER FROM ROOF AND GUTTER SYSTEM MUST BE PIPED AWAY FROM BUILDINGS
10. SEAL AT ALL EXTERIOR DOORS, WINDOWS, PLUMBING, AND ELECTRICAL PENETRATIONS TO PREVENT MOISTURE AND AIR LEAKAGE.

KEYED NOTES - DEMOLITION

Mark	Description
D1.1	REMOVE EXISTING DOOR AND FRAME
D2	REMOVE WINDOW AND FRAME
D9.1	REMOVE EXISTING SHINGLES
D9.9	REMOVE GUTTER AND DOWNSPOUT
D9.12	REMOVE DAMAGED ROOF VENT
D10.21	REMOVE EXISTING BREEZEWAY LIGHT FIXTURE
D10.22	REMOVE EXISTING UNIT EXTERIOR LIGHT FIXTURE
D16.8	REMOVE EXISTING STAIR HANDRAILS



KEY PLAN - BLDG TYPE B
6

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DERBY RUN APARTMENTS I

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DYKE NELSON ARCHITECTURE

REVISIONS

JOB NUMBER: 19-007

ISSUED: 08/01/19

ISSUED FOR:

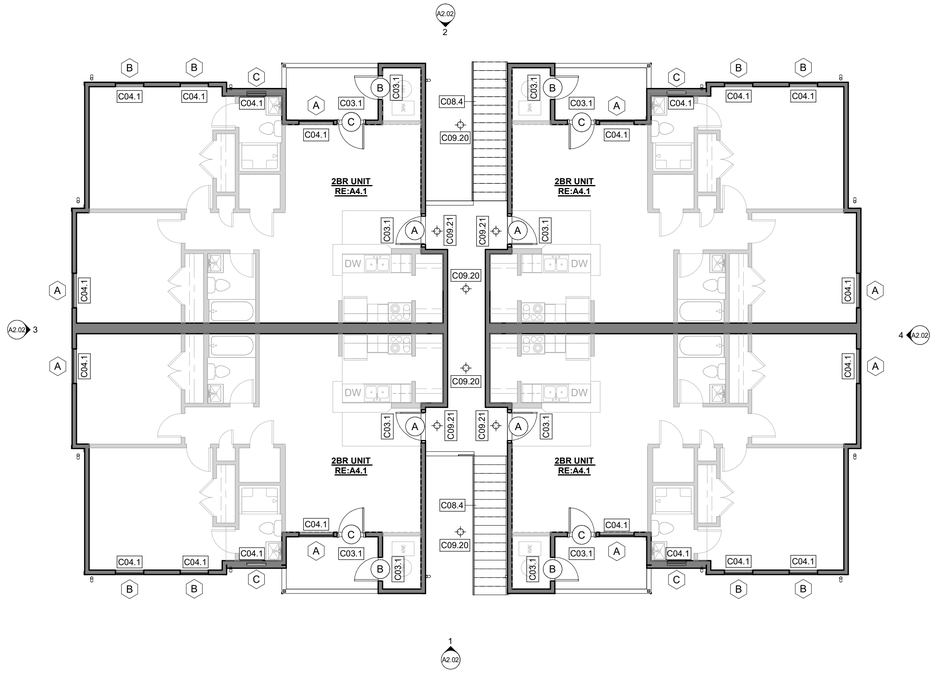
PERMITTING

COMMONWEALTH OF VIRGINIA
JOSEPH DYKE NELSON
No. 0401017290
ARCHITECT

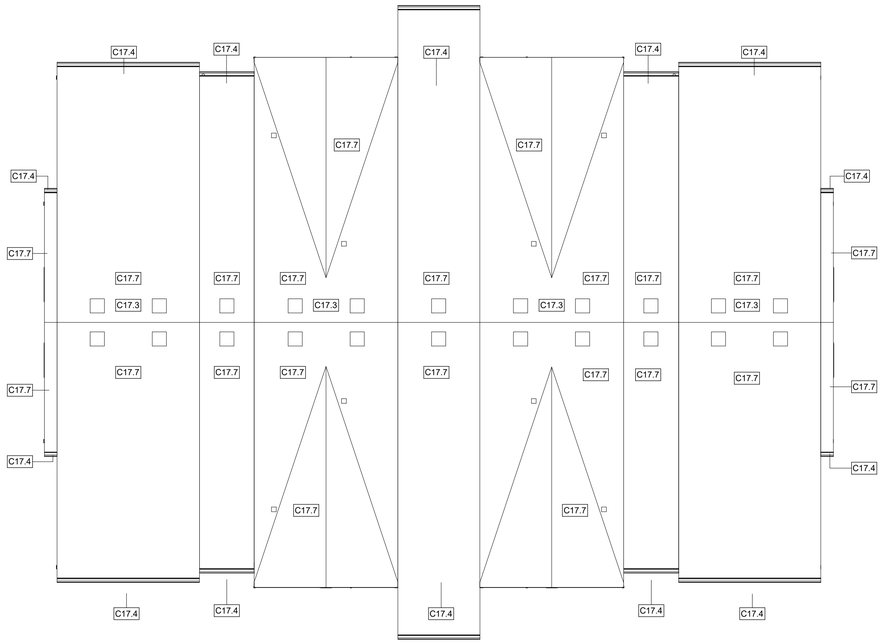
DEMO - FLOOR PLAN - BLDG TYPE B

A1.03

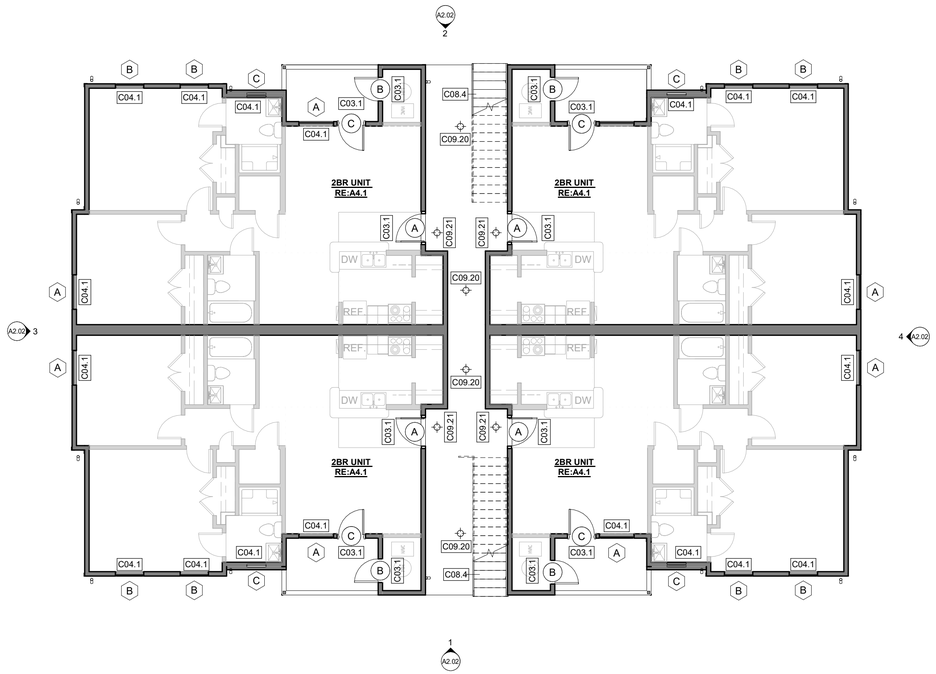
PHASE: CD



2 BLDG TYPE B - SECOND FLOOR - NEW - TYP.
1/8" = 1'-0"



3 BLDG TYPE B - ROOF - NEW - TYP.
1/8" = 1'-0"



1 BLDG TYPE B - FIRST FLOOR - NEW - TYP.
1/8" = 1'-0"

GENERAL NOTES

1. ALL DIMENSIONS ARE TO FACE OF FINISH, UNLESS NOTED OTHERWISE.
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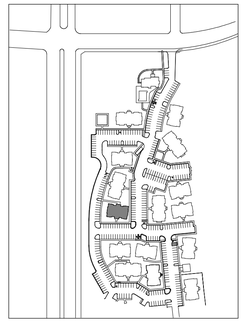
KEYED NOTES - NEW CONSTRUCTION

C03.1	NEW METAL DOOR AND WOOD FRAME, INCLUDING NEW HARDWARE AND KNOCKER, PAINTED
C04.1	NEW VINYL WINDOW AS SCHEDULED TO REPLACE EXISTING; PROVIDE NEW WINDOW TREATMENT, TYP. ALL
C08.4	NEW METAL HANDRAILS, TYP. ALL; REPLACE THREE RISERS AND TRENDS PER STAIR
C09.20	NEW BREEZEWAY LIGHT FIXTURE, RE:ELECTRICAL
C09.21	NEW UNIT EXTERIOR LIGHT FIXTURE, RE:ELECTRICAL
C17.3	INSTALL NEW ROOF VENT TO REPLACE DAMAGED ROOF VENT
C17.4	INSTALL NEW GUTTERS AND DOWNSPOUTS; TYP. ALL
C17.7	REMOVE AND REPLACE ALL FELT, FLASHING, DRIP EDGE, SHINGLES, BOOTS, AND RIDGE VENTS, AND REPLACE WITH NEW. REPAIR ALL DAMAGED VINYL SOFFITS. NEW SHINGLES TO BE ANTI-FUNGAL, COMPOSITION SHINGLES W/ 30-YR WARRANTY



KEY PLAN - BLDG TYPE B
6

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DERBY RUN APARTMENTS I

6 DERBY DRIVE, HAMPTON, VA 23666

REVISIONS

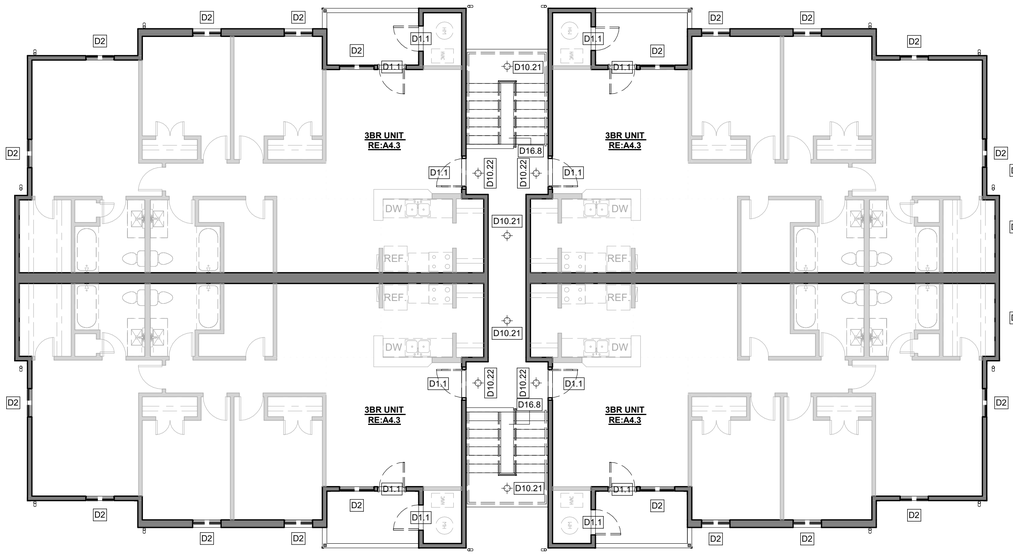
JOB NUMBER: 19-007
ISSUED: 08/01/19
ISSUED FOR:
PERMITTING

COMMONWEALTH OF VIRGINIA
JOSEPH DYKE NELSON
No. 040107290
ARCHITECT

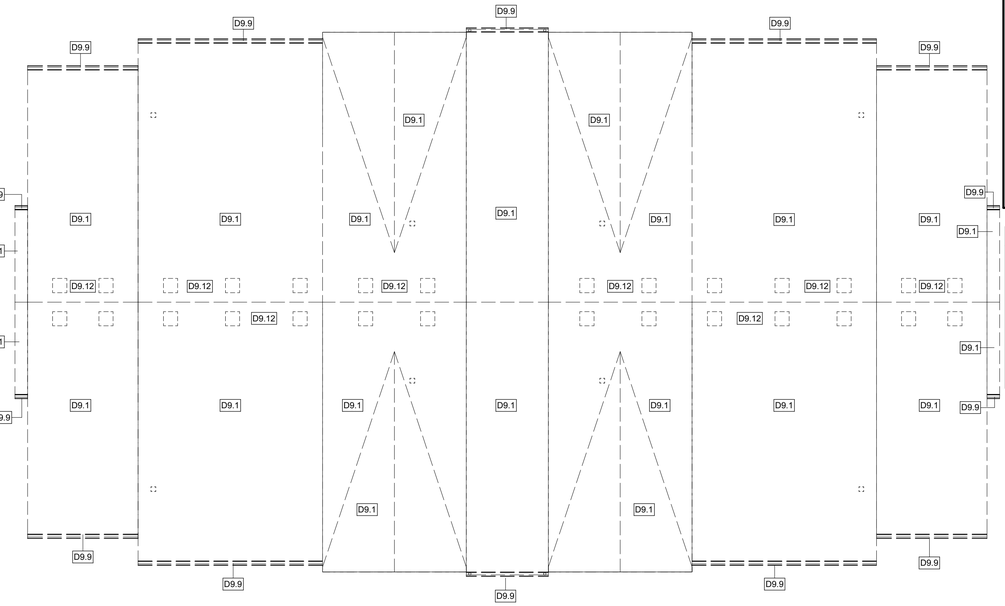
NEW - FLOOR PLAN - BLDG TYPE B

A1.04

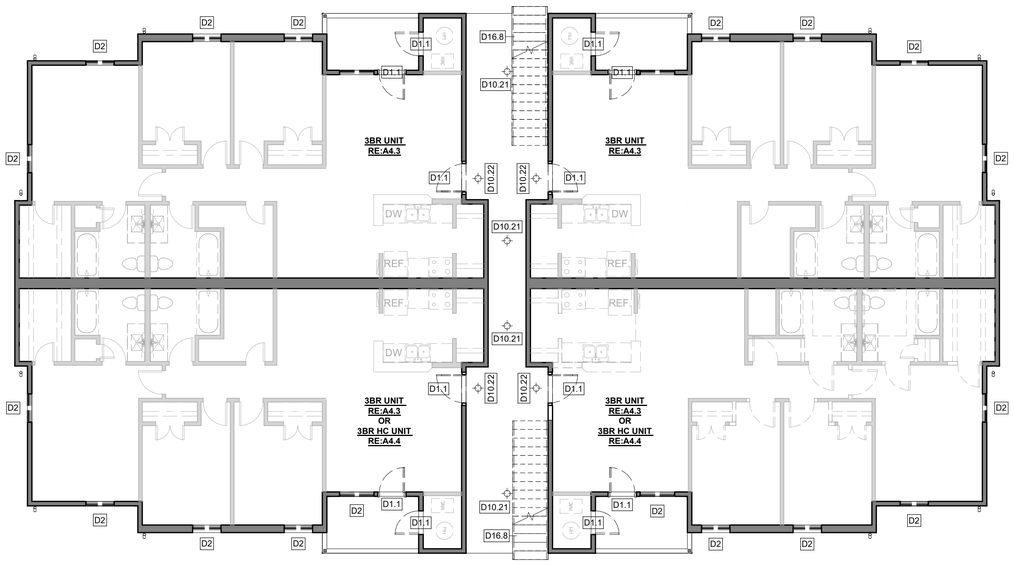
PHASE: CD



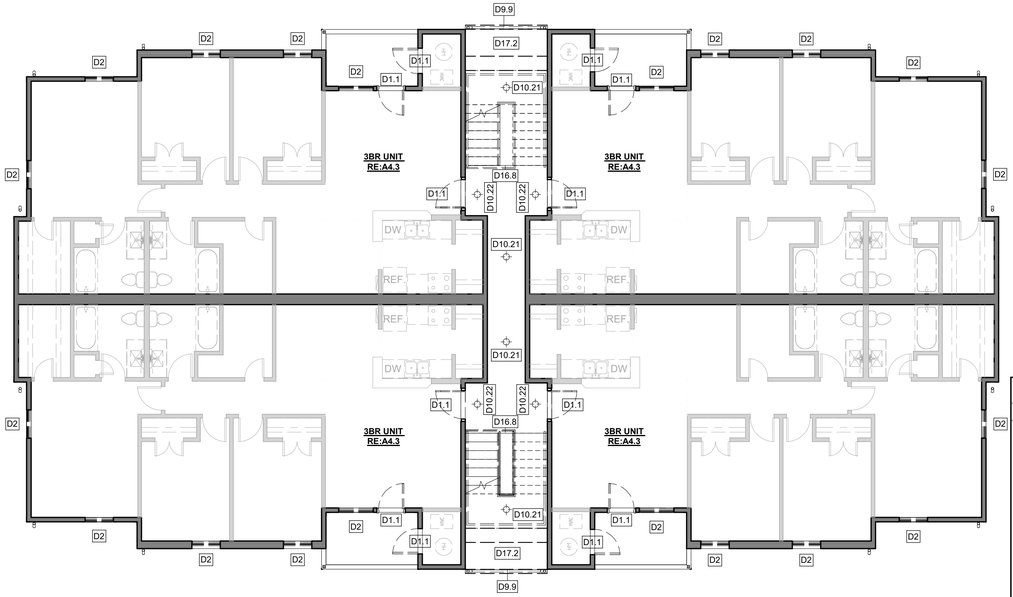
3 BLDG TYPE C - THIRD FLOOR - DEMO - TYP.
1/8" = 1'-0"



4 BLDG TYPE C - ROOF - DEMO - TYP.
1/8" = 1'-0"



1 BLDG TYPE C - FIRST FLOOR - DEMO - TYP.
1/8" = 1'-0"



2 BLDG TYPE C - SECOND FLOOR - DEMO - TYP.
1/8" = 1'-0"

GENERAL NOTES

1. ALL DIMENSIONS ARE TO FACE OF FINISH, UNLESS NOTED OTHERWISE.
2. CONTRACTOR TO VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
3. IN THE CASE OF CONFLICT, CONTRACTOR TO NOTIFY ARCHITECT.
4. CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS AND COORDINATE WITH NEW. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT.
5. CONTRACTOR SHALL PATCH AND SEAL EXISTING CEILING, WALLS, FLOORS, AND ROOF TO MATCH EXISTING AND SHALL MAKE WATERTIGHT.
6. CONTRACTOR TO REFERENCE SHEET G4.0 & G4.1 FOR ACCESSIBILITY REQUIREMENTS
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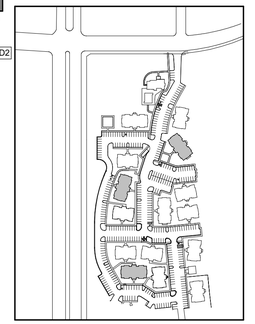
8. LOTS TO BE RE-GRADED TO DRAIN STORM WATER DIRECTLY AWAY FROM BUILDINGS AND SITE AMENTIES. ALLOWANCE HAS BEEN INCLUDED IN SCOPE (UP TO $35,000).
9. ALL WATER FROM ROOF AND GUTTER SYSTEM MUST BE PIPED AWAY FROM BUILDINGS
10. SEAL AT ALL EXTERIOR DOORS, WINDOWS, PLUMBING, AND ELECTRICAL PENETRATIONS TO PREVENT MOISTURE AND AIR LEAKAGE.

KEYED NOTES - DEMOLITION

Mark	Description
D1.1	REMOVE EXISTING DOOR AND FRAME
D2	REMOVE WINDOW AND FRAME
D9.1	REMOVE EXISTING SHINGLES
D9.9	REMOVE GUTTER AND DOWNSPOUT
D9.12	REMOVE DAMAGED ROOF VENT
D10.21	REMOVE EXISTING BREEZEWAY LIGHT FIXTURE
D10.22	REMOVE EXISTING UNIT EXTERIOR LIGHT FIXTURE
D16.8	REMOVE EXISTING STAIR HANDRAILS
D17.2	REMOVE EXISTING CANOPY OVER BREEZEWAY STAIRS



KEY PLAN - BLDG TYPE C
2,5,9,12

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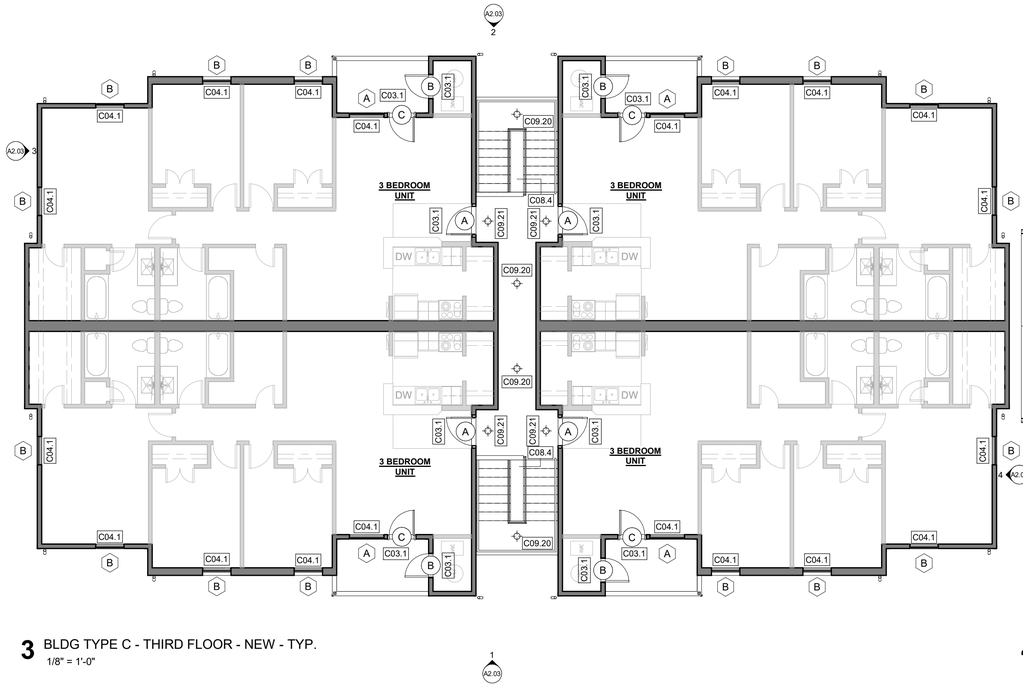
COMMONWEALTH OF VIRGINIA
JOSEPH DYKE NELSON
No. 0401017290
ARCHITECT

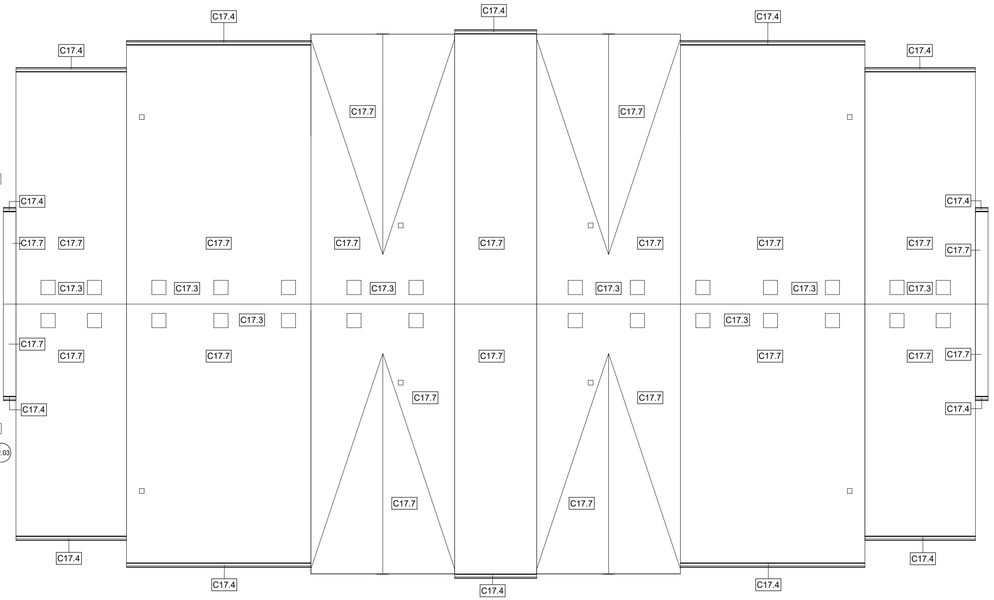
DEMO - FLOOR PLAN - BLDG TYPE C

A1.05

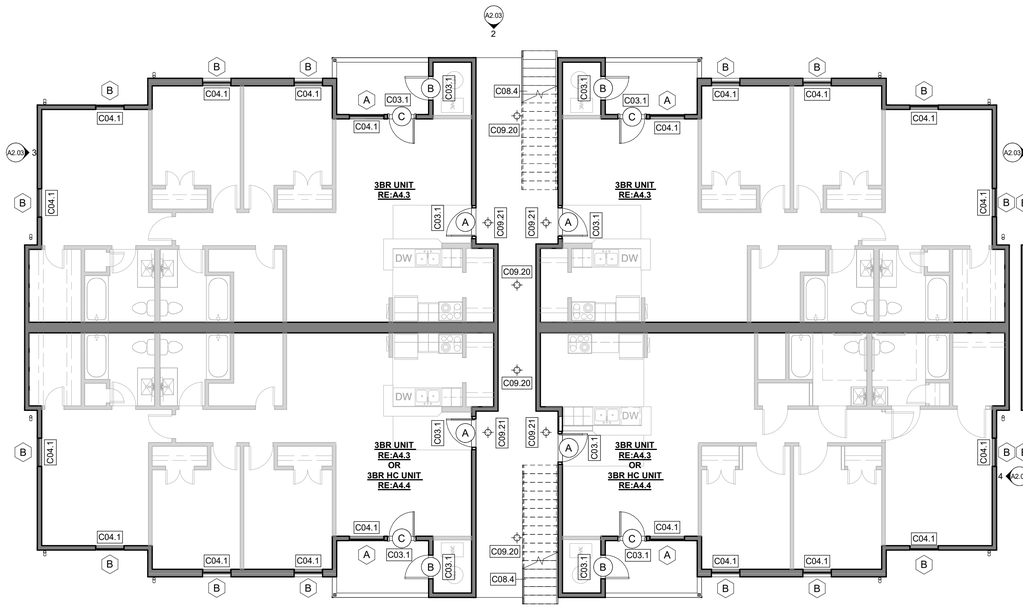
PHASE: CD



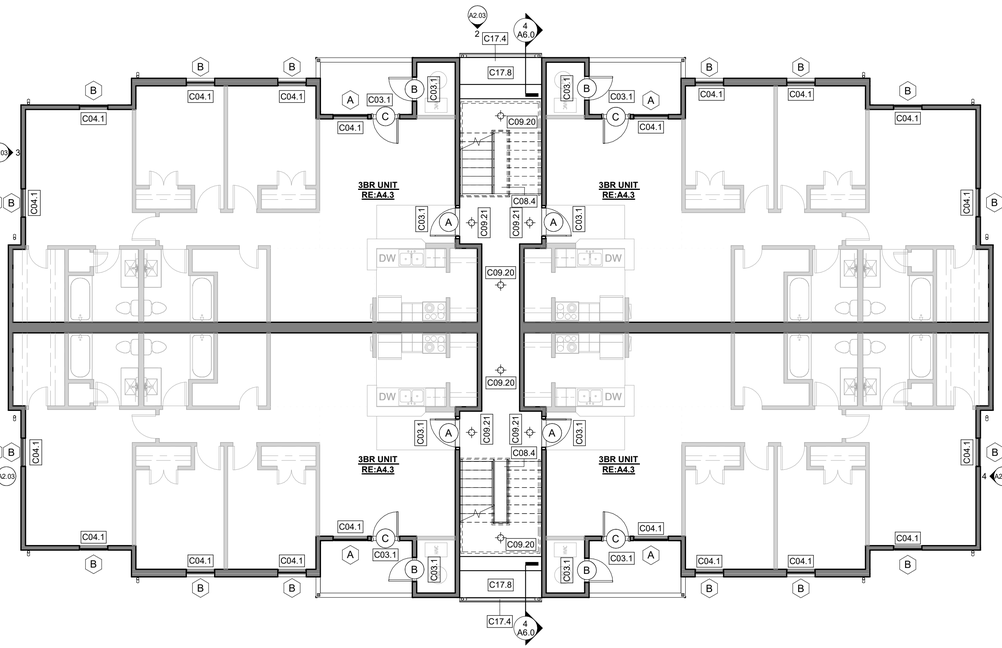
3 BLDG TYPE C - THIRD FLOOR - NEW - TYP.
1/8" = 1'-0"



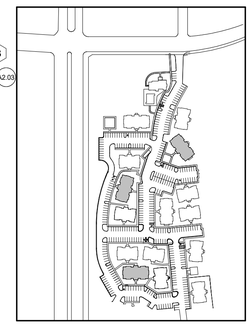
4 BLDG TYPE C - ROOF - NEW - TYP.
1/8" = 1'-0"



1 BLDG TYPE C - FIRST FLOOR - NEW - TYP.
1/8" = 1'-0"



2 BLDG TYPE C - SECOND FLOOR - NEW - TYP.
1/8" = 1'-0"



KEY PLAN - BLDG TYPE C
1, 11, 14, 15

GENERAL NOTES

1. ALL DIMENSIONS ARE TO FACE OF FINISH, UNLESS NOTED OTHERWISE.
2. CONTRACTOR TO VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
3. IN THE CASE OF CONFLICT, CONTRACTOR TO NOTIFY ARCHITECT.
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9. ALL WATER FROM ROOF AND GUTTER SYSTEM MUST BE PIPED AWAY FROM BUILDINGS
10. SEAL AT ALL EXTERIOR DOORS, WINDOWS, PLUMBING, AND ELECTRICAL PENETRATIONS TO PREVENT MOISTURE AND AIR LEAKAGE.

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C03.1	NEW METAL DOOR AND WOOD FRAME, INCLUDING NEW HARDWARE AND KNOCKER, PAINTED
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C17.3	INSTALL NEW ROOF VENT TO REPLACE DAMAGED ROOF VENT
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C17.8	NEW CANOPY OVER BREEZEWAY STAIRS, RE:4/A6.0

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DYKE NELSON ARCHITECTURE

REVISIONS

JOB NUMBER: 19-007

ISSUED: 08/01/19

ISSUED FOR:
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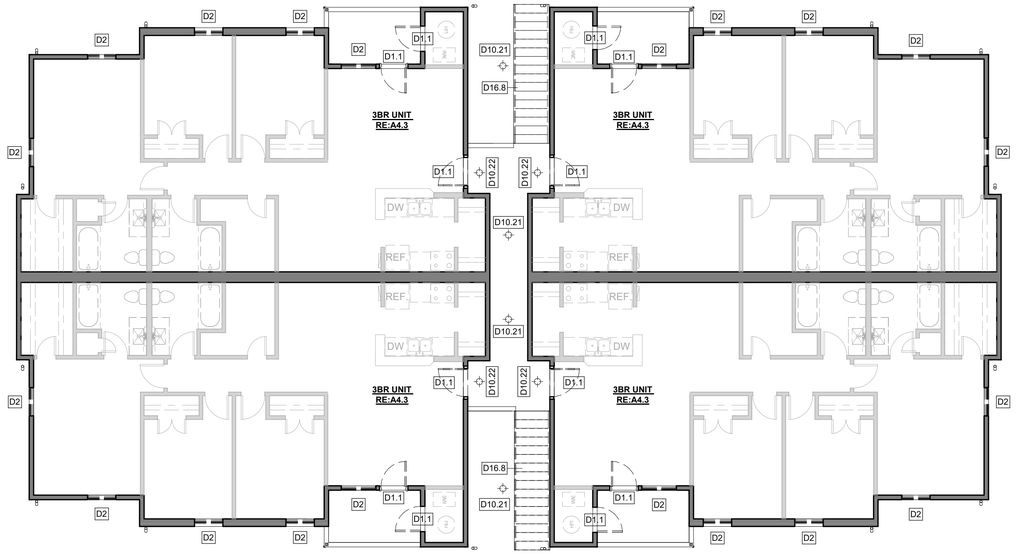
COMMONWEALTH OF VIRGINIA
JOSEPH DYKE NELSON
No. 0401017290
ARCHITECT

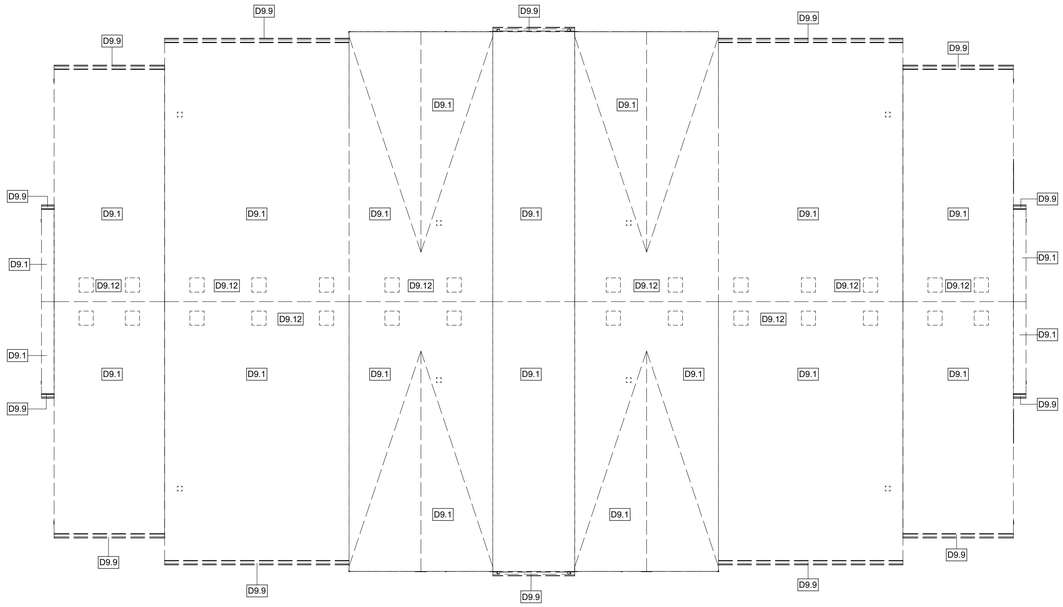
NEW - FLOOR PLAN - BLDG TYPE C

A1.06

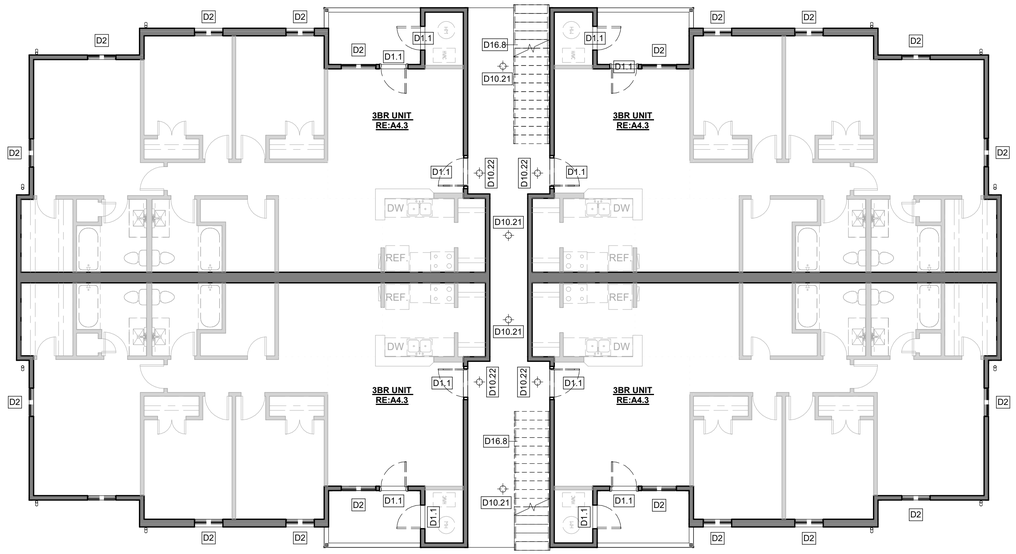
PHASE: CD



2 BLDG TYPE D - SECOND FLOOR - DEMO - TYP.
1/8" = 1'-0"



3 BLDG TYPE D - ROOF - DEMO - TYP.
1/8" = 1'-0"



1 BLDG TYPE D - FIRST FLOOR - DEMO - TYP.
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GENERAL NOTES

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KEYED NOTES - DEMOLITION

Mark	Description
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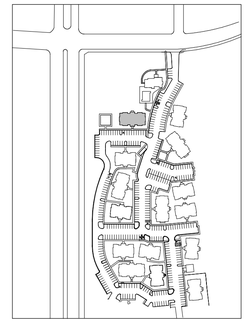

KEY PLAN - BLDG TYPE D
3

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6 DERBY DRIVE, HAMPTON, VA 23666

REVISIONS

JOB NUMBER: 19-007

ISSUED: 08/01/19

ISSUED FOR:

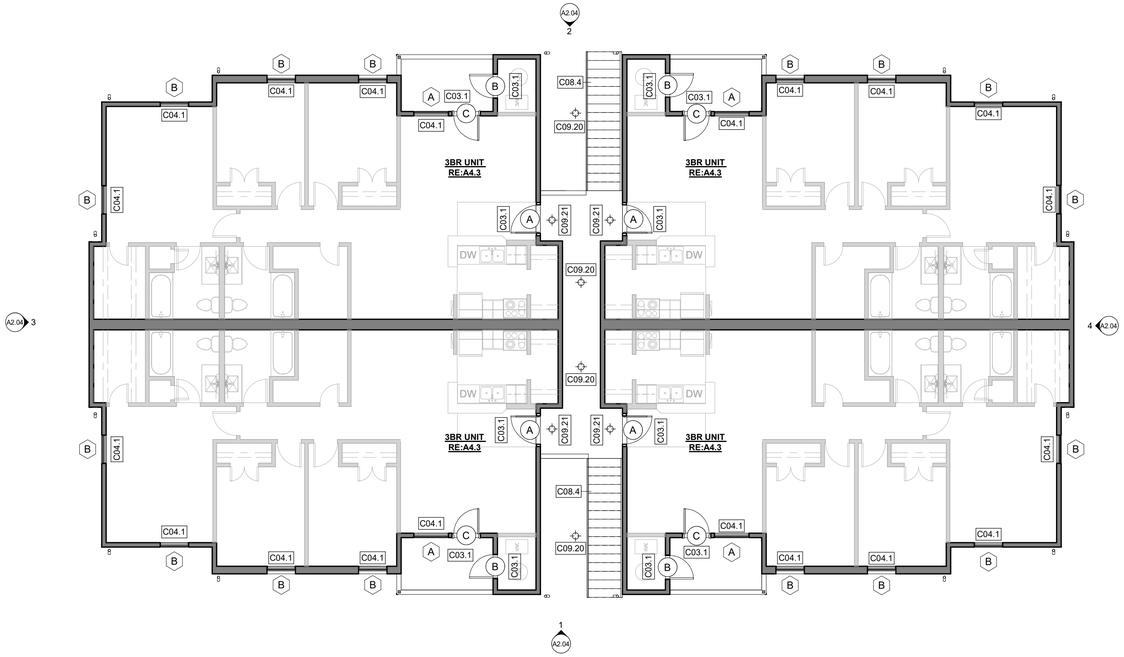
PERMITTING

COMMONWEALTH OF VIRGINIA
JOSEPH DYKE NELSON
No. 0401017290
ARCHITECT

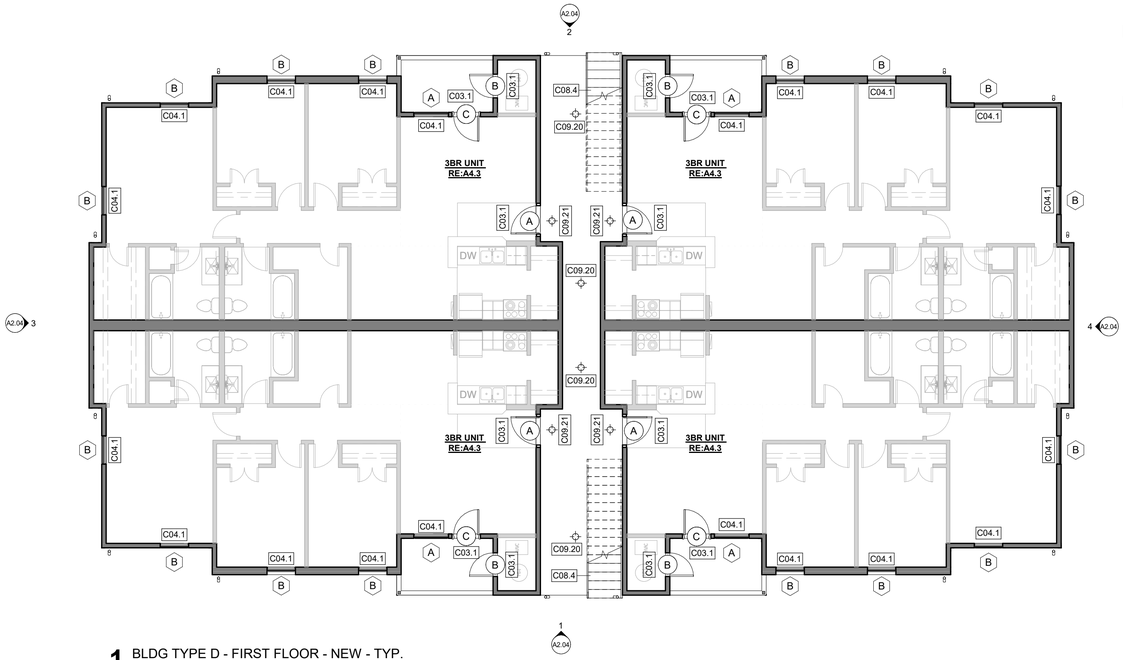
DEMO - FLOOR PLAN - BLDG TYPE D

A1.07

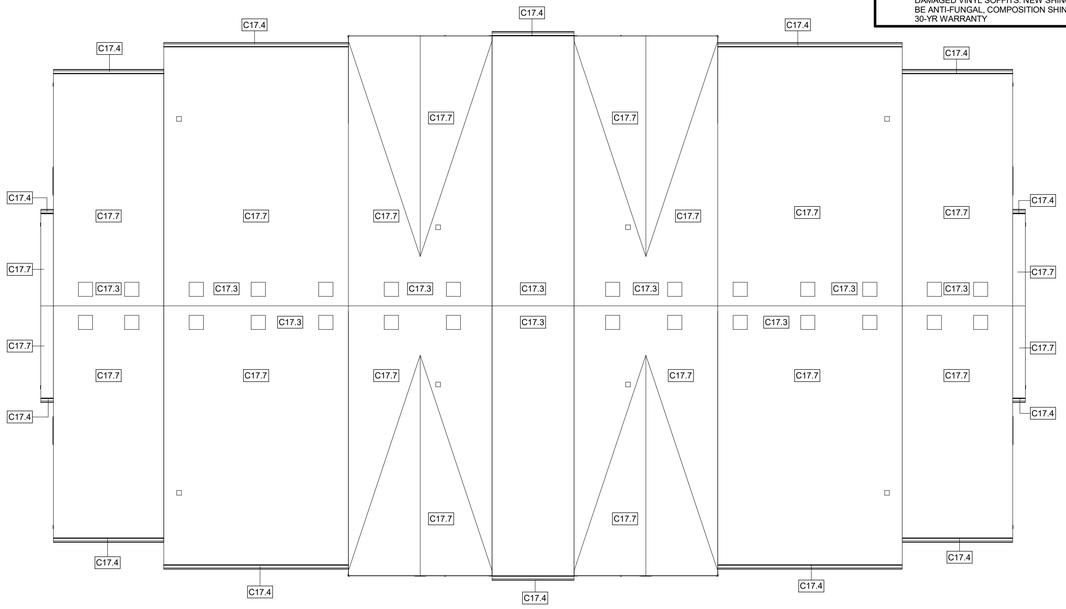
PHASE: CD



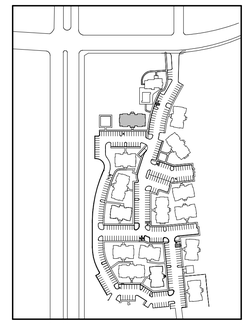
2 BLDG TYPE D - SECOND FLOOR - NEW - TYP.
1/8" = 1'-0"



1 BLDG TYPE D - FIRST FLOOR - NEW - TYP.
1/8" = 1'-0"



3 BLDG TYPE D - ROOF - NEW - TYP.
1/8" = 1'-0"



KEY PLAN - BLDG TYPE D
3

GENERAL NOTES

1. ALL DIMENSIONS ARE TO FACE OF FINISH, UNLESS NOTED OTHERWISE.
2. CONTRACTOR TO VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
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C04.1	NEW VINYL WINDOW AS SCHEDULED TO REPLACE EXISTING; PROVIDE NEW WINDOW TREATMENT, TYP. ALL
C08.4	NEW METAL HANDRAILS, TYP. ALL; REPLACE THREE RISERS AND TRENDS PER STAIR
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REVISIONS

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ISSUED FOR:

PERMITTING

COMMONWEALTH OF VIRGINIA
JOSEPH DYKE NELSON
No. 0401017290
ARCHITECT

NEW - FLOOR PLAN - BDLG TYPE D

A1.08

PHASE: CD

REPLACE EXISTING VINYL SOFFIT ALONG FRONT SIDE OF BUILDING WITH NEW VENTED VINYL SOFFIT TO MATCH.
SALVAGE EXISTING SOFFIT PIECES IN GOOD CONDITION.

1 BLDG TYPE A - FRONT - NEW
1/8" = 1'-0"

REPLACE SECTIONS OF VINLY SOFFITS ALONG BACK SIDE OF BUILDING THAT ARE IN DISREPAIR WITH SALVAGED SOFFITS FROM FRONT SIDE.

2 BLDG TYPE A - BACK - NEW
1/8" = 1'-0"

3 BLDG TYPE A - LEFT - NEW
1/8" = 1'-0"

4 BLDG TYPE A - RIGHT - NEW
1/8" = 1'-0"

GENERAL NOTES

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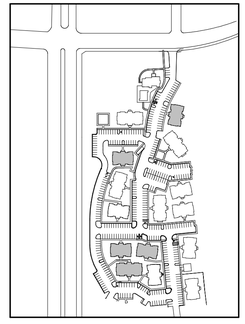
GENERAL ELEVATION NOTES

1. REMOVE AND REPLACE ALL FELT, FLASHING, DRIP EDGE, SHINGLES, BOOTS, AND RIDGE VENTS, AND REPLACE WITH NEW. REPAIR ALL DAMAGED VINYL SOFFITS. NEW SHINGLES TO BE ANTI-FUNGAL, COMPOSITION SHINGLES W/ 30-YR WARRANTY
2. REPLACE ALL FASCIA AND SOFFITS NEW IN LIKE KIND TO MATCH AS NOTED ON ELEVATIONS. NEW SOFFITS TO BE VENTED.
3. REPLACE ALL EXISTING WINDOW UNITS WITH NEW INSULATED, DOUBLE PANEL, VINYL WINDOWS. PROVIDE NEW TRIM AND FLASHING.
4. PROVIDE NEW WINDOW TREATMENT; TYP. ALL
5. REPAINT ALL NEW EXTERIOR DOORS
6. INSTALL NEW METAL HANDRAILS, TYP. ALL;
7. REPLACE THREE RISERS AND TRENDS PER STAIR
8. PROVIDE NEW LED LIGHT FIXTURES AND BULBS AT:
   A. UNIT EXTERIOR LIGHTING
   B. BUILDING EXTERIOR LIGHTING
   C. BREEZEWAY EXTERIOR LIGHTING

KEYED NOTES - NEW CONSTRUCTION

C08.4	NEW METAL HANDRAILS, TYP. ALL; REPLACE THREE RISERS AND TRENDS PER STAIR
C09.19	NEW BLDG EXTERIOR LIGHT, RE: ELECTRICAL
C17.4	INSTALL NEW GUTTERS AND DOWNSPOUTS; TYP. ALL
C17.7	REMOVE AND REPLACE ALL FELT, FLASHING, DRIP EDGE, SHINGLES, BOOTS, AND RIDGE VENTS, AND REPLACE WITH NEW. REPAIR ALL DAMAGED VINYL SOFFITS. NEW SHINGLES TO BE ANTI-FUNGAL, COMPOSITION SHINGLES W/ 30-YR WARRANTY
C17.8	NEW CANOPY OVER BREEZEWAY STAIRS, RE:4/A6.0



KEY PLAN - BLDG TYPE A
1, 2A, 2B, 4, 9A, 9B, 15, 20

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REVISIONS

1 08/17/19 D3G/HUD

JOB NUMBER: 19-007

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COMMONWEALTH OF VIRGINIA
JOSEPH DYKE NELSON
No. 0401017290
ARCHITECT

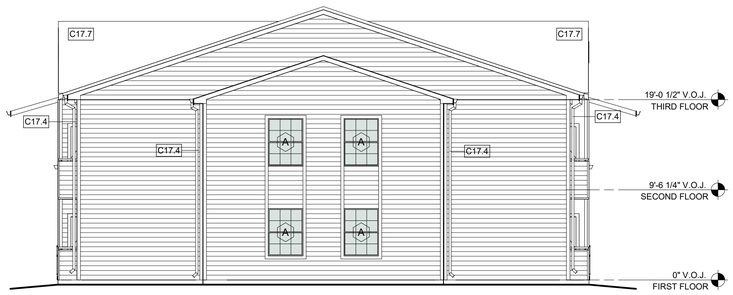
NEW - BUILDING ELEVATIONS - BLDG TYPE A

A2.01

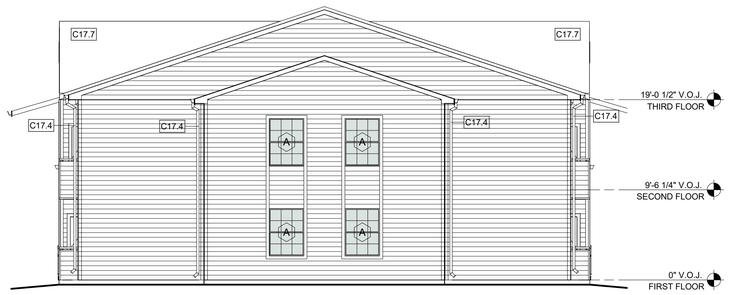
PHASE: CD

1 BLDG TYPE B - FRONT - NEW
1/8" = 1'-0"

2 BLDG TYPE B - BACK - NEW
1/8" = 1'-0"



3 BLDG TYPE B - LEFT - NEW
1/8" = 1'-0"



4 BLDG TYPE B - RIGHT - NEW
1/8" = 1'-0"

GENERAL NOTES

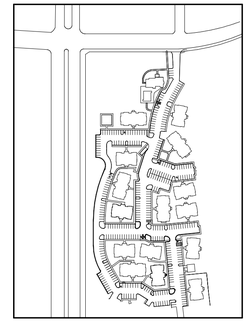
1. ALL DIMENSIONS ARE TO FACE OF FINISH, UNLESS NOTED OTHERWISE.
2. CONTRACTOR TO VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
3. IN THE CASE OF CONFLICT, CONTRACTOR TO NOTIFY ARCHITECT.
4. CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS AND COORDINATE WITH NEW. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT.
5. CONTRACTOR SHALL PATCH AND SEAL EXISTING CEILING, WALLS, FLOORS, AND ROOF TO MATCH EXISTING AND SHALL MAKE WATERTIGHT.
6. CONTRACTOR TO REFERENCE SHEET G4.0 & G4.1 FOR ACCESSIBILITY REQUIREMENTS
7. ALL REPAIRS & COMPONENT REPLACEMENTS TO BE IN INSTALLED IN ACCORDANCE WITH APPLICABLE BUILDING CODES
8. LOTS TO BE RE-GRADED TO DRAIN STORM WATER DIRECTLY AWAY FROM BUILDINGS AND SITE AMENTIES. ALLOWANCE HAS BEEN INCLUDED IN SCOPE (UP TO $35,000).
9. ALL WATER FROM ROOF AND GUTTER SYSTEM MUST BE PIPED AWAY FROM BUILDINGS
10. SEAL AT ALL EXTERIOR DOORS, WINDOWS, PLUMBING, AND ELECTRICAL PENETRATIONS TO PREVENT MOISTURE AND AIR LEAKAGE.

GENERAL ELEVATION NOTES

1. REMOVE AND REPLACE ALL FELT, FLASHING, DRIP EDGE, SHINGLES, BOOTS, AND RIDGE VENTS, AND REPLACE WITH NEW. REPAIR ALL DAMAGED VINYL SOFFITS. NEW SHINGLES TO BE ANTI-FUNGAL, COMPOSITION SHINGLES W/ 30-YR WARRANTY
2. REPLACE ALL FASCIA AND SOFFITS NEW IN LIKE KIND TO MATCH AS NOTED ON ELEVATIONS. NEW SOFFITS TO BE VENTED.
3. REPLACE ALL EXISTING WINDOW UNITS WITH NEW INSULATED, DOUBLE PANEL, VINYL WINDOWS. PROVIDE NEW TRIM AND FLASHING.
4. PROVIDE NEW WINDOW TREATMENT; TYP. ALL
5. REPAINT ALL NEW EXTERIOR DOORS
6. INSTALL NEW METAL HANDRAILS, TYP. ALL;
7. REPLACE THREE RISERS AND TRENDS PER STAIR
8. PROVIDE NEW LED LIGHT FIXTURES AND BULBS AT:
   A. UNIT EXTERIOR LIGHTING
   B. BUILDING EXTERIOR LIGHTING
   C. BREEZEWAY EXTERIOR LIGHTING

KEYED NOTES - NEW CONSTRUCTION

C08.4	NEW METAL HANDRAILS, TYP. ALL; REPLACE THREE RISERS AND TRENDS PER STAIR
C09.19	NEW BLDG EXTERIOR LIGHT, RE: ELECTRICAL
C17.4	INSTALL NEW GUTTERS AND DOWNSPOUTS; TYP. ALL
C17.7	REMOVE AND REPLACE ALL FELT, FLASHING, DRIP EDGE, SHINGLES, BOOTS, AND RIDGE VENTS, AND REPLACE WITH NEW. REPAIR ALL DAMAGED VINYL SOFFITS. NEW SHINGLES TO BE ANTI-FUNGAL, COMPOSITION SHINGLES W/ 30-YR WARRANTY



KEY PLAN - BLDG TYPE B
1

DNAworkshop

DERBY RUN APARTMENTS I

6 DERBY DRIVE, HAMPTON, VA 23666

DYKE NELSON ARCHITECTURE 235 SOUTH 14TH ST. BATON ROUGE, LA 70802DNA-WORKSHOP.COM [225] 224 3363

REVISIONS

1 08/17/19 D3G/HUD

JOB NUMBER: 19-007

ISSUED: 08/01/19

ISSUED FOR:

PERMITTING

COMMONWEALTH OF VIRGINIA
JOSEPH DYKE NELSON
No. 0401017290
ARCHITECT

NEW - BUILDING ELEVATIONS - BLDG TYPE B

A2.02

PHASE: CD

REPLACE EXISTING VINYL SOFFIT ALONG FRONT SIDE OF BUILDING WITH NEW VENTED VINYL SOFFIT TO MATCH.
SALVAGE EXISTING SOFFIT PIECES IN GOOD CONDITION.

1 BLDG TYPE C - FRONT - NEW
1/8" = 1'-0"

REPLACE SECTIONS OF VINLY SOFFITS ALONG BACK SIDE OF BUILDING THAT ARE IN DISREPAIR WITH SALVAGED SOFFITS FROM FRONT SIDE.

2 BLDG TYPE C - BACK - NEW
1/8" = 1'-0"

3 BLDG TYPE C - LEFT - NEW
1/8" = 1'-0"

4 BLDG TYPE C - RIGHT - NEW
1/8" = 1'-0"

GENERAL NOTES

1. ALL DIMENSIONS ARE TO FACE OF FINISH, UNLESS NOTED OTHERWISE.
2. CONTRACTOR TO VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
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8. LOTS TO BE RE-GRADED TO DRAIN STORM WATER DIRECTLY AWAY FROM BUILDINGS AND SITE AMENTIES. ALLOWANCE HAS BEEN INCLUDED IN SCOPE (UP TO $35,000).
9. ALL WATER FROM ROOF AND GUTTER SYSTEM MUST BE PIPED AWAY FROM BUILDINGS
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GENERAL ELEVATION NOTES

1. REMOVE AND REPLACE ALL FELT, FLASHING, DRIP EDGE, SHINGLES, BOOTS, AND RIDGE VENTS, AND REPLACE WITH NEW. REPAIR ALL DAMAGED VINYL SOFFITS. NEW SHINGLES TO BE ANTI-FUNGAL, COMPOSITION SHINGLES W/ 30-YR WARRANTY
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4. PROVIDE NEW WINDOW TREATMENT; TYP. ALL
5. REPAINT ALL NEW EXTERIOR DOORS
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   A. UNIT EXTERIOR LIGHTING
   B. BUILDING EXTERIOR LIGHTING
   C. BREEZEWAY EXTERIOR LIGHTING

KEYED NOTES - NEW CONSTRUCTION

C08.4	NEW METAL HANDRAILS, TYP. ALL; REPLACE THREE RISERS AND TRENDS PER STAIR
C09.19	NEW BLDG EXTERIOR LIGHT, RE: ELECTRICAL
C17.4	INSTALL NEW GUTTERS AND DOWNSPOUTS; TYP. ALL
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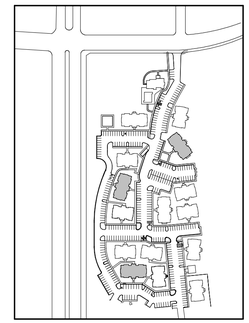
C17.8	NEW CANOPY OVER BREEZEWAY STAIRS, RE:4/A6.0



KEY PLAN - BLDG TYPE C
1, 11, 14, 15

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DERBY RUN APARTMENTS I

6 DERBY DRIVE, HAMPTON, VA 23666

DYKE NELSON ARCHITECTURE

REVISIONS
1 08/17/19 D3G/HUD

JOB NUMBER: 19-007
ISSUED: 08/01/19
ISSUED FOR:
PERMITTING

COMMONWEALTH OF VIRGINIA
JOSEPH DYKE NELSON
No. 0401017290
ARCHITECT

NEW - BUILDING ELEVATIONS - BLDG TYPE C

A2.03

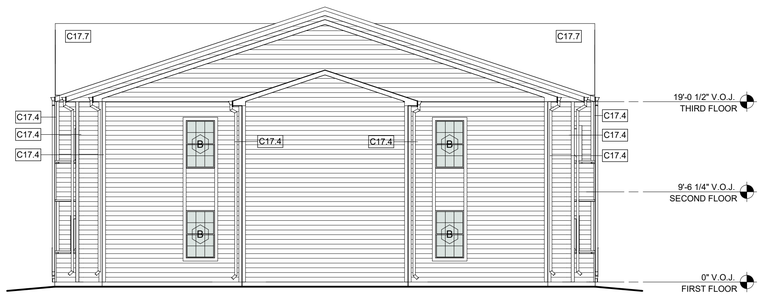
PHASE: CD

REPLACE EXISTING VINYL SOFFIT ALONG FRONT SIDE OF BUILDING WITH NEW VENTED VINYL SOFFIT TO MATCH.
SALVAGE EXISTING SOFFIT PIECES IN GOOD CONDITION.

1 BLDG TYPE D - FRONT - NEW
1/8" = 1'-0"

REPLACE SECTIONS OF VINLY SOFFITS ALONG BACK SIDE OF BUILDING THAT ARE IN DISREPAIR WITH SALVAGED SOFFITS FROM FRONT SIDE.

2 BLDG TYPE D - BACK - NEW
1/8" = 1'-0"



3 BLDG TYPE D - LEFT - NEW
1/8" = 1'-0"

4 BLDG TYPE D - RIGHT - NEW
1/8" = 1'-0"

GENERAL NOTES

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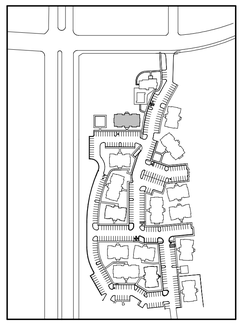

KEY PLAN - BLDG TYPE D
2

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DERBY RUN APARTMENTS I

6 DERBY DRIVE, HAMPTON, VA 23666

REVISIONS

1 08/17/19 D3G/HUD

JOB NUMBER: 19-007

ISSUED: 08/01/19

ISSUED FOR:

PERMITTING

NEW - BUILDING ELEVATIONS - BLDG TYPE D

A2.04

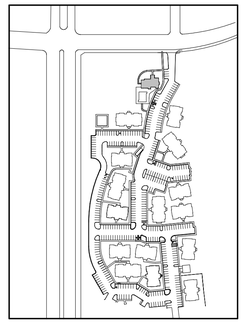
PHASE: CD

1 CLUBHOUSE - FRONT - NEW
1/4" = 1'-0"

2 CLUBHOUSE - BACK - NEW
1/4" = 1'-0"

3 CLUBHOUSE - LEFT - NEW
1/4" = 1'-0"

4 CLUBHOUSE - RIGHT - NEW
1/4" = 1'-0"



KEY PLAN - CLUBHOUSE
15

GENERAL NOTES

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KEYED NOTES - NEW CONSTRUCTION

C17.4	INSTALL NEW GUTTERS AND DOWNSPOUTS; TYP. ALL
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DERBY RUN APARTMENTS I

6 DERBY DRIVE, HAMPTON, VA 23666

REVISIONS

JOB NUMBER: 19-007

ISSUED: 08/01/19

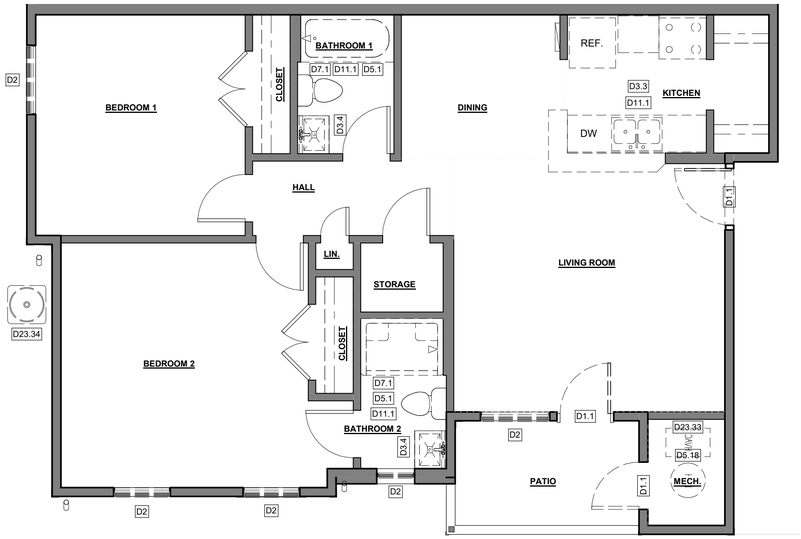
PRELIMINARY

NOT FOR CONSTRUCTION

NEW - BUILDING ELEVATIONS - CLUBHOUSE

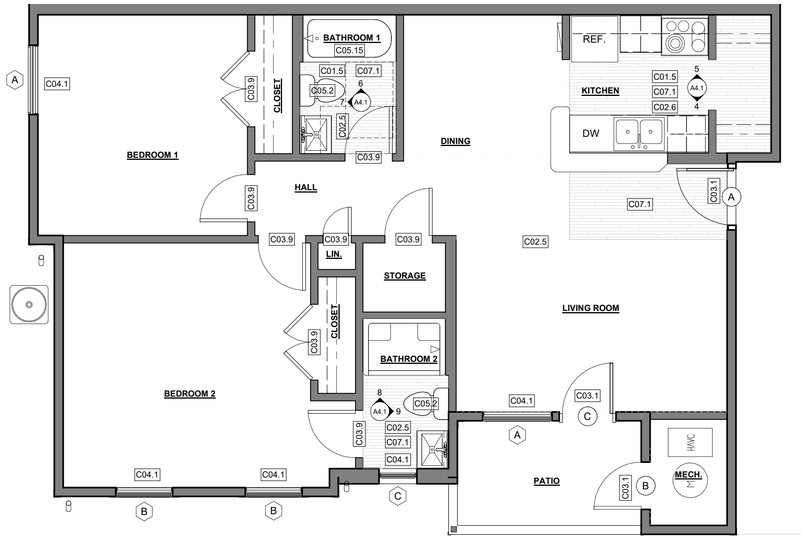
A2.05

PHASE: CD



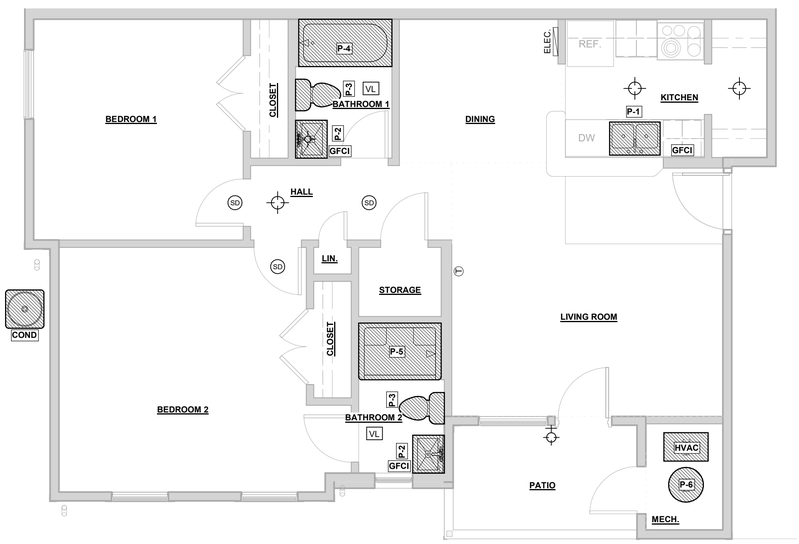
1 DEMO - ENLARGED UNIT PLAN - 2BR

1/4" = 1'-0" *TYPICAL LAYOUT AT 2ND & 3RD FLOOR UNITS*



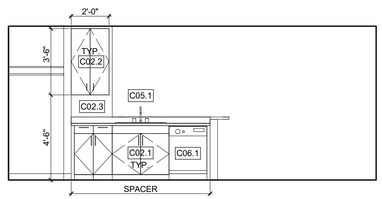
2 NEW - ENLARGED UNIT PLAN - 2BR

1/4" = 1'-0" *TYPICAL LAYOUT AT 2ND & 3RD FLOOR UNITS*



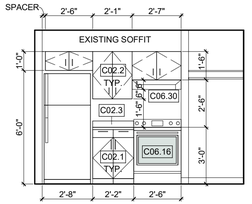
3 NEW - MEP - 2BR

1/4" = 1'-0"



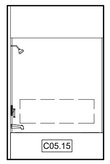
4 2BR KITCHEN 1

1/4" = 1'-0"



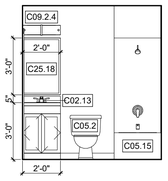
5 2BR KITCHEN 2

1/4" = 1'-0"



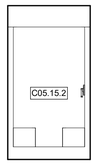
6 2BR BATHROOM 1-1

1/4" = 1'-0"



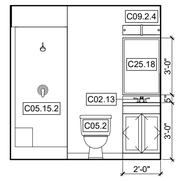
7 2BR BATHROOM 1-2

1/4" = 1'-0"



8 2BR BATHROOM 2-1

1/4" = 1'-0"



9 2BR BATHROOM 2-2

1/4" = 1'-0"

NEW UNIT M.E.P. LEGEND

	REPLACE EXISTING INTERIOR LIGHTING WITH ENERGY STAR RATED LED FIXTURES AT ALL EXISTING LOCATIONS
	REPLACE EXISTING WALL MOUNTED LIGHTING WITH ENERGY STAR RATED LED LIGHT FIXTURES AT ALL EXISTING LOCATIONS
SD	NEW SMOKE DETECTOR
VL	NEW 70 CFM VENTILATION FAN.
ELEC.	EXISTING ELEC. PANEL
GFCI	GROUND FAULT CIRCUIT INTERRUPTER TO BE INSTALLED IN EXISTING OUTLET LOCATION(S), VERIFY ON SITE
HVAC	NEW AIR HANDLER UNIT. REUSE EXISTING DUCT WORK. RE-USE EXISTING LINE SETS.
COND	NEW CONDENSING UNIT
T	NEW PROGRAMMABLE THERMOSTAT
P-1	NEW DOUBLE BOWL STAINLESS STEEL SINK WITH STRAINER, WATER SENSE LEVER FAUCET, NEW P-TRAP, AND HOT AND COLD WATER SUPPLY LINES.
P-2	NEW LAVATORY SINK AND WATER SENSE LEVER FAUCET WITH NEW P-TRAPS, AND SUPPLY LINES.
P-3	NEW WATER SENSE TOILET, INCLUDING TOILET SEAT, AND NEW WATER SUPPLY LINE W/ESCUTCHEON.
P-4	NEW TUB AND SURROUND, WITH NEW WATER SENSE LEVER FAUCET, NEW WATER SENSE SHOWER HEAD, NEW DIVERTER AND TRIM.
P-5	EXISTING SHOWER AND SURROUND, WITH NEW WATER SENSE LEVER FAUCET, NEW WATER SENSE SHOWER HEAD, NEW DIVERTER AND TRIM.
WH P-6	NEW 0.93 UEF ELECTRIC WATER HEATER, OVERFLOW DRIP PAN, AND DRAIN TO EXISTING HUB

KEYED NOTES - DEMOLITION

Mark	Description
D1.1	REMOVE EXISTING DOOR AND FRAME
D2	REMOVE WINDOW AND FRAME
D3.3	REMOVE EXISTING CABINETRY, COUNTERTOPS SINK, AND APPLIANCES; PREPARE SURFACES FOR NEW
D5.1	REMOVE EXISTING SINK, TOILET, TUB AND SURROUND
D5.18	REMOVE EXISTING HOT WATER HEATER
D7.1	REMOVE EXISTING BATH ACCESSORIES; MIRROR, TOILET PAPER HOLDER, AND TOWEL RACK, ETC.
D11.1	REMOVE EXISTING FLOORING DOWN TO ORIGINAL VCT; PREPARE EXISTING SURFACE TO RECEIVE NEW LVT PLANK FLOORING
D23.33	REMOVE EXISTING HVAC
D23.34	REMOVE EXISTING CONDENSING UNIT

KEYED NOTES - NEW CONSTRUCTION

C01.5	NEW PAINT, TYP. REPAIR WALLS AS NECESSARY PRIOR TO PAINT.
C02.1	NEW BASE CABINET, TYP.
C02.2	NEW UPPER CABINET, TYP.
C02.3	NEW COUNTERTOP AND BACKSPLASH
C02.5	NEW VANITY CABINET AND COUNTERTOP WITH BACKSPLASH AND SIDESPLASH
C02.6	NEW CABINETRY, COUNTERTOPS, SINK, AND APPLIANCES
C02.13	NEW VANITY BASE CABINET
C03.1	NEW METAL DOOR AND WOOD FRAME, INCLUDING NEW HARDWARE AND KNOCKER, PAINTED
C03.9	NEW DOOR FINISH HARDWARE
C04.1	NEW VINYL WINDOW AS SCHEDULED TO REPLACE EXISTING; PROVIDE NEW WINDOW TREATMENT, TYP. ALL.
C05.2	NEW TOILET
C05.15	NEW TUB AND SHOWER SURROUND
C05.15.2	NEW SHOWER AND SHOWER SURROUND
C06.16	NEW RANGE
C06.30	NEW RANGE HOOD W/ NEW RANGE QUEENS
C07.1	NEW VINYL PLANK FLOORING
C09.2.4	NEW WALL MOUNTED LIGHT FIXTURE
C25.18	NEW VANITY MIRROR

GENERAL NOTES

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4. CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS AND COORDINATE WITH NEW. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT.
5. CONTRACTOR SHALL PATCH AND SEAL EXISTING CEILING, WALLS, FLOORS, AND ROOF TO MATCH EXISTING AND SHALL MAKE WATERTIGHT.
6. CONTRACTOR TO REFERENCE SHEET G4.0 & G4.1 FOR ACCESSIBILITY REQUIREMENTS
7. ALL REPAIRS & COMPONENT REPLACEMENTS TO BE IN INSTALLED IN ACCORDANCE WITH APPLICABLE BUILDING CODES
8. LOTS TO BE RE-GRADED TO DRAIN STORM WATER DIRECTLY AWAY FROM BUILDINGS AND SITE AMENTIES. ALLOWANCE HAS BEEN INCLUDED IN SCOPE (UP TO $35,000).
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10. SEAL AT ALL EXTERIOR DOORS, WINDOWS, PLUMBING, AND ELECTRICAL PENETRATIONS TO PREVENT MOISTURE AND AIR LEAKAGE.

GENERAL UNIT NOTES

1. DRYWALL TO BE REPAIRED WHERE DAMAGED ($250 PER UNIT ALLOWANCE)
2. FOUR (4) UNITS TO RECEIVE HEARING AND SIGHT IMPAIRED UPGRADES.
   A. STROBES FOR SMOKE DETECTORS
   B. STROBES FOR DOOR BELL.
3. PROVIDE NEW FLOOR UNDERLAYMENT AT ALL 2ND & 3RD FLOOR KITCHENS AND BATHROOMS

GENERAL MEP NOTES

FIRE AND LIFE SAFETY

1. INSTALL ONE HARDWIRED SMOKE DETECTOR PER UNIT AND ADD WIRELESS INTERCONNECTED SMOKE DETECTORS IN ALL BEDROOMS IN ALL UNITS.
2. PROVIDE NEW RANGE QUEENS

MECHANICAL

1. REPLACE ALL COMPONENTS EXCEPT SET LINES
2. MANUFACTURER TO PROVIDE LETTER CONFIRMING WARRANTY IS VALID WITH EXISTING SET LINES.
3. REPLACE ALL THERMOSTATS WITH PROGRAMMABLE TYPE.
4. REPLACE ALL EXISTING GRILLES.
5. PROVIDE NEW BATHROOM FANS.
6. ALL HVAC SUPPLY, RETURN, AND EXHAUST DUCTING, AND PLENUMS ARE EXISTING, AND ARE TO REMAIN. CLEAN ALL EXISTING DUCTS AND PLENUMS.

ELECTRICAL

1. REPLACE ALL PAINTED OR DAMAGED SWITCHES AND RECEPTICALS WITH NEW (10% REPLACEMENT)
   A. HC UNIT RECEPTICALS, OUTLETS AND THERMOSTAT TO BE AT HEIGHTS PER G4.0

PLUMBING

1. 160 UNITS TO RECEIVE NEW WATER HEATER AND PAN.

NEW APPLIANCE SCHEDULE

REFRIGERATOR: ENERGY STAR REFRIGERATOR

ACCESSIBLE UNITS TO BE ADA-COMPLIANT; RE: A4.2

RANGE & HOOD: NEW 30" RANGE AND NEW RANGE HOOD W/ NEW RANGE QUEENS

ACCESSIBLE UNITS TO BE ADA-COMPLIANT, HOOD TO HAVE ACCESSIBLE CONTROLS RE: A 4.2

DISHWASHER: ENERGY STAR DISHWASHER

ACCESSIBLE UNITS TO BE ADA-COMPLIANT; RE: A 4.2

WALL LEGEND

- EXISTING WALL
- DEMOLISHED WALL
- NEW WALL

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DERBY RUN APARTMENTS I

6 DERBY DRIVE, HAMPTON, VA 23666

DYKE NELSON ARCHITECTURE

REVISIONS

1 08/17/19 D3G/HUD

JOB NUMBER: 19-007

ISSUED: 08/01/19

ISSUED FOR:

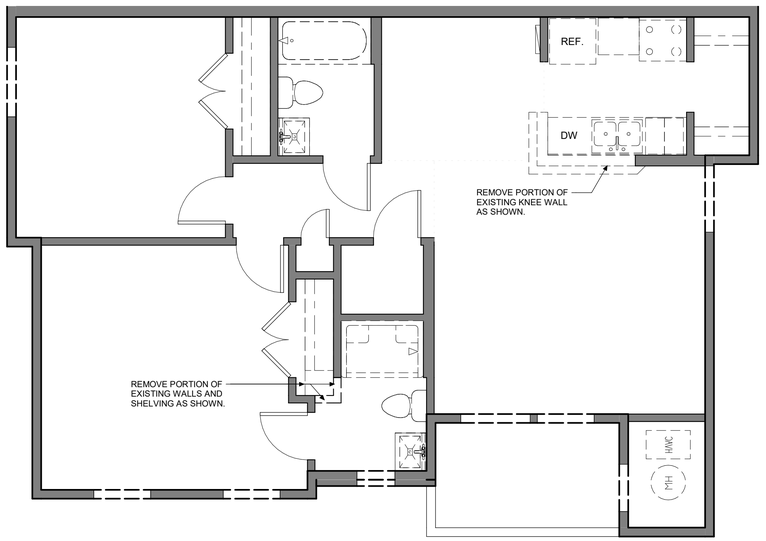
PERMITTING

COMMONWEALTH OF VIRGINIA
JOSEPH DYKE NELSON
No. 0401017290
ARCHITECT

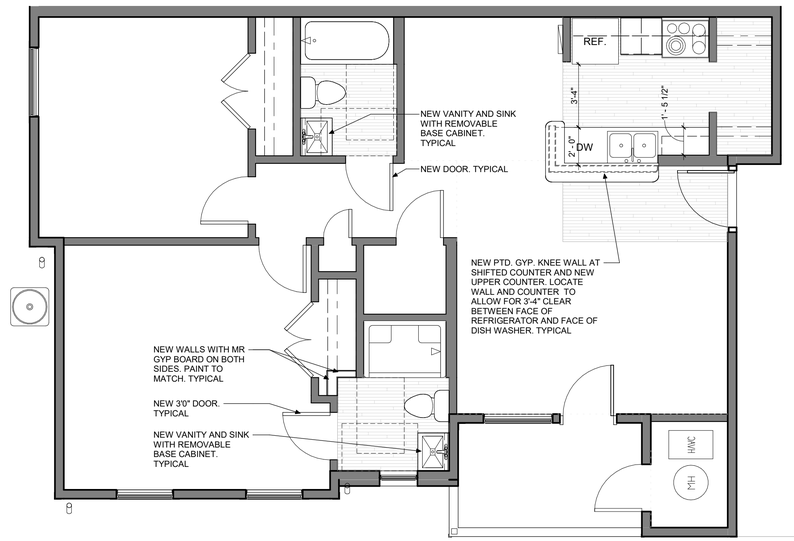
ENLARGED 2BR UNIT PLANS & INTERIOR ELEV.

A4.1

PHASE: CD



1 DEMO - ENLARGED UNIT PLAN - 2BR GROUND FLOOR UNITS ONLY
1/4" = 1'-0"

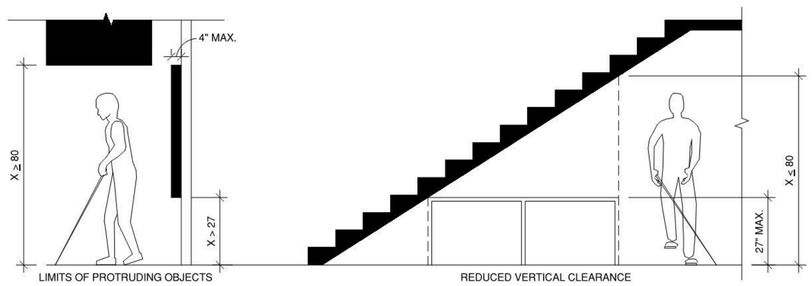


2 NEW - ENLARGED UNIT PLAN - 2BR GROUND FLOOR UNITS ONLY
1/4" = 1'-0"

GENERAL NOTES FOR ALL GROUND FLOOR UNITS:

1. ALL BATHROOMS TO HAVE COMPLETE FINISHED FLOORS AND WALLS PRIOR TO INSTALLING REMOVABLE BASE CABINETS AT NEW VANITIES.
2. NEW REMOVABLE BASE CABINETS AT NEW VANITIES TO INCLUDE SCALD GUARD. RE:B/A7.0
3. CENTER OF NEW VANITY SINKS TO BE 15" FROM SIDE WALL.
4. PROVIDE BLOCKING IN ALL BATHROOMS PER FHA REQUIREMENTS AT NEW TUBS/SHOWERS PRIOR TO INSTALLING NEW TUBS AND SURROUNDS.
5. PROVIDE BLOCKING IN ALL BATHROOMS PER FHA REQUIREMENTS AT EXISTING SHOWERS TO REMAIN.
6. PROVIDE BLOCKING IN ALL BATHROOMS PER FHA REQUIREMENTS AT NEW TOILETS PRIOR TO INSTALLATION.
7. CENTER OF NEW TOILETS AT 3 BD RM UNITS TO BE 18" FROM SIDE WALL.
8. NEW DOORS TO BE MIN. OF 32" CLEAR FROM FACE OF DOOR SLAB TO JAMB IN 90 DEGREE OPEN POSITION.
9. REPLACE ALL THRESHOLDS AT NEW UNIT ENTRY DOORS WITH ADA COMPLIANT THRESHOLDS.
10. INSTALL NEW 1-1/2" PTD. STEEL PIPE CANE RAILS WITH PIPE SLEEVES SECURED TO CONCRETE AT ALL FIRST FLOOR BREEZEWAY STAIRS. RE: CANE RAIL DIAGRAM.

NOTE: RE: A 4.1 FOR TYPICAL DEMO AND NEW CONSTRUCTION NOTES. DRAWINGS AND NOTES ON THIS SHEET APPLY ONLY TO GROUND FLOOR 2 BR AND 3 BR UNITS.



CANE RAIL DIAGRAM

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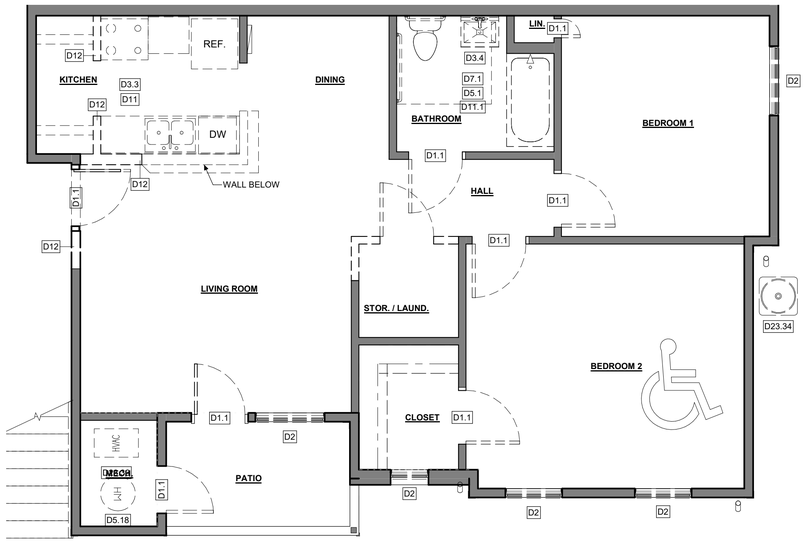
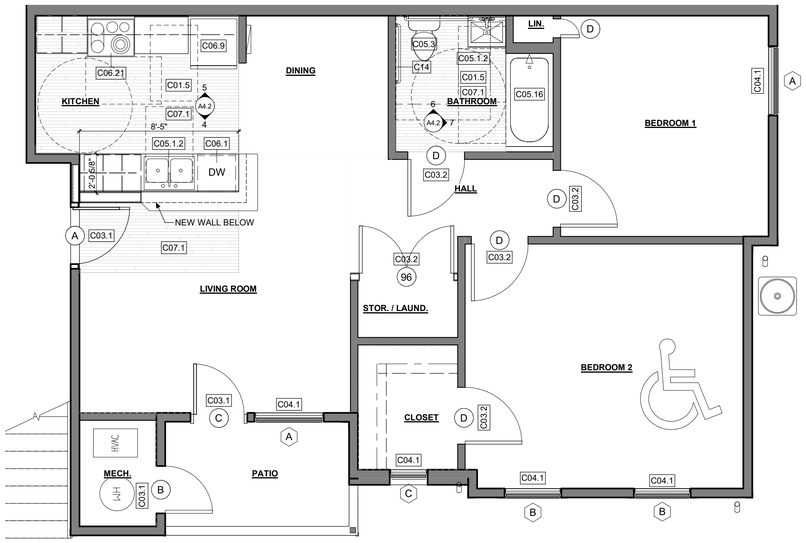
GROUND FLOOR UNIT MODIFICATIONS

A4.1.2

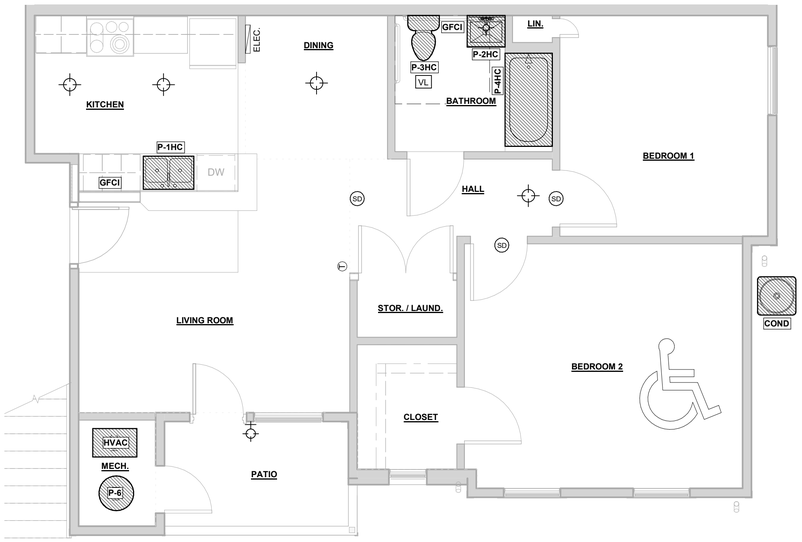
PHASE: CD



1 DEMO - ENLARGED UNIT PLAN - 2BR HC
1/4" = 1'-0"



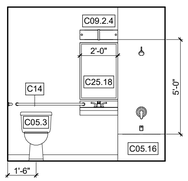
2 NEW - ENLARGED UNIT PLAN - 2BR HC
1/4" = 1'-0"



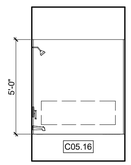
3 NEW - MEP - 2BR HC
1/4" = 1'-0"

4 2BR-HC & 3BR-HC KITCHEN 1
1/4" = 1'-0"

5 2BR-HC & 3BR-HC KITCHEN 2
1/4" = 1'-0"



6 2BR HC BATHROOM 1
1/4" = 1'-0"



7 2BR HC BATHROOM 2
1/4" = 1'-0"

NEW HC UNIT M.E.P. LEGEND

	REPLACE EXISTING INTERIOR LIGHTING WITH ENERGY STAR RATED LED FIXTURES AT ALL EXISTING LOCATIONS
	REPLACE EXISTING WALL MOUNTED LIGHTING WITH ENERGY STAR RATED LED LIGHT FIXTURES AT ALL EXISTING LOCATIONS
SD	NEW SMOKE DETECTOR
VL	NEW 70 CFM VENTILATION FAN.
ELEC.	EXISTING ELEC. PANEL
GFCI	GROUND FAULT CIRCUIT INTERRUPTER TO BE INSTALLED IN EXISTING OUTLET LOCATION(S), VERIFY ON SITE
HVAC	NEW AIR HANDLER UNIT. REUSE EXISTING DUCT WORK. RE-USE EXISTING LINE SETS.
COND	NEW CONDENSING UNIT
T	NEW PROGRAMMABLE THERMOSTAT
P-1HC	NEW ADA DOUBLE BOWL STAINLESS STEEL SINK WITH STRAINER, WATER SENSE PADDLE-BLADE FAUCET, NEW P-TRAP, ANGLE STOPS, HOT AND COLD WATER SUPPLY LINES.
P-2HC	NEW ADA LAVATORY SINK AND ADA WATER SENSE PADDLE-BLADE FAUCET WITH NEW P-TRAPS, ANGLE STOPS, AND SUPPLY LINES.
P-3HC	NEW ADA WATER SENSE TOILET, INCLUDING TOILET SEAT, AND NEW WATER SUPPLY LINE WIESCUTCHEON.
P-4HC	NEW ADA-COMPLIANT TUB AND SURROUND, WITH NEW ADA-COMPLIANT WATER SENSE FAUCET, NEW ADA WATER SENSE SHOWER HEAD, NEW DIVERTER AND TRIM, AND GRAB BARS. SEE G4.0 FOR ACCESSIBLE MOUNTING REQUIREMENTS.
WH P-8	NEW 0.93 UEF ELECTRIC WATER HEATER; INCLUDES NEW VENTING, OVERFLOW DRIP PAN, AND DRAIN TO HUB

KEYED NOTES - DEMOLITION

Mark	Description
D1.1	REMOVE EXISTING DOOR AND FRAME
D2	REMOVE WINDOW AND FRAME
D3.3	REMOVE EXISTING CABINETRY, COUNTERTOPS, SINK, AND APPLIANCES; PREPARE SURFACES FOR NEW
D5.1	REMOVE EXISTING SINK, TOILET, TUB AND SURROUND
D5.18	REMOVE EXISTING HOT WATER HEATER
D7.1	REMOVE EXISTING BATH ACCESSORIES; MIRROR, TOILET PAPER HOLDER, AND TOWEL RACK, ETC.
D11	REMOVE FLOORING
D11.1	REMOVE EXISTING FLOORING DOWN TO ORIGINAL VCT; PREPARE EXISTING SURFACE TO RECEIVE NEW LVT PLANK FLOORING
D12	DEMOLISH WALL
D23.33	REMOVE EXISTING HVAC
D23.34	REMOVE EXISTING CONDENSING UNIT

KEYED NOTES - NEW CONSTRUCTION

C01.5	NEW PAINT, TYP. REPAIR WALLS AS NECESSARY PRIOR TO PAINT.
C02.1	NEW BASE CABINET, TYP.
C02.2	NEW UPPER CABINET, TYP.
C02.3	NEW COUNTERTOP AND BACKSPLASH
C02.25	NEW ADA BASE CABINET WITH OPEN FRONT
C03.1	NEW METAL DOOR AND WOOD FRAME, INCLUDING NEW HARDWARE AND KNOCKER, PAINTED
C03.2	NEW INTERIOR DOOR AND FRAME, INCLUDING NEW HARDWARE AND KNOCKER, PAINTED
C04.1	NEW VINYL WINDOW AS SCHEDULED TO REPLACE EXISTING; PROVIDE NEW WINDOW TREATMENT, TYP. ALL.
C05.1.2	NEW ADA COMPLIANT SINK AND FAUCET, RE: PLUMBING
C05.3	NEW ADA TOILET
C05.16	NEW ADA TUB
C06.1	NEW DISHWASHER
C06.9	NEW ADA COMPLIANT REFRIGERATOR
C06.16	NEW RANGE
C06.21	NEW ADA COMPLIANT RANGE WITH HOOD
C06.30	NEW RANGE HOOD W/ NEW RANGE QUEENS
C07.1	NEW VINYL PLANK FLOORING
C09.2.4	NEW WALL MOUNTED LIGHT FIXTURE
C14	NEW GRAB BARS
C25.18	NEW VANITY MIRROR

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PLUMBING
1. 160 UNITS TO RECEIVE NEW WATER HEATER AND PAN.

WALL LEGEND

	EXISTING WALL
	DEMOLISHED WALL
	NEW WALL

NEW APPLIANCE SCHEDULE

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ACCESSIBLE UNITS TO BE ADA-COMPLIANT; RE: A4.2

RANGE & HOOD: NEW 30" RANGE AND NEW RANGE HOOD W/ NEW RANGE QUEENS

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DISHWASHER: ENERGY STAR DISHWASHER

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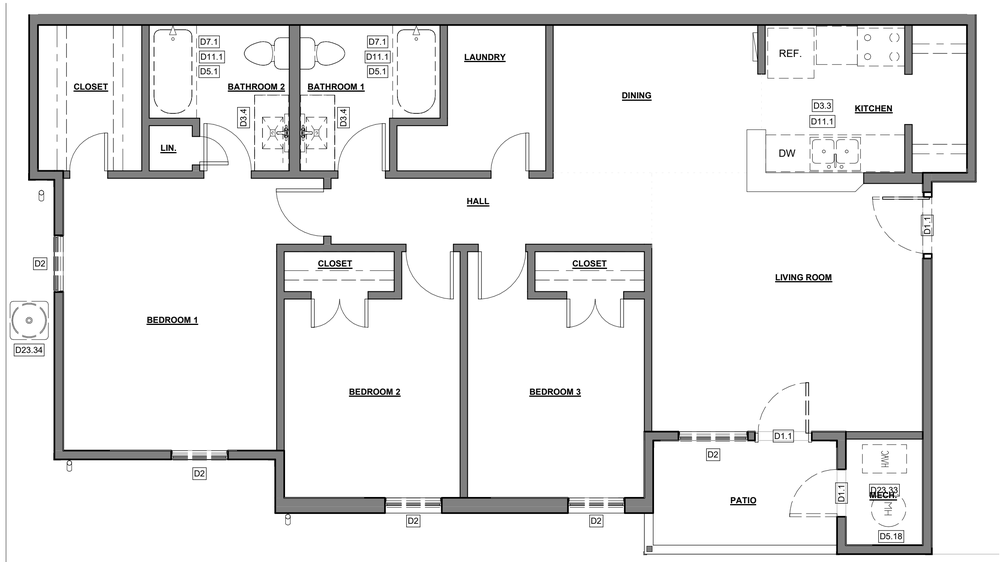
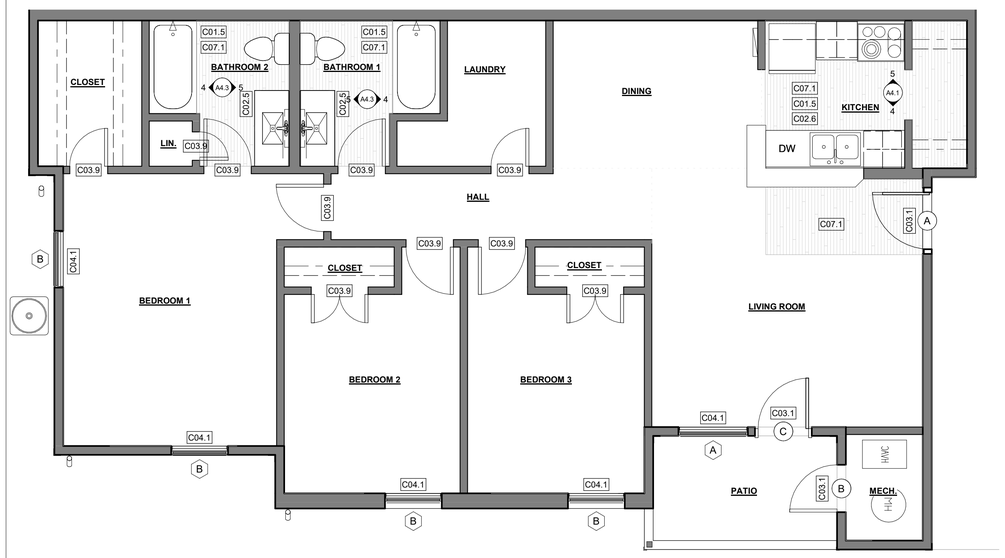
ENLARGED 2BR HC UNIT PLANS & INTERIOR ELEV.

A4.2

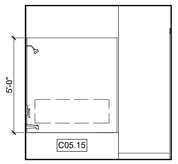
PHASE: CD



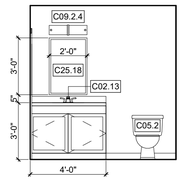
1 DEMO - ENLARGED UNIT PLAN - 3BR
1/4" = 1'-0"



2 NEW - ENLARGED UNIT PLAN - 3BR
1/4" = 1'-0"



4 3BR BATHROOM 1-1
1/4" = 1'-0"



5 3BR BATHROOM 1-2
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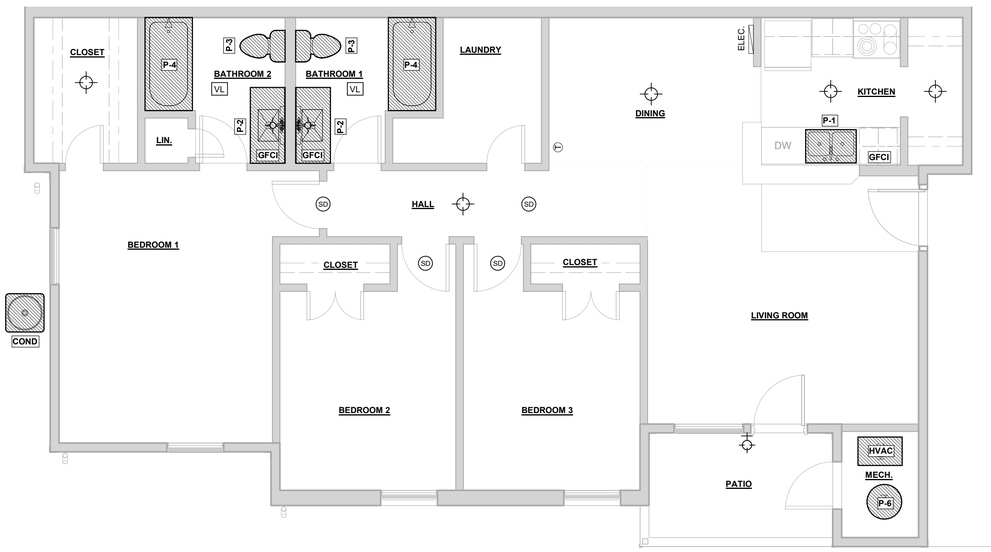

3 NEW - MEP - 3BR
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D3.4	REMOVE EXISTING VANITY COUNTERTOP AND CABINET.
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D23.34	REMOVE EXISTING CONDENSING UNIT

KEYED NOTES - NEW CONSTRUCTION

C01.5	NEW PAINT, TYP. REPAIR WALLS AS NECESSARY PRIOR TO PAINT.
C02.5	NEW VANITY CABINET AND COUNTERTOP WITH BACKSPLASH AND SIDESPLASH
C02.6	NEW CABINETRY, COUNTERTOPS, SINK, AND APPLIANCES
C02.13	NEW VANITY BASE CABINET
C03.1	NEW METAL DOOR AND WOOD FRAME, INCLUDING NEW HARDWARE AND KNOCKER, PAINTED
C03.9	NEW DOOR FINISH HARDWARE
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C05.2	NEW TOILET
C05.15	NEW TUB AND SHOWER SURROUND
C07.1	NEW VINYL PLANK FLOORING
C09.2.4	NEW WALL MOUNTED LIGHT FIXTURE
C25.18	NEW VANITY MIRROR

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WALL LEGEND

- EXISTING WALL
- DEMOLISHED WALL
- NEW WALL

NEW UNIT M.E.P. LEGEND

	REPLACE EXISTING INTERIOR LIGHTING WITH ENERGY STAR RATED LED FIXTURES AT ALL EXISTING LOCATIONS
	REPLACE EXISTING WALL MOUNTED LIGHTING WITH ENERGY STAR RATED LED LIGHT FIXTURES AT ALL EXISTING LOCATIONS
SD	NEW SMOKE DETECTOR
VL	NEW 70 CFM VENTILATION FAN.
ELEC.	EXISTING ELEC. PANEL
GFCI	GROUND FAULT CIRCUIT INTERRUPTER TO BE INSTALLED IN EXISTING OUTLET LOCATION(S), VERIFY ON SITE
HVAC	NEW AIR HANDLER UNIT. REUSE EXISTING DUCT WORK. RE-USE EXISTING LINE SETS.
COND	NEW CONDENSING UNIT
T	NEW PROGRAMMABLE THERMOSTAT
P-1	NEW DOUBLE BOWL STAINLESS STEEL SINK WITH STRAINER, WATER SENSE LEVER FAUCET, NEW P-TRAP, AND HOT AND COLD WATER SUPPLY LINES.
P-2	NEW LAVATORY SINK AND WATER SENSE LEVER FAUCET WITH NEW P-TRAPS, AND SUPPLY LINES.
P-3	NEW WATER SENSE TOILET, INCLUDING TOILET SEAT, AND NEW WATER SUPPLY LINE W/ESCUTCHEON.
P-4	NEW TUB AND SURROUND, WITH NEW WATER SENSE LEVER FAUCET, NEW WATER SENSE SHOWER HEAD, NEW DIVERTER AND TRIM.
P-5	EXISTING SHOWER AND SURROUND, WITH NEW WATER SENSE LEVER FAUCET, NEW WATER SENSE SHOWER HEAD, NEW DIVERTER AND TRIM.
WH P-6	NEW 0.93 UEF ELECTRIC WATER HEATER, OVERFLOW DRIP PAN, AND DRAIN TO EXISTING HUB

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DYKE NELSON ARCHITECTURE 235 SOUTH 14TH ST. BATON ROUGE, LA 70802 DNA-WORKSHOP.COM [225] 224 3363

DERBY RUN APARTMENTS I

6 DERBY DRIVE, HAMPTON, VA 23666

REVISIONS

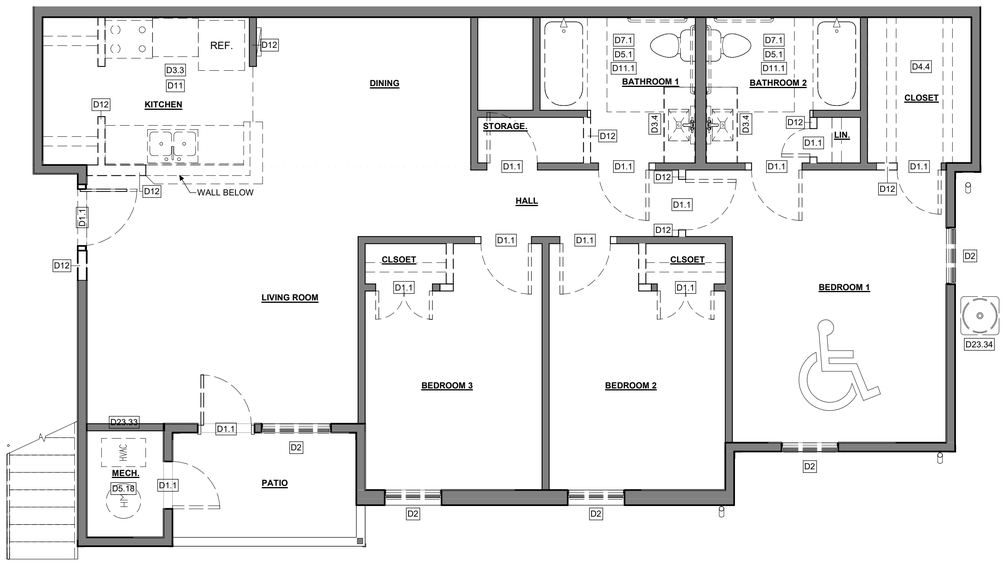
JOB NUMBER: 19-007
ISSUED: 08/01/19
ISSUED FOR:
PERMITTING

COMMONWEALTH OF VIRGINIA
JOSEPH DYKE NELSON
No. 0401017290
ARCHITECT

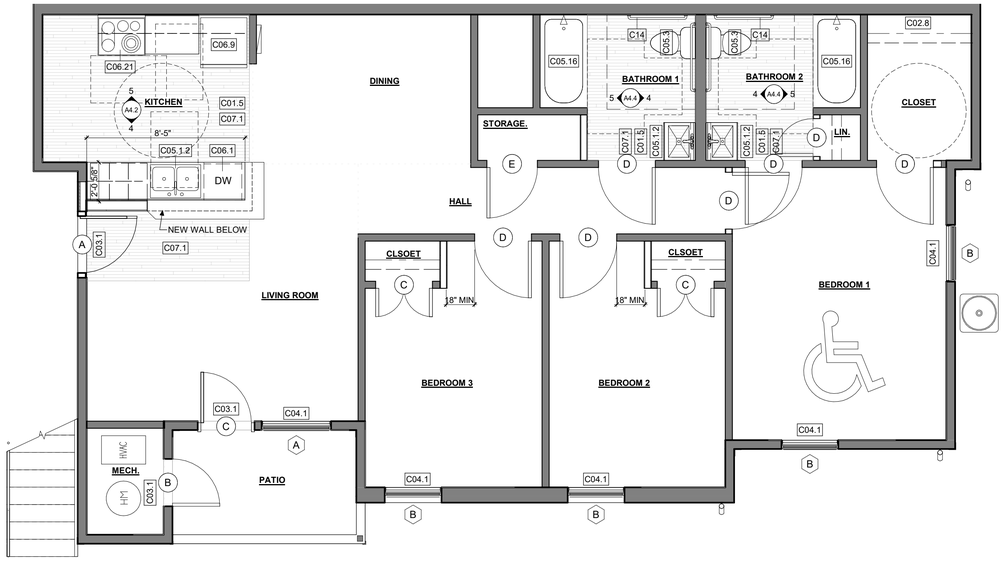
ENLARGED 3BR UNIT PLANS & INTERIOR ELEV.

A4.3

PHASE: CD

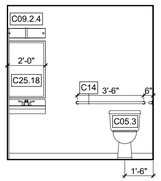


1 DEMO - ENLARGED UNIT PLAN - 3BR HC
1/4" = 1'-0"

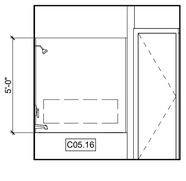


2 NEW - ENLARGED UNIT PLAN - 3BR HC
1/4" = 1'-0"

3 NEW - MEP - 3BR HC
1/4" = 1'-0"



4 3BR HC BATHROOM 1
1/4" = 1'-0"



5 3BR HC BATHROOM 2
1/4" = 1'-0"

KEYED NOTES - DEMOLITION

Mark	Description
D1.1	REMOVE EXISTING DOOR AND FRAME
D2	REMOVE WINDOW AND FRAME
D3.3	REMOVE EXISTING CABINETRY, COUNTERTOPS, SINK, AND APPLIANCES; PREPARE SURFACES FOR NEW
D3.4	REMOVE EXISTING VANITY COUNTERTOP AND CABINET.
D4.4	REMOVE SHELVING
D5.1	REMOVE EXISTING SINK, TOILET, TUB AND SURROUND
D5.18	REMOVE EXISTING HOT WATER HEATER
D7.1	REMOVE EXISTING BATH ACCESSORIES; MIRROR, TOILET PAPER HOLDER, AND TOWEL RACK, ETC.
D11	REMOVE FLOORING
D11.1	REMOVE EXISTING FLOORING DOWN TO ORIGINAL VCT; PREPARE EXISTING SURFACE TO RECEIVE NEW LVT PLANK FLOORING
D12	DEMOLISH WALL
D23.33	REMOVE EXISTING HVAC
D23.34	REMOVE EXISTING CONDENSING UNIT

KEYED NOTES - NEW CONSTRUCTION

C01.5	NEW PAINT, TYP. REPAIR WALLS AS NECESSARY PRIOR TO PAINT.
C02.8	NEW SHELF
C03.1	NEW METAL DOOR AND WOOD FRAME, INCLUDING NEW HARDWARE AND KNOCKER, PAINTED
C04.1	NEW VINYL WINDOW AS SCHEDULED TO REPLACE EXISTING; PROVIDE NEW WINDOW TREATMENT, TYP. ALL.
C05.1.2	NEW ADA COMPLIANT SINK AND FAUCET, RE: PLUMBING
C05.3	NEW ADA TOILET
C05.16	NEW ADA TUB
C06.1	NEW DISHWASHER
C06.9	NEW ADA COMPLIANT REFRIGERATOR
C06.21	NEW ADA COMPLIANT RANGE WITH HOOD
C07.1	NEW VINYL PLANK FLOORING
C09.2.4	NEW WALL MOUNTED LIGHT FIXTURE
C14	NEW GRAB BARS
C25.18	NEW VANITY MIRROR

GENERAL MEP NOTES

FIRE AND LIFE SAFETY

1. INSTALL ONE HARDWIRED SMOKE DETECTOR PER UNIT AND ADD WIRELESS INTERCONNECTED SMOKE DETECTORS IN ALL BEDROOMS IN ALL UNITS.
2. PROVIDE NEW RANGE QUEENS

MECHANICAL

1. REPLACE ALL COMPONENTS EXCEPT SET LINES
2. MANUFACTURER TO PROVIDE LETTER CONFIRMING WARRANTY IS VALID WITH EXISTING SET LINES.
3. REPLACE ALL THERMOSTATS WITH PROGRAMMABLE TYPE.
4. REPLACE ALL EXISTING GRILLES.
5. PROVIDE NEW BATHROOM FANS.
6. ALL HVAC SUPPLY, RETURN, AND EXHAUST DUCTING, AND PLENUMS ARE EXISTING; AND ARE TO REMAIN. CLEAN ALL EXISTING DUCTS AND PLENUMS.

ELECTRICAL

1. REPLACE ALL PAINTED OR DAMAGED SWITCHES AND RECEPTICALS WITH NEW (10% REPLACEMENT)
   A. HC UNIT RECEPTICALS, OUTLETS AND THERMOSTAT TO BE AT HEIGHTS PER G4.0

PLUMBING

1. 160 UNITS TO RECEIVE NEW WATER HEATER AND PAN.

NEW APPLIANCE SCHEDULE

REFRIGERATOR: ENERGY STAR REFRIGERATOR

ACCESSIBLE UNITS TO BE ADA-COMPLIANT; RE: A4.2

RANGE & HOOD: NEW 30" RANGE AND NEW RANGE HOOD W/ NEW RANGE QUEENS

ACCESSIBLE UNITS TO BE ADA-COMPLIANT, HOOD TO HAVE ACCESSIBLE CONTROLS RE: A 4.2

DISHWASHER: ENERGY STAR DISHWASHER

ACCESSIBLE UNITS TO BE ADA-COMPLIANT; RE: A 4.2

GENERAL NOTES

1. ALL DIMENSIONS ARE TO FACE OF FINISH, UNLESS NOTED OTHERWISE.
2. CONTRACTOR TO VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
3. IN THE CASE OF CONFLICT, CONTRACTOR TO NOTIFY ARCHITECT.
4. CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS AND COORDINATE WITH NEW. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT.
5. CONTRACTOR SHALL PATCH AND SEAL EXISTING CEILING, WALLS, FLOORS, AND ROOF TO MATCH EXISTING AND SHALL MAKE WATERTIGHT.
6. CONTRACTOR TO REFERENCE SHEET G4.0 & G4.1 FOR ACCESSIBILITY REQUIREMENTS
7. ALL REPAIRS & COMPONENT REPLACEMENTS TO BE IN INSTALLED IN ACCORDANCE WITH APPLICABLE BUILDING CODES
8. LOTS TO BE RE-GRADED TO DRAIN STORM WATER DIRECTLY AWAY FROM BUILDINGS AND SITE AMENTIES. ALLOWANCE HAS BEEN INCLUDED IN SCOPE (UP TO $35,000).
9. ALL WATER FROM ROOF AND GUTTER SYSTEM MUST BE PIPED AWAY FROM BUILDINGS
10. SEAL AT ALL EXTERIOR DOORS, WINDOWS, PLUMBING, AND ELECTRICAL PENETRATIONS TO PREVENT MOISTURE AND AIR LEAKAGE.

GENERAL UNIT NOTES

1. DRYWALL TO BE REPAIRED WHERE DAMAGED ($250 PER UNIT ALLOWANCE)
2. FOUR (4) UNITS TO RECEIVE HEARING AND SIGHT IMPAIRED UPGRADES.
   A. STROBES FOR SMOKE DETECTORS
   B. STROBES FOR DOOR BELL.
3. PROVIDE NEW FLOOR UNDERLAYMENT AT ALL 2ND & 3RD FLOOR KITCHENS AND BATHROOMS

WALL LEGEND

- EXISTING WALL
- DEMOLISHED WALL
- NEW WALL

NEW HC UNIT M.E.P. LEGEND

	REPLACE EXISTING INTERIOR LIGHTING WITH ENERGY STAR RATED LED FIXTURES AT ALL EXISTING LOCATIONS
	REPLACE EXISTING WALL MOUNTED LIGHTING WITH ENERGY STAR RATED LED LIGHT FIXTURES AT ALL EXISTING LOCATIONS
SD	NEW SMOKE DETECTOR
VL	NEW 70 CFM VENTILATION FAN.
ELEC.	EXISTING ELEC. PANEL
GFCI	GROUND FAULT CIRCUIT INTERRUPTER TO BE INSTALLED IN EXISTING OUTLET LOCATION(S), VERIFY ON SITE
HVAC	NEW AIR HANDLER UNIT. REUSE EXISTING DUCT WORK. RE-USE EXISTING LINE SETS.
COND	NEW CONDENSING UNIT
T	NEW PROGRAMMABLE THERMOSTAT
P-1HC	NEW ADA DOUBLE BOWL STAINLESS STEEL SINK WITH STRAINER, WATER SENSE PADDLE-BLADE FAUCET, NEW P-TRAP, ANGLE STOPS, HOT AND COLD WATER SUPPLY LINES.
P-2HC	NEW ADA LAVATORY SINK AND ADA WATER SENSE PADDLE-BLADE FAUCET WITH NEW P-TRAPS, ANGLE STOPS, AND SUPPLY LINES.
P-3HC	NEW ADA WATER SENSE TOILET, INCLUDING TOILET SEAT, AND NEW WATER SUPPLY LINE W/ESCUTCHEON.
P-4HC	NEW ADA-COMPLIANT TUB AND SURROUND, WITH NEW ADA-COMPLIANT WATER SENSE FAUCET, NEW ADA WATER SENSE SHOWER HEAD, NEW DIVERTER AND TRIM, AND GRAB BARS. SEE G4.0 FOR ACCESSIBLE MOUNTING REQUIREMENTS.
WH P-6	NEW 0.93 UEF ELECTRIC WATER HEATER. INCLUDES NEW VENTING, OVERFLOW DRIP PAN, AND DRAIN TO HUB

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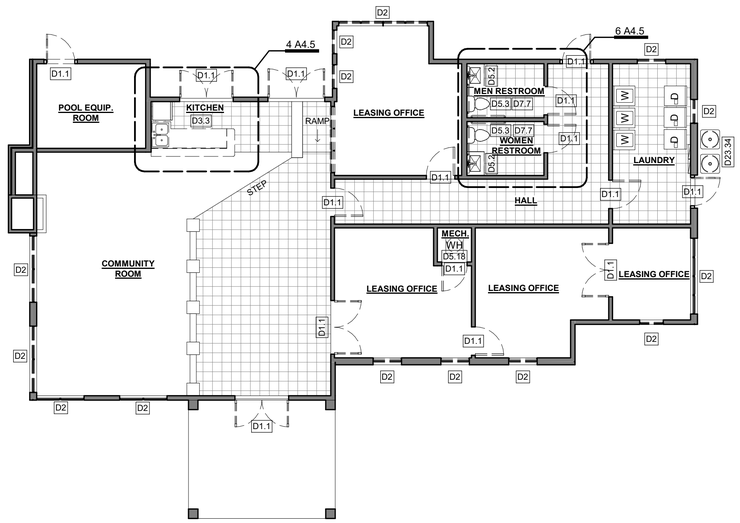
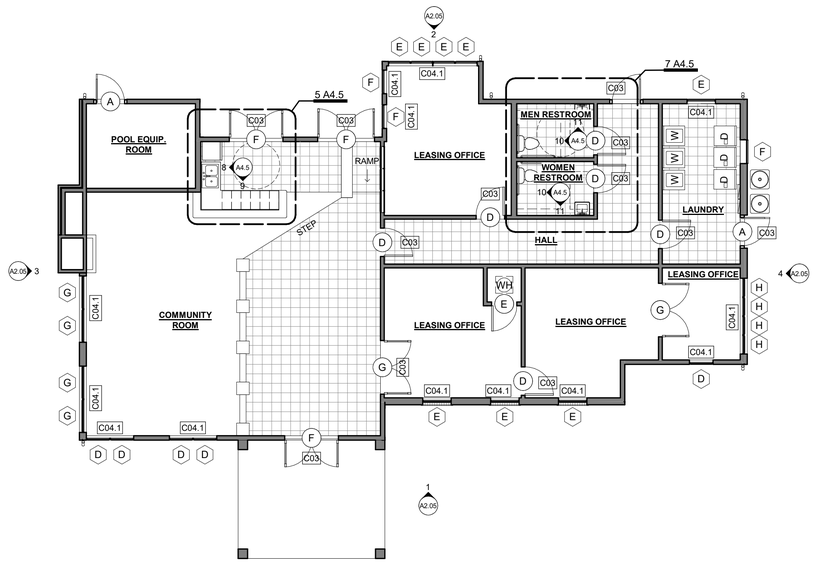
A4.4

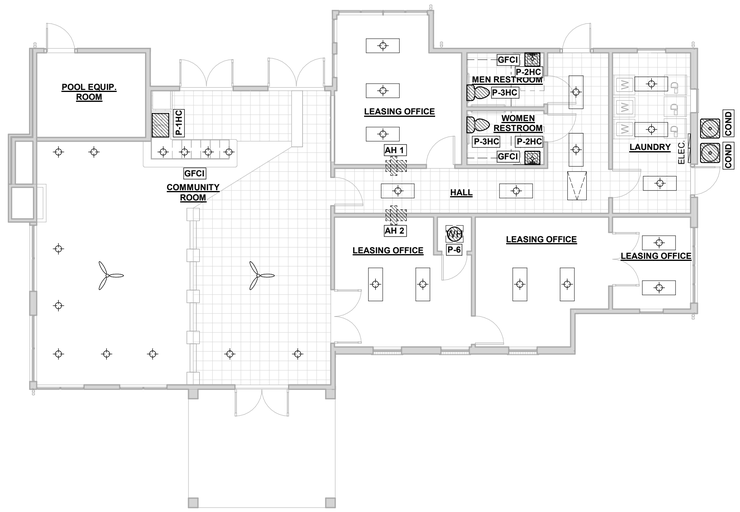
PHASE: CD



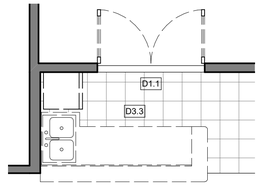
1 DEMO - ENLARGED PLAN - CLUBHOUSE
1/8" = 1'-0"



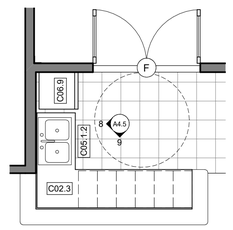
2 NEW - ENLARGED PLAN - CLUBHOUSE
1/8" = 1'-0"



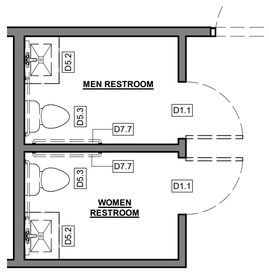
3 NEW - MEP - CLUBHOUSE
1/8" = 1'-0"



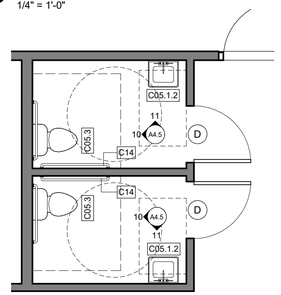
4 DEMO - ENLARGED PLAN - CLUBHOUSE KITCHEN
1/4" = 1'-0"



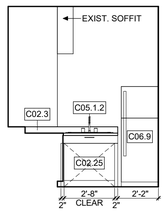
5 NEW - ENLARGED PLAN - CLUBHOUSE KITCHEN
1/4" = 1'-0"



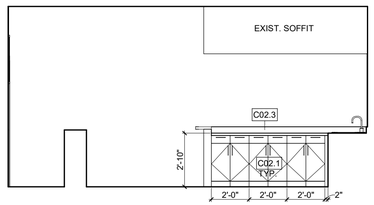
6 DEMO - ENLARGED PLAN - CLUBHOUSE RESTROOM
1/4" = 1'-0"



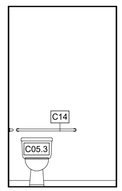
7 NEW - ENLARGED PLAN - CLUBHOUSE RESTROOM
1/4" = 1'-0"



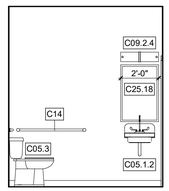
8 CLUBHOUSE - KITCHEN 1
1/4" = 1'-0"



9 CLUBHOUSE - KITCHEN 2
1/4" = 1'-0"



10 CLUBHOUSE - RESTROOM 1
1/4" = 1'-0"



11 CLUBHOUSE - RESTROOM 2
1/4" = 1'-0"

GENERAL MEP NOTES

FIRE AND LIFE SAFETY
1. INSTALL ONE HARDWIRED SMOKE DETECTOR PER UNIT AND ADD WIRELESS INTERCONNECTED SMOKE DETECTORS IN ALL BEDROOMS IN ALL UNITS.
2. PROVIDE NEW RANGE QUEENS

MECHANICAL
1. REPLACE ALL COMPONENTS EXCEPT SET LINES
2. MANUFACTURER TO PROVIDE LETTER CONFIRMING WARRANTY IS VALID WITH EXISTING SET LINES.
3. REPLACE ALL THERMOSTATS WITH PROGRAMMABLE TYPE.
4. REPLACE ALL EXISTING GRILLES.
5. PROVIDE NEW BATHROOM FANS.
6. ALL HVAC SUPPLY, RETURN, AND EXHAUST DUCTING, AND PLENUMS ARE EXISTING; AND ARE TO REMAIN. CLEAN ALL EXISTING DUCTS AND PLENUMS.

ELECTRICAL
1. REPLACE ALL PAINTED OR DAMAGED SWITCHES AND RECEPTICALS WITH NEW (10% REPLACEMENT)
   A. HC UNIT RECEPTICALS, OUTLETS AND THERMOSTAT TO BE AT HEIGHTS PER G4.0

PLUMBING
1. 160 UNITS TO RECEIVE NEW WATER HEATER AND PAN.

NEW CLUBHOUSE M.E.P. LEGEND

	REPLACE EXISTING INTERIOR LIGHTING WITH ENERGY STAR RATED LED FIXTURES AT ALL EXISTING LOCATIONS
	REPLACE EXISTING WALL MOUNTED LIGHTING WITH ENERGY STAR RATED LED LIGHT FIXTURES AT ALL EXISTING LOCATIONS
VL	NEW 70 CFM VENTILATION FAN.
ELEC.	EXISTING ELEC. PANEL
	NEW CEILING FAN WITH LIGHT
GFCI	GROUND FAULT CIRCUIT INTERRUPTER TO BE INSTALLED IN EXISTING OUTLET LOCATION(S), VERIFY ON SITE
P-1CH	NEW ADA-COMPLIANT DOUBLE BOWL STAINLESS STEEL SINK WITH STRAINER, ADA-COMPLIANT FAUCET (LABELED "WATERSENSE" OR 1.5 GPM MAX), NEW P-TRAP (INSULATED), ANGLE STOPS, HOT AND COLD WATER SUPPLY LINES. SEE G4.0 FOR ACCESSIBLE MOUNTING REQUIREMENTS.
P-2CH	NEW ADA-COMPLIANT LAVATORY SINK AND PADDLE-BLADE STYLE FAUCET (LABELED "WATERSENSE" OR 1.5 GPM MAX) WITH NEW P-TRAPS, ANGLE STOPS, AND SUPPLY LINES.
P-3CH	NEW ADA-COMPLIANT TOILET, LABELED "WATERSENSE" OR 1.6 GPF MAX, INCLUDING TOILET SEAT, AND NEW WATER SUPPLY LINE W/ESCUTCHEON. SEE G4.0 FOR ACCESSIBLE MOUNTING REQUIREMENTS.
WH P-6	NEW 0.93 UEF ELECTRIC WATER HEATER; INCLUDES NEW VENTING, OVERFLOW DRIP PAN, AND DRAIN TO HUB
COND	NEW CONDENSING UNIT
AH 1 AH 2	TWO AIR HANDLING UNITS TO BE REPLACED, VERIFY LOCATION ON SITE.

GENERAL NOTES

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3. IN THE CASE OF CONFLICT, CONTRACTOR TO NOTIFY ARCHITECT.
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10. SEAL AT ALL EXTERIOR DOORS, WINDOWS, PLUMBING, AND ELECTRICAL PENETRATIONS TO PREVENT MOISTURE AND AIR LEAKAGE.

NEW APPLIANCE SCHEDULE

REFRIGERATOR: ENERGY STAR REFRIGERATOR

ACCESSIBLE UNITS TO BE ADA-COMPLIANT; RE: A4.2

RANGE & HOOD: NEW 30" RANGE AND NEW RANGE HOOD W/ NEW RANGE QUEENS

ACCESSIBLE UNITS TO BE ADA-COMPLIANT, HOOD TO HAVE ACCESSIBLE CONTROLS RE: A 4.2

DISHWASHER: ENERGY STAR DISHWASHER

ACCESSIBLE UNITS TO BE ADA-COMPLIANT; RE: A 4.2

WALL LEGEND

	EXISTING WALL
	DEMOLISHED WALL
	NEW WALL

KEYED NOTES - DEMOLITION

Mark	Description
D1.1	REMOVE EXISTING DOOR AND FRAME
D2	REMOVE WINDOW AND FRAME
D3.3	REMOVE EXISTING CABINETRY, COUNTERTOPS, SINK, AND APPLIANCES; PREPARE SURFACES FOR NEW
D5.2	REMOVE EXISTING SINK
D5.3	REMOVE EXISTING TOILET
D5.18	REMOVE EXISTING HOT WATER HEATER
D7.7	REMOVE EXISTING GRAB BAR
D23.34	REMOVE EXISTING CONDENSING UNIT

KEYED NOTES - NEW CONSTRUCTION

C02.1	NEW BASE CABINET, TYP.
C02.3	NEW COUNTERTOP AND BACKSPLASH
C02.25	NEW ADA BASE CABINET WITH OPEN FRONT
C03	NEW DOOR
C04.1	NEW VINYL WINDOW AS SCHEDULED TO REPLACE EXISTING; PROVIDE NEW WINDOW TREATMENT, TYP. ALL
C05.1.2	NEW ADA COMPLIANT SINK AND FAUCET, RE: PLUMBING
C05.3	NEW ADA TOILET
C06.9	NEW ADA COMPLIANT REFRIGERATOR
C09.2.4	NEW WALL MOUNTED LIGHT FIXTURE
C14	NEW GRAB BARS
C25.18	NEW VANITY MIRROR

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REVISIONS

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NOT FOR CONSTRUCTION

ENLARGED CLUBHOUSE UNIT PLANS & INTERIOR ELEV.

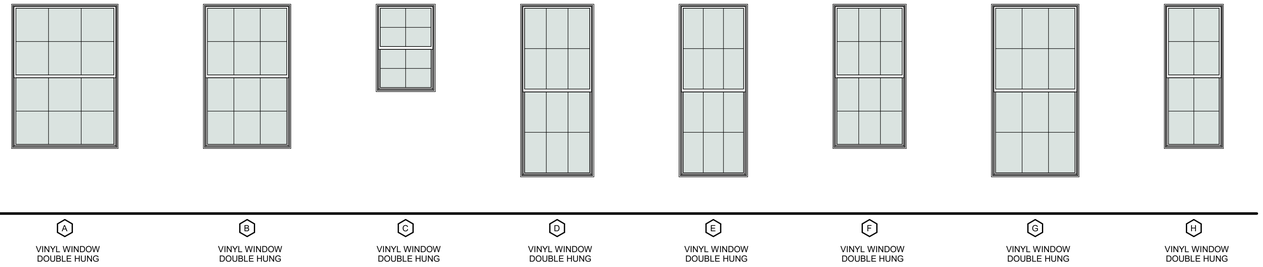
A4.5

PHASE: CD

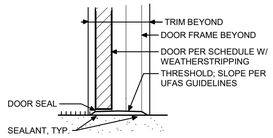
WINDOW SCHEDULE

MARK	R.O. W	R.O. H	MATERIAL	FINISH	GLAZING THK	GLAZING TYPE	DESCRIPTION
A	V.I.F	V.I.F	VINYL		DBL.	INSUL.	DOUBLE HUNG
B	V.I.F	V.I.F	VINYL		DBL.	INSUL.	DOUBLE HUNG
C	V.I.F	V.I.F	VINYL		DBL.	INSUL.	DOUBLE HUNG
D	V.I.F	V.I.F	VINYL		DBL.	INSUL.	DOUBLE HUNG
E	V.I.F	V.I.F	VINYL		DBL.	INSUL.	DOUBLE HUNG
F	V.I.F	V.I.F	VINYL		DBL.	INSUL.	DOUBLE HUNG
G	V.I.F	V.I.F	VINYL		DBL.	INSUL.	DOUBLE HUNG
H	V.I.F	V.I.F	VINYL		DBL.	INSUL.	DOUBLE HUNG

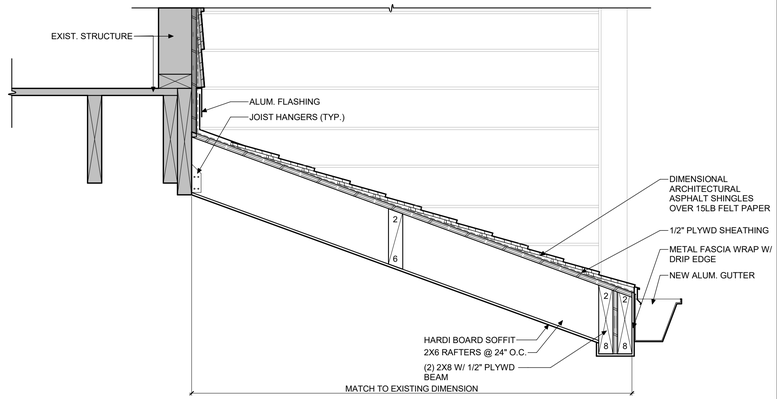
NOTE: NEW WINDOWS TO FIT IN EXISTING OPENINGS. MEASUREMENTS TO BE VERIFIED ON SITE.



1 WINDOW LEGEND
3/8" = 1'-0"



3 ACCESSIBLE THRESHOLD
1 1/2" = 1'-0"



4 BREEZEWAY CANOPY DETAIL
1 1/2" = 1'-0"

FINISH SCHEDULE - LEASING OFFICE / COMM. / 1 BD RM UNIT

NAME	CEILING HT	WALL FINISH	FLOOR FINISH	CEILING FINISH	BASE FINISH	COMMENTS
COMMUNITY ROOM	8'-0"	PTD. GYP.	CARPET,TILE	PTD. GYP.	PTD. WD.	VERIFY ON SITE. RE: MATRIX AND WORKWIRTE UP
KITCHEN	8'-0"	PTD. GYP.	TILE	PTD. GYP.	PTD. WD.	VERIFY ON SITE. RE: MATRIX AND WORKWIRTE UP
POOL EQUP. ROOM	8'-0"	PTD. GYP.	TILE	PTD. GYP.	PTD. WD.	VERIFY ON SITE. RE: MATRIX AND WORKWIRTE UP
LEASING OFFICE 1	8'-0"	PTD. GYP.	CARPET	PTD. GYP.	PTD. WD.	VERIFY ON SITE. RE: MATRIX AND WORKWIRTE UP
LEASING OFFICE 2	8'-0"	PTD. GYP.	CARPET	PTD. GYP.	PTD. WD.	VERIFY ON SITE. RE: MATRIX AND WORKWIRTE UP
LEASING OFFICE 3	8'-0"	PTD. GYP.	CARPET	PTD. GYP.	PTD. WD.	VERIFY ON SITE. RE: MATRIX AND WORKWIRTE UP
LEASING OFFICE 4	8'-0"	PTD. GYP.	CARPET	PTD. GYP.	PTD. WD.	VERIFY ON SITE. RE: MATRIX AND WORKWIRTE UP
ALL RESTROOM	8'-0"	PTD. GYP.	TILE	PTD. GYP.	PTD. WD.	VERIFY ON SITE. RE: MATRIX AND WORKWIRTE UP
LADUNDRY	8'-0"	PTD. GYP.	TILE	PTD. GYP.	PTD. WD.	VERIFY ON SITE. RE: MATRIX AND WORKWIRTE UP
ALL CLOSETS	8'-0"	PTD. GYP.	TILE	PTD. GYP.	PTD. WD.	VERIFY ON SITE. RE: MATRIX AND WORKWIRTE UP
MECH.	8'-0"	-	-	-	-	VERIFY ON SITE. RE: MATRIX AND WORKWIRTE UP

DOOR SCHEDULE

NO.	ELEV.	DOOR SIZE W	DOOR SIZE H	DOOR SIZE THK	DOOR APPEARANCE FINISH	DOOR APPEARANCE MATERIAL	DOOR APPEARANCE FRAME	HW SET	COMMENTS
A	A	36"	80"		PTD	MTL	WD	PER SPECS	
B	B	36"	80"		PTD	MTL	WD	PER SPECS	
C	C	MATCH WIDTH TO EXIST.	80"		PTD	MTL, GLASS	WD	PER SPECS	
D	D	36"	80"		PTD	WD	WD	PER SPECS	
E	E	MATCH WIDTH TO EXIST.	80"		PTD	WD	WD	PER SPECS	
F	F	MATCH WIDTH TO EXIST.	80"		PTD	WD, GLASS	WD	PER SPECS	
G	G	MATCH WIDTH TO EXIST.	80"		PTD	WD, GLASS	WD	PER SPECS	

NOTE: PROVIDE ALLOWANCE TO RECEIVE 10% OF UNIT INTERIOR DOORS (VERIFY ON SITE). ALL NEW AND EXISTING DOORS TO RECEIVE NEW HARDWARE.

FINISH SCHEDULE - UNIT 2BR & 2BR HC

NAME	CEILING HT	WALL FINISH	FLOOR FINISH	CEILING FINISH	BASE FINISH	COMMENTS
LIVING	8'-0"	EXIST. GYP.	EXIST. CARPET	EXISTING	EXISTING	
KITCHEN	8'-0"	PTD. GYP.	NEW LVT	EXISTING	PTD. WD.	NEW PAINT
DINING	8'-0"	EXIST. GYP.	EXIST. CARPET	EXISTING	EXISTING	
HALL	8'-0"	EXIST. GYP.	EXIST. CARPET	EXISTING	EXISTING	
BATH 1 & 2	8'-0"	PTD. GYP.	NEW LVT	EXISTING	PTD. WD.	NEW PAINT
BEDROOM 1 & 2	8'-0"	EXIST. GYP.	EXIST. CARPET	EXISTING	EXISTING.	
ALL CLOSETS	8'-0"	EXIST. GYP.	EXIST. CARPET	EXISTING	EXISTING	
LAUNDRY ROOM	8'-0"	PTD. GYP.	NEW LVT	EXISTING	EXISTING	

FINISH SCHEDULE - UNIT 3BR & 3BR HC

NAME	CEILING HT	WALL FINISH	FLOOR FINISH	CEILING FINISH	BASE FINISH	COMMENTS
LIVING	8'-0"	EXIST. GYP.	EXIST. CARPET	EXISTING	EXISTING	
KITCHEN	8'-0"	PTD. GYP.	NEW LVT	EXISTING	PTD. WD.	NEW PAINT
DINING	8'-0"	EXIST. GYP.	EXIST. CARPET	EXISTING	EXISTING	
HALL	8'-0"	EXIST. GYP.	EXIST. CARPET	EXISTING	EXISTING	
BATH 1 & 2	8'-0"	PTD. GYP.	NEW LVT	EXISTING	PTD. WD.	NEW PAINT
BEDROOM 1, 2 & 3	8'-0"	EXIST. GYP.	EXIST. CARPET	EXISTING	EXISTING.	
ALL CLOSETS	8'-0"	EXIST. GYP.	EXIST. CARPET	EXISTING	EXISTING	
LAUNDRY ROOM	8'-0"	PTD. GYP.	NEW LVT	EXISTING	EXISTING	

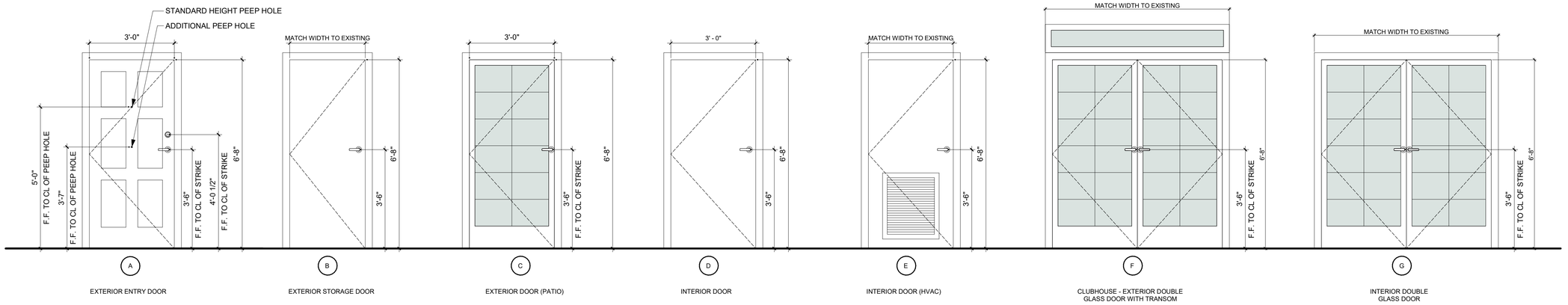
HVAC SCHEDULE

SYSTEM	2 BEDROOM	3 BEDROOM	COMMENTS
MANUFACTURER	GOODMAN ENERGY-EFFICIENT SPLIT SYSTEM HEAT PUMP	GOODMAN ENERGY-EFFICIENT SPLIT SYSTEM HEAT PUMP	VERIFY EXISTING SYSTEM AND PROVIDE COMPATIBLE
OUTDOOR UNIT	GSZ140181K - 1.5 TONS	GSZ140241K - 2 TONS	VERIFY EXISTING SYSTEM AND PROVIDE COMPATIBLE
INDOOR UNIT	ASPT25B14A WITH HKSXO3XAAA HEAT KIT - 3kW	ASPT29B14A WITH HKSXO3XAAA HEAT KIT - 3kW	VERIFY EXISTING SYSTEM AND PROVIDE COMPATIBLE
SEER RATING	**15**	**15**	**NEW UNITS TO BE 15 SEER W/ 8.5 HSPF MINIMUM**

NOTES: 1. DUCT LAYOUT AND SIZES ARE DIAGRAMMATIC.
2. ALL DUCTS TO HAVE 1" INSULATION MINIMUM.
3. DUCT SIZES SHOWN ARE CLEAR FREE AIR AREA.

WATER HEATER SIZES

SYSTEM	2 BEDROOM	3 BEDROOM	COMMENTS
MANUFACTURER	STATE SELECT RESIDENTIAL ELECTRIC WATER HEATER	STATE SELECT RESIDENTIAL ELECTRIC WATER HEATER	VERIFY EXISTING SYSTEM AND PROVIDE COMPATIBLE
GALLONS	40	50	**NEW UNITS TO HAVE 93% ENERGY FACTOR MINIMUM**



2 DOOR LEGEND
1/2" = 1'-0"

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DERBY RUN APARTMENTS I
6 DERBY DRIVE, HAMPTON, VA 23666

REVISIONS
1 08/17/19 D3G/HUD

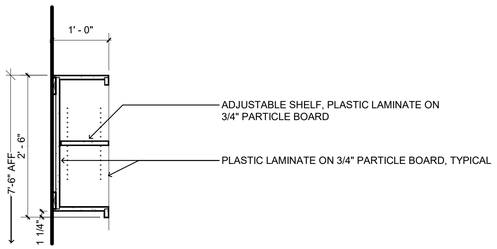
JOB NUMBER: 19-007
ISSUED: 08/01/19
ISSUED FOR:
PERMITTING

COMMONWEALTH OF VIRGINIA
JOSEPH DYKE NELSON
No. 0401017290
ARCHITECT

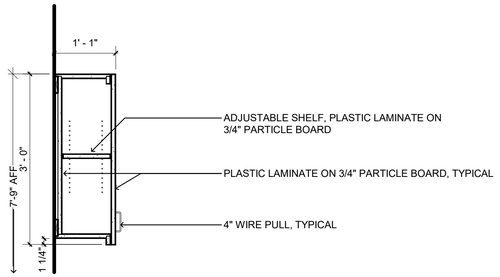
SCHEDULES

A6.0

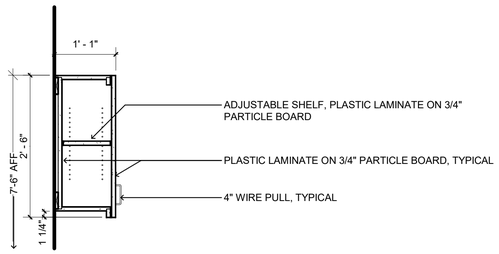
PHASE: CD



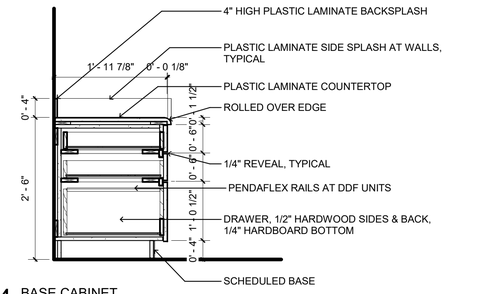
1 UPPER CABINET
3/4" = 1'-0"



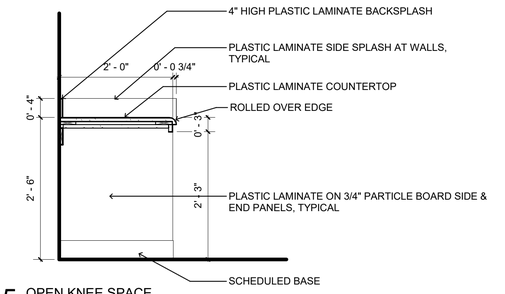
2 UPPER CABINET
3/4" = 1'-0"



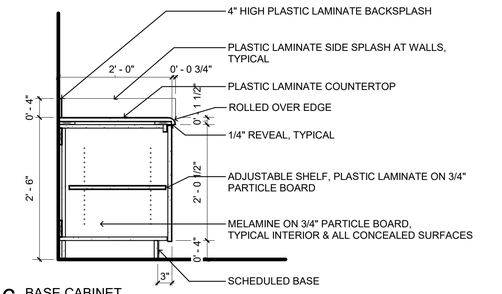
3 UPPER CABINET
3/4" = 1'-0"



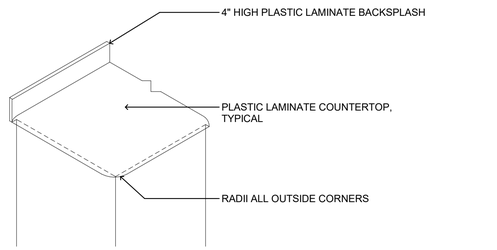
4 BASE CABINET
3/4" = 1'-0"



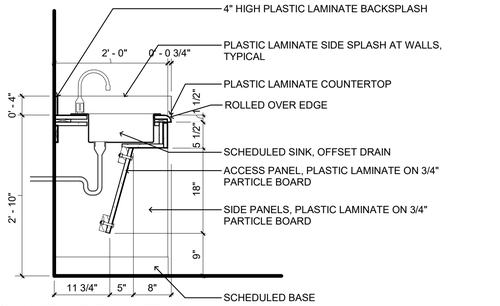
5 OPEN KNEE SPACE
3/4" = 1'-0"



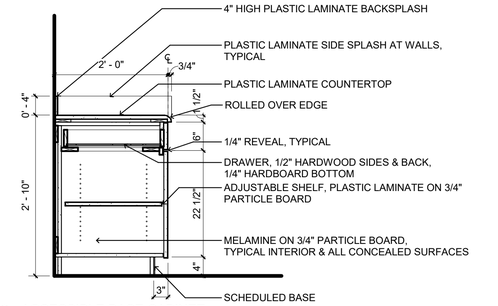
6 BASE CABINET
3/4" = 1'-0"



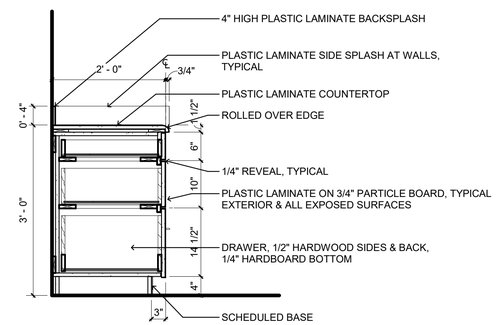
7 TYPICAL COUNTERTOP OPEN CORNER
3/4" = 1'-0"



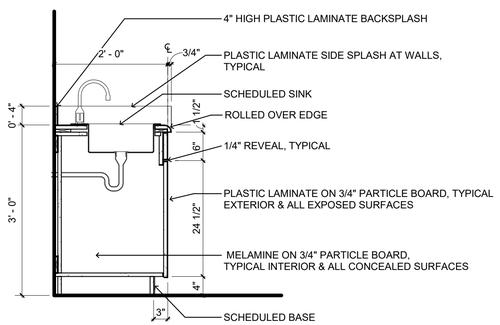
8 ACCESSIBLE SINK FRONT
3/4" = 1'-0"



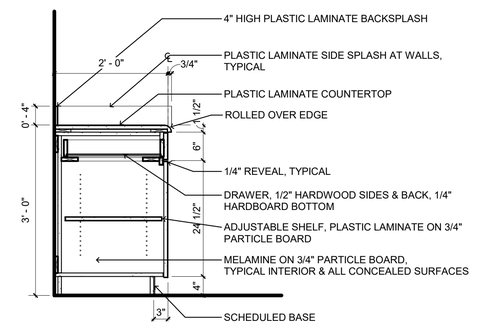
9 ACCESSIBLE BASE CABINET
3/4" = 1'-0"



10 BASE CABINET
3/4" = 1'-0"



11 BASE CABINET - SINK FRONT
3/4" = 1'-0"



12 BASE CABINET
3/4" = 1'-0"

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DERBY RUN APARTMENTS I

6 DERBY DRIVE, HAMPTON, VA 23666

DYKE NELSON ARCHITECTURE 235 SOUTH 14TH ST. BATON ROUGE, LA 70802 DNA-WORKSHOP.COM [225] 224 3363

REVISIONS

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COMMONWEALTH OF VIRGINIA
JOSEPH DYKE NELSON
No. 0401017290
ARCHITECT

MILLWORK DETAILS

A7.0

PHASE: CD

DNAworkshop
DYKE NELSON ARCHITECTURE

DERBY RUN APARTMENTS I
PROJECT SPECIFICATIONS
08/07/2019

HUD PROJECT NAME: **DERBY RUN APARTMENTS I**
HUD PROJECT NUMBER: **051-11420**

SIGNATURES

ARCHITECT

ARCHITECT ADMINISTRATING CONTRACT

CONTRACTOR

OWNER

LENDER

BONDING COMPANY

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07 00 00 – THERMAL AND MOISTURE PROTECTION

26 00 00 – ELECTRICAL

28 00 00 – ELECTRNIC SAFETY AND SECURITY

32 00 00 – EXTERIOR IMPROVEMENTS

END OF DOCUMENT

DOCUMENT 00 72 00 - GENERAL CONDITIONS

A. The general conditions of the Contract to be used for this project will be the "General Conditions of the Contract for Construction, AIA Document A201 - 2007, 2007 Edition - Electronic Format".

B. This document is included, in its entirety, in the Project Manual following this page.

END OF DOCUMENT

SECTION 00 73 00 - SUPPLEMENTARY CONDITIONS

These Supplementary Conditions replace and/or modify the provisions of AIA Document A201-2007 as indicated herein below. Any provision not specifically addressed shall remain as stated in the AIA Document A201-2007 (hereinafter the "General Conditions").

Article 1 - General Provisions

§1.1.8 Initial Decision Maker - Strike this section in its entirety and delete from all Contract Documents any and all references to the "Initial Decision Maker" and replace with the "Architect" as it is the intent of the parties that the Architect will perform all such functions and there will be no Initial Decision Maker.

Article 3 - Contractor

§3.1.2 - Delete in its entirety and substitute with the following:

The Contractor shall perform the Work in accordance with the Contract Documents.

§3.2.2 - Delete in its entirety and replace with the following:

Because the Contract Documents are complimentary, the Contractor shall, before starting each portion of the Work, carefully study all conditions upon which any portion of the Work is to be performed in order to ensure that conditions are suitable for the performance of each portion of the Work in strict accordance with the Contract Documents. The Contractor shall, before performance of each portion of the Work, take field measurements of existing conditions related to that portion of the Work, and the Contractor shall take into account all existing conditions including, but not limited to, conditions at the site affecting the Work, including existing utilities. The Contractor shall report to the Architect, prior to commencing any portion of the Work, any errors, inconsistencies or omissions discovered by or made known to the Contractor.

§3.2.4 - Delete in its entirety and replace with the following:

In order for the Contractor to have any right to assert or claim for any additional time or money associated with or arising from any clarification or instruction issued by the Architect in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall, prior to commencing any work involving additional time or additional money, make a Claim as provided in Article 15. Failure to provide such notice shall serve as a knowing and voluntary waiver of any Claim by the Contractor, and the Contractor shall be liable for and shall pay all costs, damages and attorney's fees incurred by the Owner which could have been avoided had the Contractor provided the prior notification and allowed for a reasonable period of time for the Owner to respond.

§3.3.3 - Delete in its entirety and substitute with the following:

The Contractor shall be responsible for inspection of portions of the Work already performed to determine and ensure that such portions are in proper condition to receive subsequent portions of the Work.

§3.4.1 - Delete the following from the 2nd line: "water, heat, utilities, ".

§3.6 Taxes - Delete in its entirety and replace with the following:

The Contractor shall pay all sales, consumer, use and similar taxes associated with the Contractor's performance of the Work.

§3.10 Contractor's Construction Schedules

§3.10.2 - Add to the end:

The Contractor's submittal schedule shall allow for a minimum of 7 calendar days for the Architect to review each submittal.

Add new §3.10.4 to read as follows:

Schedules submitted by the Contractor under §3.10.1 through 3.10.3 are not to be considered, nor interpreted to be, Contract Documents. The Contractor stipulates and agrees that, unless approved, the schedules shall not form the basis of any delay claim as the schedules are submitted solely for information purposes.

§3.11 Documents and Samples at the Site - Add the following sentence:

The Contractor shall also maintain at the site for the Owner the record set of Drawings and Specifications as stamped by governmental officials having jurisdiction over the Work.

§3.12.8 - Add the following:

Any deviation from the requirements of the Contract Documents shall also be noted by the Contractor as deviations in the written correspondence transmitting the shop drawings, product data, samples or similar submittals by the Contractor to the Architect.

§3.12.10 - Modify the last sentence and add the following:

, as supplied by the Architect. This section shall also be applicable to any Subcontractor or supplier engaged by the Contractor for performance of any portion of the Work which requires any design services including, but not limited to, fire protection.

§3.15.2 - Delete in its entirety and replace with the following:

If the Contractor fails to clean up as provided in the Contract Documents within three

(3) calendar days after receiving written notice from the Owner or the Architect to do so, the Owner may, at its option, perform such cleanup work, and the Contractor shall be liable to pay to the Owner for all such costs, expenses and fees.

§3.18 Indemnification

§3.18.1 - In the first sentence delete the parenthetical phrase "(other than the Work itself)" and replace with the following: "(including the Work itself)".

Article 4 - Architect

§4.1 General

§4.1.2 - Add the following:

Unless directed by the owner, the Architect shall not be considered as the Owner's agent and the Owner shall not be responsible for any reliance by the Contractor upon oral instructions given by the Architect, nor shall the Owner be responsible for any acts, errors or omissions of the Architect which exceed the duties, responsibilities and limitations of authority of the Architect as set forth in the Contract Documents. Contractor hereby stipulates and agrees that reliance upon any appearance of authority beyond the duties, responsibilities and limitations of authority of the Architect as set forth in the Contract Documents, is not reasonable.

§4.2 Administration of the Contract

§4.2.1 - Delete and replace with the following:

The Architect will provide administration of the Contract as described in the Contract Documents, not as the agent for the Owner but as an independent professional.

§4.2.3 - Delete the first sentence.

§4.2.10 Delete in its entirety

§4.2.11 - Delete the first sentence and replace with the following:

The Architect will interpret and decide all matters concerning performance failure to perform by either the Contractor or Owner under the Contract Documents either on written request of the Owner or the Contractor, or upon the Architect's own initiative.

Article 7 - Changes in the Work

§ 7.1 GENERAL – Delete in its entirety and replace with the following:

§ 7.1.1

Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order signed by the Owner and the Contractor, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2

A Change Order shall be based upon agreement among the Owner, Contractor and Architect. An order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3

Changes in the Work shall be performed under applicable provisions of the Contract Documents, and the Contractor shall proceed promptly, unless otherwise provided in the Change Order or order for a minor change in the Work.

Add new §7.1.4 to read as follows:

Any Change in the Work shall only be effective if in writing. The Contractor hereby stipulates and agrees that reliance upon any oral instruction which may cause a Change in the Work is unreasonable, and shall not serve as the basis for any claim by the Contractor.

§7.4 Minor Changes in the Work - Add the following:

The issuance of an Architect's supplemental instruction ("ASI") or the Architect's response to any request for information ("RFI") shall not be interpreted as authorization for the Contractor to perform Work which increases the Contract Sum or Contract Time. The Contractor hereby stipulates and agrees that the Architect does not have the authority to instruct the Contractor to perform any Work which increases the Contract Sum or Contract Time without the express written approval of the Owner as may be documented in a Change Order or Construction Change Directive.

Article 8 - Time

§8.1 Definitions

§8.3 Delays and Extensions of Time

§8.3.1 - Add the following:

Any and all claims by the Contractor arising from or connected with delay shall be submitted in strict accordance with Article 15 of the General Conditions. The Contractor hereby stipulates and agrees that the Contractor's failure to strictly comply with the procedures as set forth in Article 15 of the General Conditions shall serve as a knowing and voluntary forfeiture of any such claim.

§8.3.3 - Add the following:

§8.3.4

If adverse weather conditions are the basis for a claim for additional time, the Contractor shall document that weather conditions had an adverse effect on the scheduled construction: Rain days shall be those of occurrence of rain over a 3 hour period during a work day. Wet days will not be considered. An increase in the contract time due to weather shall not be cause for an increase in the contract sum."

Note: Adverse weather conditions shall not be considered as a basis of claim for additional time involving interior work and may not be claimed for normally scheduled holidays.

The following are considered reasonably anticipated days of adverse weather on a monthly basis:

January 11 days	May 5 days	September 4 days
February 10 days	June 6 days	October 3 days
March 8 days	July 6 days	November 5 days
April 7 days	August 5 days	December 8 days

Note: Contract is on a consecutive calendar day basis.

The Contractor shall submit to the Architect a written request for total adverse weather days with each application for payment. Failure to submit such request with supporting documentation with the Contractor's application for payment shall serve as a knowing and voluntary waiver of any claim for weather related delays for the period of time covered by the application for payment which did not include a request and supporting documentation for weather related delay. The Contractor's request for extension of time due to weather related delay shall be considered only for days over the allowable number of days stated above. The Contractor stipulates and agrees that delays caused by any adverse weather conditions shall not increase the Contract Sum.

Article 9 – Payments and Completion

§9.3 Applications for Payment

Add new §9.3.4 to read as follows:

Upon written request by the Architect or Owner, the Contractor shall submit with each Application for Payment, lien waivers or other documentation acceptable to the Owner to evidence that the Contractor has properly applied all previous payments.

§9.5 Add the following:

or .8 Failure to provide approved documentation as required under the Contract Documents.

§9.6 Progress Payments

§9.6.7 - Delete in its entirety.

§9.8 Substantial Completion

§9.8.3 - Add the following:

Failure of the Architect to include any item on any list of deficiencies or punch list prepared by the Architect, or failure of the Architect to identify any non-conforming work

or Contractor failure to perform, shall not serve to waive any of the Owner's rights and the Contractor shall, not withstanding any omission by the Architect, remain responsible for strict compliance with the Contract Documents.

Add new §9.8.7 to read as follows:

The Architect will, based solely upon the Architect's professional judgment, include monetary values for the estimated cost to perform each item on the list of deficiencies or punch list. The estimated cost of such deficiencies shall not exceed the balance of funds for the related item from the Contract Schedule of Values. The Architect's monetary quantification shall be final, binding and not subject to review by a court or arbitrator absent a finding of arbitrary and capricious.

Add new §9.8.8 to read as follows:

After the Contractor, Architect and Owner have signed the Certificate of Substantial Completion, the Contractor shall record with the Recorder of Mortgages in the Parish where the Work is performed, the fully executed Certificate of Substantial Completion together with the final list of deficiencies or punch lists within two (2) business days after final execution of the Certificate of Substantial Completion. The Contractor shall deliver a copy of same to the Owner and Architect bearing the file stamp of the Recorder of Mortgages. The Certificate of Substantial Completion must identify the date of

recordation and the recordation data where the Notice of Contract was originally recorded.

§9.9 Partial Occupancy or Use

§9.9.1 - Delete in its entirety and replace with the following:

The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by the Architect, provided such occupancy or use is authorized by public authorities having jurisdiction over the Work, and the Contractor has been provided ten (10) days prior written notice to enable the Contractor to fully document conditions prior to occupancy or use of the completed or partially completed portion of the Work. Such partial occupancy or use may commence whether or not the portion is substantially complete. Any partial occupancy or use of the Work by the Owner shall not relieve the Contractor of any obligation under the Contract Documents except an obligation to provide property casualty insurance for the specific portion of the Work upon the occupancy or use of that portion of the Work by the Owner. The stage of the progress of the Work for any portion to be occupied or used by the Owner shall be determined by decision of the Architect whose decision shall be final, binding and not subject to review by a court or arbitrator absent a finding of arbitrary and capricious.

§9.10 Final Completion and Final Payment

§9.10.2 - Add the following:

In addition to the above, neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect a certificate issued by the Recorder of Mortgages for the parish where the Work has been performed attesting that no liens have been recorded in connection with the Work.

§9.10.4 - Add the following:

The failure of the Architect to identify any failure to perform by the Contractor in accordance with the Contract Documents, shall not serve as a waiver of any Owner rights nor relieve the Contractor of any responsibility to perform the Work in strict accordance with the Contract Documents, despite the Architect's signature on a Final Application or Certification for Payment, or on any recommendation of final acceptance.

§9.10.5 - Delete in its entirety and substitute the following:

Acceptance of Final Payment by the Contractor, a subcontractor or material supplier shall constitute a knowing and voluntary forfeiture of any and all claims by that payee except those claims which are specifically identified in writing by that payee on the Final Application for Payment document.

Article 10 – Hazardous Materials

§ 10.3.3 Add the following sentence.

The Contractor shall not be held responsible for bodily or property damage due to mold.

§ 10.3.7 – Add the following new section.

The Owner shall be responsible for providing sufficient evidence (such as a Phase 1) determining if any hazardous materials or conditions exist on site. The Contractor shall not be responsible for determining the existence of hazardous materials or conditions on site.

Article 11 – Insurance and Bonds

Add new §11.1.5 to read as follows:

The Contractor hereby agrees, on its behalf and on behalf of its insurance carriers, to waive any rights of Subrogation for any loss sustained arising from the Work in favor of the Owner as per Section 11.3.7. The Contractor agrees to carry the insurance required in the Contract Documents, which shall be written for not less than the following minimum limits or as required by law, whichever is greater.

.1 COMMERCIAL GENERAL LIABILITY INSURANCE

Bodily Injury	$500,000	Any One Person or Organization;
	$1,000,000	Any One Occurrence

Property Damage $1,000,000 per occurrence; $1,000,000 Aggregate

Products Completed Operations $1,000,000 To be maintained for one (1) year after final payment.

.2 WORKMEN'S COMPENSATION - statutory minimum

.3 EMPLOYERS LIABILITY INSURANCE $1,000,000 per accident.

.4 COMPREHENSIVE AUTOMOBILE LIABILITY

Bodily Injury & Property $ 500,000 each person

Damage Liability $1,000,000 each accident

.5 Insurance provided under this Contract by the Contractor shall be primary and not contributory to any other insurance provided to the Owner.

Add new §11.6 to read as follows:

The Owner shall be named as "additional insured" on all of the Contractor's liability policies as respects liability arising out of the Work; products and completed operations of the Contractor, as well as premises owned, occupied or used by the Contractor. The additional insured coverage shall contain no special limitations on the scope of protection afforded to any additional insured. It is understood that the business auto policy under "Who is an Insured" automatically provides liability coverage in favor of the Owner. Any failure of Contractor to comply with any reporting provision of any policy shall not affect coverage provided to an additional insured. The insurance to be provided by Contractor shall not include any provision, exclusion or endorsement precluding coverage for claims between insureds and/or additional insureds.

§11.3 Property Insurance

§11.3.1.2 - Delete in its entirety.

§11.3.2 Boiler and Machinery Insurance - Delete in its entirety

§11.3.3 Loss of Use Insurance - Delete in its entirety

§11.3.4 - Delete in its entirety

§11.3.5 - Delete in its entirety

§11.3.6 - Delete in its entirety

§11.3.7 Waivers of Subrogation - In the first sentence, delete the phrase "obtained pursuant to this Section 11.3 or other property insurance", and also delete the phrase "held by the Owner as fiduciary."

§11.3.8 - Delete in its entirety

§11.3.9 - Delete in its entirety

§11.3.10 - Delete in its entirety

Article 12 – Uncovering and Correction of Work

§12.2.2.3 - Delete in its entirety and replace with the following:

The one-year period for correction of Work shall be extended for any portion of the Work, excluding manufacturer warranties, corrected or performed by the Contractor for an additional one year from the date that the corrective Work was completed in accordance with the Contract Documents as determined by the Architect.

Article 13 - Miscellaneous Provisions

Add new §13.8 - ADAAG Certificate, to read as follows:

Along with and at the same time that Contractor records the Certificate of Substantial Completion, the Contractor shall record in the Mortgage Records for the Parish where the Work is performed, a fully executed ADAAG Certificate in the form as attached hereto as Exhibit 'A.'

Article 15 – Claims and Disputes

§15.1.6 Claims for Consequential Damages - Delete this section in its entirety.

§15.2 Initial Decision Maker - Delete in their entirety the following sections:

§15.2.1; §15.2.2; §15.2.3; §15.2.4; §15.2.5; §15.2.6; and §15.2.6.1.

§15.3 Mediation

§15.3.1 - Delete in its entirety and replace with the following:

Claims, disputes, or other matters in controversy arising out of, or related to the Contract Documents or the Work, except those previously waived, shall be subject to mediation as a condition precedent to binding dispute resolution.

§15.4 Arbitration - Strike this Article in its entirety and strike any and all references to arbitration wherever they may appear anywhere in the Contract Documents as that parties stipulate and agree that all claims, disputes or any matter in controversy among the parties of any nature or kind arising from or in any way whatsoever connected with the Contract Documents or the Work, the binding dispute procedure shall be litigation in a court in the Parish where the Work is performed, or to be performed. The parties agree that exclusive venue shall be in a court in the Parish where the Work is performed or to be performed.

SUPPLEMENTARY CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

U.S. Department of Housing and Urban Development
Office of Housing

OMB Approval No. 2502-0598
(Exp. 06/30/2017)

Article 1: Labor Standards

A. **Applicability.** The Project or program to which the construction work covered by this Contract pertains is being assisted or insured by the United States of America, and the following Federal Labor Standards Provisions are included in this Contract or related instrument pursuant to the provisions applicable to such Federal assistance or insurance. Any statute or regulation contained herein shall also include any subsequent amendment or successor statute or regulation.

B. **Minimum Wages.** Pursuant to Section 212 of the National Housing Act, as amended, 12 U.S.C. 1715c, the minimum wage provisions contained in this paragraph B do not apply to those projects with Security Instruments insured under Section 221(h)(1) designed for less than 9 families and they do not apply to those projects with Security Instruments insured under either Section 220 or 233 designed for less than 12 families.

1. (i) All laborers and mechanics employed or working upon the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the Project) shall be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR Part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the Contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1 (b)(2) of the Davis-Bacon Act (40 U.S.C. 3141(2)(B)(ii)) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of 29 CFR 5.5(a)(1)(iv); also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each

classification for the time actually worked therein: *Provided,* that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under 29 CFR 5.5(a)(1)(ii)) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the Contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

(ii) (a) Any class of laborers or mechanics that is not listed in the wage determination and that is to be employed under this Contract shall be classified in conformance with the wage determination. HUD shall approve an additional classification and wage rate and fringe benefits only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(b) If the Contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and HUD or its designee agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by HUD or its designee to the Administrator of the Wage and Hour Division, U.S. Department of Labor, Washington, D.C. 20210 (**"Administrator"**). The Administrator, or an authorized representative, shall approve, modify, or disapprove every additional classification action within thirty (30) days of receipt and so advise HUD or its designee or shall notify HUD or its designee within the thirty (30) day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB control number 1215-0140.)

(c) In the event the Contractor, the laborers or mechanics to be employed in the classification or their representatives and HUD or its designee do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), HUD or its designee shall refer the questions, including the views of all interested parties and the recommendation of HUD or its designee, to the Administrator for determination. The Administrator, or an authorized representative, shall issue a determination within thirty (30) days of receipt and so advise HUD or its designee or shall notify HUD or its designee within the thirty (30) day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)

(d) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs B.1.(ii)(b) or (c) of this Article, shall be paid to all workers

performing work in the classification under this Contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the Contract for a class of laborers or mechanics includes a fringe benefit that is not expressed as an hourly rate, the Contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the Contractor does not make payments to a trustee or other third person, the Contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, *Provided*, That the Secretary of Labor has found, upon the written request of the Contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the Contractor to set aside in a separate account assets for the meeting of obligations under the plan or program. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)

2. **Withholding.** HUD or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the Contractor under this Contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees and helpers, employed by the Contractor or any subcontractor the full amount of wages required by the Contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee or helper, employed or working on the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the Project), all or part of the wages required by the Contract, HUD or its designee may, after written notice to the Contractor, sponsor, applicant, or Owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased. HUD or its designee may, after written notice to the Contractor, disburse such amounts withheld for and on account of the Contractor or subcontractor to the respective employees to whom they are due.

3. **Payrolls, records, and certifications.**

(i) Payrolls and basic records relating thereto shall be maintained by the Contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949, in the construction or development of the Project). Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in Section 1 (b)(2)(B) of the Davis-Bacon Act (40 U.S.C. 3141(2)(B)(ii))), daily and weekly number of hours worked, deductions made and actual wages paid.

Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section 1 (b)(2)(B) of the Davis-Bacon Act (40 U.S.C. 3141(2)(B)(ii)), the Contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs. (Approved by the Office of Management and Budget under OMB Control Numbers 1215-0140 and 1215-0017.)

(ii)(a) The Contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to HUD or its designee if the agency is a party to the Contract, but if the agency is not such a party, the Contractor shall submit the payrolls to the applicant, sponsor, or Owner, as the case may be, for transmission to HUD or its designee. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at http://www.dol.gov/whd/forms/wh347.pdf or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to HUD or its designee if the agency is a party to the Contract, but if the agency is not such a party, the Contractor will submit the payrolls to the applicant sponsor, or Owner, as the case may be, for transmission to HUD or its designee, the Contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this subparagraph for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to HUD or its designee.(Approved by the Office of Management and Budget under OMB Control Number 1215-0149.)

(b) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the Contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the Contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under 29 CFR 5.5(a)(3)(ii), the appropriate information is being maintained under 29 CFR 5.5(a)(3)(i), and that such information is correct and complete.
(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the Contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR Part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the Contract.

(c) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by subparagraph B.3.(ii)(b) of this Article.

(d) The falsification of any of the above certifications may subject the Contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Sections 3801 et seq of Title 31 of the United States Code.

(iii) The Contractor or subcontractor shall make the records required under subparagraph B.3.(i) of this Article available for inspection, copying, or transcription by authorized representatives of HUD or its designee or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the Contractor or subcontractor fails to submit the required records or to make them available, HUD or its designee may, after written notice to the Contractor, sponsor, applicant, or Owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. **Apprentices and Trainees.**

(i) **Apprentices.** Apprentices shall be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship, or with a State Apprenticeship Agency recognized by such Office, or if a person is employed in his or her first ninety (90) days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship, or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in

any craft classification shall not be greater than the ratio permitted to the Contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where the Contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the Contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship, or a State Apprenticeship Agency recognized by such Office, withdraws approval of an apprenticeship program, the Contractor shall no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) **Trainees.** Except as provided in 29 CFR 5.16, trainees shall not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman's hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws

approval of a training program, the Contractor shall no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) **Equal employment opportunity.** The utilization of apprentices, trainees and journeymen under 29 CFR Part 5 shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

5. **Compliance with Copeland Act Requirements.** The Contractor shall comply with the requirements of 29 CFR Part 3, which are incorporated by reference in this Contract.

6. **Subcontracts.** The Contractor or subcontractor shall insert in any subcontracts the clauses set forth in subparagraphs 1 through 10 of this paragraph B and such other clauses as HUD or its designee may by appropriate instructions require, and a copy of the applicable prevailing wage determination, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all Contract clauses referenced in this subparagraph.

7. **Contract termination and debarment.** A breach of the Contract clauses in 29 CFR 5.5 may be grounds for termination of the Contract, and for debarment as a contractor or a subcontractor as provided in 29 CFR 5.12.

8. **Compliance with Davis-Bacon and Related Act Requirements.** All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this Contract.

9. **Disputes concerning labor standards.** Disputes arising out of the labor standards provisions of this Contract shall not be subject to the general disputes clause of this Contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the Contractor (or any of its subcontractors) and HUD or its designee, the U.S. Department of Labor, or the employees or their representatives.

10. **Certification of Eligibility.**

(i) By entering into this Contract, the Contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the Contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of Section 3(a) of the Davis-Bacon Act (40 U.S.C. 3144(b)(2)) or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(ii) No part of this Contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of Section 3(a) of the Davis-Bacon Act (40

U.S.C. 3144(b)(2)) or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001. Additionally, U.S. Criminal Code, Section 1010, Title 18, U.S.C., "Federal Housing Administration transactions", provides in part: "Whoever, for the purpose of . . . influencing in any way the action of such Department . . . makes, passes, utters or publishes any statement, knowing the same to be false . . . shall be fined under this title or imprisoned not more than two years, or both."

C. **Contract Work Hours and Safety Standards Act.**

1. **Applicability and Definitions.** This paragraph C of Article 1 is applicable only if a direct form of federal assistance is involved, such as Section 8, Section 202/811 Capital Advance, grants etc., and is applicable only where the prime contract is in an amount greater than $100,000. As used in this paragraph C, the terms "laborers" and "mechanics" include watchmen and guards.

2. **Overtime requirements.** No contractor or subcontractor contracting for any part of the Contract work that may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty (40) hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty (40) hours in such workweek.

3. **Violation; liability for unpaid wages; liquidated damages.** In the event of any violation of the immediately preceding subparagraph C.2, the Contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, the Contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory) for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of such subparagraph, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty (40) hours without payment of the overtime wages required by the clause set forth in such subparagraph.

4. **Withholding for unpaid wages and liquidated damages.** HUD or its designee shall, upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from any moneys payable on account of work performed by the Contractor or subcontractor under any such contract, or under any other Federal contract with the same prime contractor, or under any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act which is held by the same prime contractor such sums as may be determined to be necessary to satisfy any liabilities of such Contractor or

subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in subparagraph 3 of this paragraph C.

5. **Subcontracts.** The Contractor or subcontractor shall insert in any subcontracts the clauses set forth in subparagraphs 1 through 5 of this paragraph C and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in such subparagraphs 1 through 5.

D. **Certification.**

For projects with Security Instruments insured under the National Housing Act, as amended, that are subject to paragraph B of this Article 1, the Contractor is required to execute the Contractor's Prevailing Wage Certificate within HUD-92448 as a condition precedent to insurance by HUD of the Loan, or an advance thereof, made or to be made by the Lender in connection with the construction of the Project.

Article 2: Equal Employment Opportunity

A. **Applicability.** This Article 2 applies to any contract for construction work, or modification thereof, as defined in the regulations of the Secretary of Labor at 41 CFR Chapter 60, which is paid for in whole or in part with funds obtained from the Federal Government or borrowed on the credit of the Federal Government pursuant to a grant, contract, loan insurance, or guarantee, or undertaken pursuant to any Federal program involving such grant, contract, loan, insurance, or guarantee.

B. The Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, disability, or national origin. The Contractor shall take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, disability or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training including apprenticeship. The Contractor agrees to post in conspicuous places available to employees and applicants for employment notices to be provided setting forth the provisions of this nondiscrimination clause.

C. The Contractor shall, in all solicitations or advertisements for employees placed by or on behalf of the Contractor state that all qualified applicants shall receive consideration for employment without regard to race, color, religion, sex, disability, or national origin.

D. The Contractor shall send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding a notice to be provided advising the said labor union or workers representatives of the Contractor's commitments hereunder, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

E. The Contractor shall comply with all provisions of Executive Order 11246 of September 24, 1965 and of the rules, regulations, and relevant orders of the Secretary of Labor.

F. The Contractor shall furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and shall permit access to its books, records, and accounts by the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

G. In the event of the Contractor's noncompliance with the nondiscrimination clauses of this Contract or with any of the said rules, regulations, or orders, this Contract may be canceled, terminated, or suspended in whole or in part and Contractor may be declared ineligible for further government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulations or order of the Secretary of Labor, or as otherwise provided by law.

H. The Contractor shall include the provisions of paragraphs A through H of this Article 2 in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such provisions shall be binding upon each subcontractor or vendor. The Contractor shall take such action with respect to any subcontract or purchase order as HUD or the Secretary of Labor may direct as a means of enforcing such provisions, including sanctions for noncompliance. *Provided, however,* that in the event the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by HUD or the Secretary of Labor, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

Article 3: Equal Opportunity for Businesses and Lower Income Persons Located Within the Project Area

A. This Article 3 is applicable to projects covered by Section 3, as defined in 24 CFR Part 135.

B. The work to be performed under this Contract is on a project assisted under a program providing direct Federal financial assistance from HUD and is subject to the requirements of Section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. 1701u. Section 3 requires that to the greatest extent feasible opportunities for training and employment be given to lower income residents of the unit of local government or the metropolitan area (or non-metropolitan county) as determined by HUD in which the Project is located and contracts for work in connection with the Project be awarded to business concerns which are located in, or owned in substantial part by persons residing in the same metropolitan area (or non-metropolitan county) as the Project.

Article 4: Health and Safety

A. This Article 4 is applicable only where the prime contract is in an amount greater than $100,000.

B. No laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his or her health and safety as determined under construction safety and health standards promulgated by the Secretary of Labor by regulation.

C. The Contractor shall comply with all regulations issued by the Secretary of Labor pursuant to 29 CFR Part 1926, and failure to comply may result in imposition of sanctions pursuant to the Contract Work Hours and Safety Standards Act, 40 USC 3701 et seq.

D. The Contractor shall include the provisions of this Article 4 in every subcontract so that such provisions shall be binding on each subcontractor. The Contractor shall take such action with respect to any subcontract as HUD or the Secretary of Labor shall direct as a means of enforcing such provisions.

General Decision Number: VA180160 05/04/2018 VA160

Superseded General Decision Number: VA20170160

State: Virginia

Construction Type: Residential

Counties: Augusta, Harrisonburg*, Rockingham, Staunton* and Waynesboro* Counties in Virginia.

*INDEPENDENT CITIES

RESIDENTIAL CONSTRUCTION PROJECTS (consisting of single family homes and apartments up to and including 4 stories).

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.35 for calendar year 2018 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.35 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2018. The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types

of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number Publication Date

0 01/05/2018

1 05/04/2018

* ENGI0147-012 05/01/2018

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
Cranes 90 tons & over capacity; Tower & Climbing Cranes with Controls 100 ft. above ground	$ 30.00	10%+9.94
Cranes under 90 tons	$ 29.08	10%+9.94

SUVA2012-027 08/08/2014

	Rates	Fringes
BRICKLAYER	$ 16.35	0.00

CARPENTER.....$ 12.60 0.00

CEMENT MASON/CONCRETE FINISHER...$ 18.00 0.00

ELECTRICIAN.....$ 16.34 0.00

IRONWORKER, ORNAMENTAL.....$ 15.59 0.00

IRONWORKER, STRUCTURAL.....$ 21.55 1.39

LABORER: Common or General.....$ 9.28 0.34

LABORER: Mason Tender - Brick...$ 12.37 0.00

LABORER: Mason Tender -
Cement/Concrete.....$ 12.37 0.00

LABORER: Pipelayer.....$ 14.88 1.51

OPERATOR:
Backhoe/Excavator/Trackhoe.....$ 17.36 2.25

OPERATOR: Bobcat/Skid
Steer/Skid Loader.....$ 15.26 0.80

OPERATOR: Bulldozer.....$ 15.29 2.27

OPERATOR: Loader.....$ 17.93 2.70

PAINTER (Brush and Roller).....$ 15.41 0.00

PLUMBER.....$ 16.14 1.50

ROOFER.....$ 15.33 1.95

SHEET METAL WORKER, Includes
HVAC Duct Installation.....$ 15.54 0.00

TRUCK DRIVER: Dump Truck.....$ 16.30 0.00

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons

resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were

prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the

wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request

review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

SECTION 01 11 00 - SUMMARY

GENERAL

RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

SUMMARY

Section includes:

Project information / Work covered by Contract Documents.
Phased construction.
Owner-furnished, contractor installed products.
Access to site.
Work restrictions.
Specification and drawing conventions.

Related Section:

Division 1 Section "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

PROJECT INFORMATION / WORK COVERED BY CONTRACT DOCUMENTS

Project Identification:

Name: Derby Run Apartments I
Location: 6 Derby Drive, Hampton, VA 23666
Owner: LRC- Derby Run 1, LP

Architect Identification: The Contract Documents were prepared for Derby Run Apartments I by Dyke Nelson Architecture, LLC, 235 South 14th Street, Baton Rouge, LA 70802.

Project Scope:

GENERAL DESCRIPTION:

BUILT IN 1994, DERBY RUN APARTMENTS I IS AN EXISTING MULTI-FAMILY COMPLEX CONSISTING OF 160 UNITS IN 14 RESIDENTIAL TWO-STORY & THREE-STORY BUILDINGS, WITH AN ADDITIONAL CLUBHOUSE, SITUATED ON 8.73 ACRES.

ADDRESS: 6 DERBY DRIVE, HAMPTON, VA 23666
PIN: 6000964

THE SCOPE OF THE PROPOSED RENOVATIONS WILL INCLUDE UPDATING ITEMS THAT HAVE NOT BEEN RECENTLY UPDATED INCLUDING KITCHEN AND BATH UPGRADES AND REMODELS, NEW WINDOWS, ROOF REPLACEMENT, AND GENERAL REPAIRS THROUGHOUT THE PROPERTY AS WELL AS ENERGY EFFICIENT HVAC SYSTEMS AND NEW LED LIGHTING IN ALL UNITS. THE SCOPE OF WORK INCLUDES CONVERTING 8 EXISTING UNITS TO ACCESSIBLE UNITS (5%) AND EQUIPPING 4 EXISTING UNITS FOR THE AUDITORY/VISUAL IMPAIRED (2%). ADDITIONALLY, THE RENOVATIONS WILL COMPLY WITH THE VHDA MINIMUM DESIGN & CONSTRUCTION STANDARDS

I. Site Work

1. Roads and Walks: Dig out and replace 4,650 SF (5%) of damaged pavement for vehicular area prior to overlay. Overlay 93,000 SF vehicular paving and restripe. Install bumper stops. General repairs to walks and stairs (2,000 SF). Replace and/or repair damaged site railings.

2. Lawns and Plantings: Finish grading for positive drainage away from buildings and to prevent pooling. Seeding, sodding, and sprigging. Trimming trees, clearing, and grubbing.

3. Site Utilities: Video inspection of sewer lines (1 per building and 5 mains).

4. Street & Grounds Lighting: Add site lighting to provide 1FS/SF.

5. Walls, Fencing, Gates: Repair and/or replace retaining walls and erosion. Repair and/or replace five (5) dumpster enclosures (bollards to be added at dumpsters). Repair and/or replace privacy fencing and gates.

6. Playground: Replace playground sand with mulch.

II. Residential Building Exteriors

1. Roofing: New 25-year minimum, anti-fungal shingles on new sheathing.

2. Insulation: Additional insulation added to attics to achieve R-38 total.

3. Cleaning: Pressure wash building exteriors.

4. Repairs: Repair and/or replace concrete patio area (600 SF).

5. Siding: Vinyl siding repairs.

6. Gutters: Repairs to gutters and downspouts.

7. Windows: Replace all existing window units with new vinyl frame windows.

8. Entry Doors: New metal entry doors with wooden frames, including new door hardware.

9. Rear Entry Doors: New metal entry doors with wooden frames, including new door hardware.

10. Decks: Repair and/or replace decks (50%).

11. Lighting: New LED exterior sconces. New wall packs on buildings to provide total of 1FS/SF (See Street & Grounds Lighting above).

III. Residential Unit Interiors

1. Three (3) units to receive hearing and sight impaired upgrades.
    a) Strobes for smoke detectors
    b) Strobes for door bell.
2. Entry
    a) Replace flooring with new vinyl plank flooring.
3. Openings
    a) Replace damaged mini-blinds (3/unit).
    b) Replace bifold doors with new swing doors, to include new hardware.
    c) Replace damaged interior doors with new (10%), to include new hardware.
4. Living / Dining
    a) Lighting: New LED interior lighting fixtures
5. Kitchen
    a) Refrigerator: New Energy Star refrigerators.
    b) Ranges: New Energy Star ranges, and range hoods.
    c) Dishwasher: New Energy Star dishwasher.
    d) Millwork: Remove and Replace all cabinetry including laminated counter tops.
    e) Plumbing: Replace kitchen sink, faucet, supplies, and trim.
    f) Flooring: Replace flooring with vinyl plank flooring to include new baseboard trim.
    g) Paint: Paint room complete, repairing gypsum before paint.
    h) Lighting: New LED interior lighting fixtures
    i) Fire equipment: Dry-chemical fire-extinguishing equipment (Range Queens).
6. Mechanical
    a) HVAC: Install new split systems (15 SEER). Existing ducts and plenums to be cleaned and reused, with new thermostat and grilles.
    b) Water Heater: New energy efficient water heaters with pans.

7. Laundry
    a) New leak sensors with cutoff.
8. Bedrooms
    a) Lighting: New LED interior lighting fixtures
    b) Smoke Detector: Replace existing smoke detectors (1/floor).
9. Full Bath
    a) Tub: Install new tub valve and trim, spout and shower head.
    b) Toilet: Replace commode with Water Sense unit with seat.
    c) Lavatory: Replace vanity cabinet, countertop and sink, and faucet with new P-traps and supply lines.
    d) Flooring: Replace flooring with vinyl plank flooring to include new baseboard trim.
    e) Accessories: New bath accessories.
    f) Paint: Paint room complete, repairing gypsum before paint.
    g) Exhaust Fan: Install new exhaust fan at existing location (provide power and switch.
    h) Lighting: New LED interior lighting fixtures
10. Half Bath
    a) Toilet: Replace commode with Water Sense unit with seat.
    b) Lavatory: Replace counter top and sink, and faucet with new P-traps and supply lines.
    c) Flooring: Replace flooring with vinyl plank flooring to include new baseboard trim.
    d) Accessories: New bath accessories.
    e) Paint: Paint room complete, repairing gypsum before paint.
    f) Exhaust Fan: Install new exhaust fan at existing location (provide power and switch.
    g) Lighting: New LED interior lighting fixtures

IV. Community Building

1. Add new secure computer lab.

V. Laundry Building

1. Interior of Laundry Building not in scope.

Type of Contract:

Project will be constructed under a single prime contract.

PHASED CONSTRUCTION

The Work shall be conducted in a single phase.

ACCESS TO SITE

General: Contractor will have access to entire site for the entire duration of the project.

Use of site: Keep driveways, loading areas, lots, sidewalks, and public ways adjacent to the project site clear unless an agreement has been executed with property owners, government agencies, etc.

WORK RESTRICTIONS

Work Restrictions, General: Comply with restrictions on construction operations.

Comply with limitations on use of public streets and other requirements of authorities having jurisdiction.

SPECIFICATION FORMATS AND CONVENTIONS

Specification Format: The Specifications are organized into Divisions and Sections using the 50-division format and CSI/CSC's "MasterFormat" numbering system.

Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred, as the sense requires. Singular words shall be interpreted as plural and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.

The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

OWNER-FURNISHED, CONTRACTOR INSTALLED PRODUCTS

Owner will furnish products indicated. The Work includes receiving, unloading, handling, storing, protecting, and installing Owner-furnished products and making building services connections.

Owner-Furnished Products:

None at this time.

PRODUCTS (Not Used)

EXECUTION (Not Used)

END OF SECTION 01100

SECTION 01 26 00 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for handling and processing Contract modifications.

B. Related Sections include the following:
   1. Division 1 Section "Product Requirements" for administrative procedures for handling requests for substitutions made after Contract award.

1.3 MINOR CHANGES IN THE WORK

A. Architect will issue supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710, "Architect's Supplemental Instructions."

1.4 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

   1. Proposal Requests issued by Architect are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
   2. Within time specified in Proposal Request after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.

      a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
      b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
      c. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

B. Contractor-Initiated Proposals: If latent or unforeseen conditions require modifications to the Contract, Contractor may propose changes by submitting a request for a change.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
5. Comply with requirements in Division 1 Section "Product Requirements" if the proposed change requires substitution of one product or system for product or system specified.

C. Proposal Request Form: Use AIA Document G709 for Proposal Requests.

1.5 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on HUD 92437 Request for Construction Changes on Project Mortgages.

1.6 CONSTRUCTION CHANGE DIRECTIVE

A. Construction Change Directive: Architect may issue a Construction Change Directive on AIA Document G714. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01250

SECTION 01 31 00 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. General Project coordination procedures.
2. Coordination Drawings.
3. Project meetings.

1.3 COORDINATION

A. Coordination: Coordinate construction operations included in various Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, which depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.
4. Coordinate Owners Separate Contractors.
5. Coordinate the work of Mechanical and Electrical Subcontractors.

B. If necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's Construction Schedule.
2. Preparation of the Schedule of Values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.

5. Progress meetings.
6. Pre-installation conferences.
7. Project closeout activities.

1.4 SUBMITTALS

A. Coordination Drawings: Prepare Coordination Drawings as limited space availability necessitates maximum utilization of space for efficient installation of different components and coordination and is required for installation of products and materials fabricated by separate entities.

1. Indicate relationship of components shown on separate Shop Drawings.
2. Indicate required installation sequences.
3. See Division 15 Sections for specific Coordination Drawing requirements for mechanical installations.
4. See Division 16 Sections for specific Coordination Drawing requirements for electrical installations.
5. Provide list of components to be shown in the coordination drawings for approval to the architect prior to the creation of said drawings.

1.5 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: At the Architect's discretion: Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within 4 days of the meeting.

B. Pre-construction Conference: Schedule a pre-construction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.

1. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; manufacturers; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Discuss items of significance that could affect progress, including the following:

    a. Tentative construction schedule.
    b. Phasing.
    c. Critical work sequencing.
    d. Designation of responsible personnel.
    e. Procedures for processing field decisions and Change Orders.
    f. Procedures for processing Applications for Payment.
    g. Distribution of the Contract Documents.
    h. Submittal procedures.
    i. Preparation of Record Documents.

j. Use of the premises.
k. Responsibility for temporary facilities and controls.
l. Parking availability.
m. Office, work, and storage areas.
n. Equipment deliveries and priorities.
o. First aid.
p. Security.
q. Progress cleaning.
r. Working hours.
s. Coordination drawings

C. Pre-installation Conferences: Conduct a pre-installation conference at Project site before each construction activity that requires coordination with other construction.

1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect of scheduled meeting dates 48 hours in advance.
2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:

a. Contract Documents.
b. Options.
c. Related Change Orders.
d. Purchases.
e. Deliveries.
f. Submittals.
g. Review of mockups.
h. Possible conflicts.
i. Compatibility problems.
j. Time schedules.
k. Weather limitations.
l. Manufacturer's written recommendations.
m. Warranty requirements.
n. Compatibility of materials.
o. Acceptability of substrates.
p. Temporary facilities and controls.
q. Space and access limitations.
r. Regulations of authorities having jurisdiction.
s. Testing and inspecting requirements.
t. Required performance results.
u. Protection of construction and personnel.

3. Record significant conference discussions, agreements, and disagreements.
4. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

D. Progress Meetings: Conduct progress meetings at monthly intervals. Coordinate dates of meetings with preparation of payment requests.

1. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

    a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
    b. Review present and future needs of each entity present, including the following:

        1) Interface requirements.
        2) Sequence of operations.
        3) Status of submittals.
        4) Deliveries.
        5) Off-site fabrication.
        6) Access.
        7) Site utilization.
        8) Temporary facilities and controls.
        9) Work hours.
        10) Hazards and risks.
        11) Progress cleaning.
        12) Quality and work standards.
        13) Change Orders.
        14) Documentation of information for payment requests.

3. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present. Include a brief summary, in narrative form, of progress since the previous meeting and report.

    a. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01310

SECTION 01 32 00 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Contractor's Construction Schedule.
2. Submittals Schedule.

B. See Division 1 Section "Payment Procedures" for submitting the Schedule of Values.

1.3 DEFINITIONS

A. Critical Path: The longest continuous chain of activities through the network schedule that establishes the minimum overall Project duration and contains no float.

B. Float: The measure of leeway in starting and completing an activity.

1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.

C. Fragnet: A partial or fragmentary network that breaks down activities into smaller activities for greater detail.

D. Major Area: A story of construction, a separate building, or a similar significant construction element.

1.4 SUBMITTALS

A. Submittals Schedule: Submit one copy of schedule. Arrange the following information in a tabular format:

1. Scheduled date for first submittal.
2. Specification Section number and title.
3. Submittal category (action or informational).
4. Name of subcontractor.
5. Description of the Work covered.
6. Scheduled date for Architect's final release or approval.

B. Contractor's Construction Schedule: Submit one printed copy of initial schedule, large enough to show entire schedule for entire construction period, including critical path and updated weekly.

1.5 COORDINATION

A. Coordinate preparation and processing of schedules with performance of construction activities.

B. Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from parties involved.
2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 SUBMITTALS SCHEDULE

A. Preparation: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, re-submittal, ordering, manufacturing, fabrication, and delivery when establishing dates.

1. Coordinate Submittals Schedule with list of subcontracts, the Schedule of Values, and Contractor's Construction Schedule.
2. Submit concurrently with the first complete submittal of Contractor's Construction Schedule.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE (CPM SCHEDULE)

A. General: Prepare network diagrams using AON (activity-on-node) format.

B. Preliminary Network Diagram: Submit diagram within 14 days of date established for commencement of the Work. Outline significant construction activities for the first 60 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

C. CPM Schedule: Prepare Contractor's Construction Schedule using a CPM network analysis diagram.

1. Develop network diagram in sufficient time to submit CPM schedule so it can be accepted for use no later than 30 days after date established for commencement of the Work.
2. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
3. Use "one workday" as the unit of time.

D. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the preliminary network diagram, prepare a skeleton network to identify probable critical paths.

1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following:

    a. Preparation and processing of submittals.
    b. Purchase of materials.
    c. Delivery.
    d. Fabrication.
    e. Installation.

2. Processing: Process data to produce output data or a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
3. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.

    a. Subnetworks on separate sheets are permissible for activities clearly off the critical path.

E. Initial Issue of Schedule: Prepare initial network diagram from a list of straight "early start-total float" sort. Identify critical activities. Prepare tabulated reports showing the following:

1. Contractor or subcontractor and the Work or activity.
2. Description of activity.
3. Principal events of activity.
4. Immediate preceding and succeeding activities.
5. Early and late start dates.
6. Early and late finish dates.
7. Activity duration in workdays.
8. Total float or slack time.
9. Average size of workforce.

F. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:

1. Identification of activities that have changed.
2. Changes in early and late start dates.
3. Changes in early and late finish dates.
4. Changes in activity durations in workdays.
5. Changes in the critical path.
6. Changes in total float or slack time.
7. Changes in the Contract Time.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
3. As the Work progresses, indicate Actual Completion percentage for each activity.

B. Distribution: Distribute copies of approved schedule to Architect, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

1. Post copies in Project meeting rooms and temporary field offices.
2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION 01320

SECTION 01 33 00 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other miscellaneous submittals.

B. See Division 1 Section "Construction Progress Documentation" for submitting schedules and reports, including Contractor's Construction Schedule and the Submittals Schedule.

C. See Division 1 Section "Quality Requirements" for submitting test and inspection reports and Delegated-Design Submittals and for erecting mockups.

D. See Division 1 Section "Closeout Procedures" for submitting warranties Project Record Documents and operation and maintenance manuals.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information that requires Architect's responsive action.

B. Informational Submittals: Written information that does not require Architect's approval. Submittals may be rejected for not complying with requirements.

1.4 SUBMITTAL PROCEDURES

A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.

    a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

B. Submittals Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation" for list of submittals and time requirements for scheduled performance of related construction activities.

C. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal.

1. Initial Review: Allow 7 days after receipt by Architect for initial review of each submittal. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
2. If intermediate submittal is necessary, process it in same manner as initial submittal.
3. Allow 7 days for processing each re-submittal.
4. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing.

D. Identification: Place a permanent label or title block on each submittal for identification.

1. Indicate name of firm or entity that prepared each submittal on label or title block.
2. Provide a space approximately 4 by 5 inches on label or beside title block to record Contractor's review and approval markings and action taken by Architect.
3. Include the following information on label for processing and recording action taken:

    a. Project name and Architect’s Project Number.
    b. Date.
    c. Name and address of Architect.
    d. Name and address of Contractor.
    e. Name and address of subcontractor.
    f. Name and address of supplier.
    g. Name of manufacturer.
    h. Unique identifier, including revision number.
    i. Section Number and title of appropriate Specification Section.
    j. Drawing number and detail references, as appropriate.
    k. Other necessary identification.

E. Deviations: Highlight, encircle, or otherwise identify deviations from the Contract Documents on submittals.

F. Additional Copies: Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions of the Contract Documents, initial submittal may serve as final submittal.

1. Additional copies submitted for maintenance manuals will be marked with action taken and will be returned.

G. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect will discard submittals received from sources other than Contractor.

1. Include Contractor's certification stating that information submitted complies with requirements of the Contract Documents.

2. Submittals may be transmitted electronically.

H. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

I. Use for Construction: Use only final submittals with mark indicating action taken by Architect in connection with construction.

PART 2 - PRODUCTS

2.1 ACTION SUBMITTALS

A. General: Prepare and submit Action Submittals required by individual Specification Sections.

1. Number of Copies: Submit four copies of each submittal, unless otherwise indicated. Architect will return three, or two copies, if Architect's consulting Engineer must review items. Mark up and retain one returned copy as a Project Record Document.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:

a. Manufacturer's written recommendations.
b. Manufacturer's product specifications.
c. Manufacturer's installation instructions.
d. Manufacturer's catalog cuts.
e. Wiring diagrams showing factory-installed wiring.
f. Printed performance curves.
g. Operational range diagrams.
h. Compliance with recognized trade association standards.
i. Compliance with recognized testing agency standards.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data except as approved by the Architect.

1. Preparation: Include the following information, as applicable:

a. Dimensions.
b. Identification of products.
c. Fabrication and installation drawings.
d. Roughing-in and setting diagrams.
e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
f. Shopwork manufacturing instructions.
g. Templates and patterns.
h. Schedules.
i. Notation of coordination requirements.
j. Notation of dimensions established by field measurement.

2. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.
3. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 30 by 40 inches. Submit Digital-Bond copies for large sheets.

D. Coordination Drawings: Comply with requirements in Division 1 Section "Project Management and Coordination."

E. Samples: Prepare physical units of materials or products, including the following:

1. Comply with requirements in Division 1 Section "Quality Requirements" for mockups.
2. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.

    a. Submit one full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.

3. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from the same material to be used for the Work, cured and finished in manner specified, and physically identical with the product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

    a. Submit three sets of Samples. Architect will retain two Sample sets; remainder will be returned.

4. Preparation: Mount, display, or package Samples in manner specified to facilitate review of qualities indicated. Prepare Samples to match Architect's sample where so indicated. Attach label on unexposed side.
5. Submit Samples for review of kind, color, pattern, and texture for a final check of these characteristics with other elements and for a comparison of these characteristics between final submittal and actual component as delivered and installed.
6. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

F. Product Schedule or List: Prepare a written summary indicating types of products required for the Work and their intended location.

G. Delegated-Design Submittal: Comply with requirements in Division 1 Section "Quality Requirements."

H. Submittals Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation."

I. Application for Payment: Comply with requirements in Division 1 Section "Payment Procedures."

J. Schedule of Values: Comply with requirements in Division 1 Section "Payment Procedures."

K. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Use CSI Form 1.5A.

2.2 INFORMATIONAL SUBMITTALS

A. General: Prepare and submit Informational Submittals required by other Specification Sections.

1. Number of Copies: Submit two copies of each submittal, unless otherwise indicated. Architect will not return copies.
2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
3. Test and Inspection Reports: Comply with requirements in Division 1 Section "Quality Requirements."

B. Contractor's Construction Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation."

C. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

D. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements.

E. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.

F. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements and, where required, is authorized for this specific Project.

G. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements. Include evidence of manufacturing experience where required.

H. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements.

I. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements.

J. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

K. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements.

L. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

M. Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project.

N. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements in Division 1 Section "Closeout Procedures."

O. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

P. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer.

Q. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections.

R. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Review each submittal and check for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.

B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S ACTION

A. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.

B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:

1. NO EXCEPTIONS TAKEN. No further review of Submittal required.
2. MAKE CORRECTIONS AS NOTED: Incorporate corrections in work; resubmittal is not required. If contractor cannot comply with corrections as noted, revise to respond to exceptions and resubmit.

3. REVISE AND RESUBMIT: Revise as noted and resubmit for further review.
4. RESUBMIT PROPERLY: Submittal not reviewed because it does not contain Contractor's signature indicating its review and approval, and/or is not in proper condition for review. Resubmit.
5. NOT REVIEWED: Submittal is not required by Contract Documents.

C. Informational Submittals: Architect will review each submittal and will not return it, or will reject and return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

D. Submittals not required by the Contract Documents will not be reviewed and may be discarded.

END OF SECTION 01330

SECTION 01 40 00 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specified tests, inspections, and related actions do not limit Contractor's quality-control procedures that facilitate compliance with the Contract Document requirements.
2. Provisions of this Section do not limit requirements for Contractor to provide quality-control services required by Architect, Owner, or authorities having jurisdiction.

C. See Divisions 2 through 33 Sections for specific test and inspection requirements.

1.3 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and ensure that proposed construction complies with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that completed construction complies with requirements. Services do not include contract enforcement activities performed by Architect.

C. Mockups: Full-size, physical example assemblies to illustrate finishes and materials. Mockups are used to verify selections made under Sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. Mockups establish the standard by which the Work will be judged.

D. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

1.4 DELEGATED DESIGN

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

1.5 SUBMITTALS

A. Qualification Data: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

B. Delegated-Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit a statement, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.

C. Reports: Prepare and submit certified written reports that include the following:

1. Date of issue.
2. Project title and number.
3. Name, address, and telephone number of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Ambient conditions at time of sample taking and testing and inspecting.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and re-inspecting.

D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.6 QUALITY ASSURANCE

A. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

B. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

C. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

D. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product, that are similar to those indicated for this Project in material, design, and extent.

F. Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities that are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.

1. Requirement for specialists shall not supersede building codes and similar regulations governing the Work, nor interfere with local trade-union jurisdictional settlements and similar conventions.

G. Testing Agency Qualifications: An agency with the experience and capability to conduct testing and inspecting indicated, as documented by ASTM E 548, and that specializes in types of tests and inspections to be performed.

H. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
2. Notify Architect seven days in advance of dates and times when mockups will be constructed.
3. Demonstrate the proposed range of aesthetic effects and workmanship.
4. Obtain Architect's approval of mockups before starting work, fabrication, or construction.
5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
6. Demolish and remove mockups when directed, unless otherwise indicated.

1.7 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of the types of testing and inspecting they are engaged to perform.
2. Costs for retesting and re-inspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.

B. Contractor Responsibilities: Unless otherwise indicated, provide quality-control services specified and required by authorities having jurisdiction.

1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.

    a. Contractor shall not employ the same entity engaged by Owner, unless agreed to in writing by Owner.

2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Special Tests and Inspections: Owner will engage a testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner.

1. Testing agency will notify Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
2. Testing agency will submit a certified written report of each test, inspection, and similar quality-control service to Architect with copy to Contractor and to authorities having jurisdiction.
3. Testing agency will submit a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
4. Testing agency will interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
5. Testing agency will retest and re-inspect corrected work.

D. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing.

E. Retesting/Re-inspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and re-inspecting, for construction that revised or replaced Work that failed to comply with requirements established by the Contract Documents.

F. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
3. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
4. Do not release, revoke, alter, or increase requirements of the Contract Documents or approve or accept any portion of the Work.
5. Do not perform any duties of Contractor.

G. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Preliminary design mix proposed for use for material mixes that require control by testing agency.
6. Security and protection for samples and for testing and inspecting equipment at Project site.

H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

I. Building Envelope: It is the intent of the Construction Documents that the Project be constructed free of water infiltration, excessive air infiltration, excessive moisture or vapor build-up in building materials and that continuous thermal barriers against excessive heat loss or gain are maintained. The proper use of certain materials such as bituminous damp proofing, flexible and rigid flashing and building insulation are essential to ensure this performance. It is the responsibility of the Contractor to review the Documents carefully and advise the Architect of any concerns or recommendations in regard to potential problem areas. It is also the responsibility of the Contractor, during construction, to coordinate the work to ensure that the integrity of the continuous waterproofing and thermal envelope be maintained.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Sections of these Specifications. Restore patched areas and extend restoration into adjoining areas in a manner that eliminates evidence of patching.

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01400

01 42 00 - **REFERENCES**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to and govern the execution of the work of all Sections of the Project Manual.

1.2 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. "Approved": The term "approved," when used to convey Architect's action on Contractor's submittals, applications, and requests, is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.

C. "Directed": Terms such as "directed," "requested," "authorized," "selected," "approved," "required," and "permitted" mean directed by Architect, requested by Architect, and similar phrases.

D. "Indicated": The term "indicated" refers to graphic representations, notes, or schedules on Drawings or to other paragraphs or schedules in Specifications and similar requirements in the Contract Documents. Terms such as "shown," "noted," "scheduled," and "specified" are used to help the user locate the reference.

E. "Regulations": The term "regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.

F. "Furnish": The term "furnish" means to supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. "Install": The term "install" describes operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

H. "Provide": The term "provide" means to furnish and install, complete and ready for the intended use.

I. "Installer": An installer is the Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

J. The term "experienced," when used with an entity, means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to trades people of the corresponding generic name.

K. "Project site" is the space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.3 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with standards in effect as of date of the Contract Documents, unless otherwise indicated.

C. Conflicting Requirements: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Architect for a decision before proceeding.

1. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

D. Copies of Standards: Each entity engaged in construction on Project must be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source and make them available on request.

E. Abbreviations and Acronyms for Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

AA	Aluminum Association, Inc. (The) www.aluminum.org	(202) 862-5100
AAADM	American Association of Automatic Door Manufacturers www.taol.com/aaadm	(216) 241-7333
AABC	Associated Air Balance Council www.aabchq.com	(202) 737-0202
AAMA	American Architectural Manufacturers Association	(847) 303-5664

	www.aamanet.org	
AAN	American Association of Nurserymen (See ANLA)	
AASHTO	American Association of State Highway and Transportation Officials www.aashto.org	(202) 624-5800
AATCC	American Association of Textile Chemists and Colorists (The) www.aatcc.org	(919) 549-8141
ABMA	American Bearing Manufacturers Association www.abma-dc.org	(202) 429-5155
ACI	American Concrete Institute/ACI International www.aci-int.org	(248) 848-3700
ACPA	American Concrete Pipe Association www.concrete-pipe.org	(972) 506-7216
ADC	Air Diffusion Council	(312) 201-0101
AEIC	Association of Edison Illuminating Companies, Inc. (The) www.aeic.org	(205) 257-2530
AFPA	American Forest & Paper Association (See AF&PA)	
AF&PA	American Forest & Paper Association www.afandpa.org	(800) 878-8878 (202) 463-2700
AGA	American Gas Association www.aga.org	(202) 824-7000
AHA	American Hardboard Association www.ahardbd.org	(847) 934-8800
AHAM	Association of Home Appliance Manufacturers www.aham.org	(202) 872-5955
AI	Asphalt Institute www.asphaltinstitute.org	(606) 288-4960
AIA	American Institute of Architects (The) www.aiaonline.org	(202) 626-7300
AISC	American Institute of Steel Construction, Inc. www.aisc.org	(800) 644-2400 (312) 670-2400
AISI	American Iron and Steel Institute www.steel.org	(202) 452-7100
AITC	American Institute of Timber Construction	(303) 792-9559

ALA	American Laminators Association (See LMA)	
ALCA	Associated Landscape Contractors of America www.alca.org	(800) 395-2522 (703) 736-9666
ALSC	American Lumber Standard Committee	(301) 972-1700
AMCA	Air Movement and Control Association International, Inc. www.amca.org	(847) 394-0150
ANLA	American Nursery & Landscape Association (Formerly: AAN - American Association of Nurserymen) www.anla.org	(202) 789-2900
ANSI	American National Standards Institute www.ansi.org	(212) 642-4900
AOSA	Association of Official Seed Analysts www.zianet.com/AOSA	(402) 476-3852
APA	APA-The Engineered Wood Association www.apawood.org	(253) 565-6600
APA	Architectural Precast Association www.archprecast.org	(941) 454-6989
API	American Petroleum Institute www.api.org	(202) 682-8000
ARI	Air-Conditioning & Refrigeration Institute www.ari.org	(703) 524-8800
ASCA	Architectural Spray Coaters Association www.ascassoc.com	(856) 848-6120
ASCE	American Society of Civil Engineers www.asce.org	(800) 548-2723 (703) 295-6300
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers www.ashrae.org	(800) 527-4723 (404) 636-8400
ASME	ASME International (The American Society of Mechanical Engineers International) www.asme.org	(800) 843-2763
ASSE	American Society of Sanitary Engineering www.asse-plumbing.org	(440) 835-3040
ASTM	American Society for Testing and Materials www.astm.org	(610) 832-9585

AWCI	AWCI International (Association of the Wall and Ceiling Industries International) www.awci.org	(703) 534-8300
AWCMA	American Window Covering Manufacturers Association (See WCMA)	
AWI	Architectural Woodwork Institute www.awinet.org	(800) 449-8811 (703) 733-0600
AWPA	American Wood-Preservers' Association www.awpa.com	(817) 326-6300
AWS	American Welding Society www.aws.org	(800) 443-9353 (305) 443-9353
AWWA	American Water Works Association www.awwa.org	(800) 926-7337 (303) 794-7711
BHMA	Builders Hardware Manufacturers Association www.buildershardware.com	(212) 661-4261
BIA	Brick Industry Association (The) www.bia.org	(703) 620-0010
BIFMA	BIFMA International (Business and Institutional Furniture Manufacturer's Association International) www.bifma.com	(616) 285-3963
CCC	Carpet Cushion Council www.carpetcushion.org	(203) 637-1312
CCFSS	Center for Cold-Formed Steel Structures www.umr.edu/~ccfss	(573) 341-4471
CDA	Copper Development Association Inc. www.copper.org	(800) 232-3282 (212) 251-7200
CEA	Canadian Electricity Association (The) www.canelect.ca	(613) 230-9263
CFFA	Chemical Fabrics & Film Association, Inc. www.taol.com/cffa	(216) 241-7333
CGA	Compressed Gas Association www.cganet.com	(703) 412-0900
CGSB	Canadian General Standards Board www.pwgsc.gc.ca/cgsb	(819) 956-0425
CIMA	Cellulose Insulation Manufacturers Association www.cellulose.org	(888) 881-2462 (937) 222-2462

CISCA	Ceilings & Interior Systems Construction Association www.cisca.org	(630) 584-1919
CISPI	Cast Iron Soil Pipe Institute www.cispi.org	(423) 892-0137
CLFMI	Chain Link Fence Manufacturers Institute www.chainlinkinfo.com (under construction)	(301) 596-2584
CPA	Composite Panel Association (Formerly: National Particleboard Association) www.pbmdf.com	(301) 670-0604
CPPA	Corrugated Polyethylene Pipe Association Division of Plastics Pipe Institute www.cppa-info.org	(800) 510-2772 (419) 241-2221
CRI	Carpet and Rug Institute (The) www.carpet-rug.com	(800) 882-8846 (706) 278-3176
CRSI	Concrete Reinforcing Steel Institute www.crsi.org	(847) 517-1200
CSA	CSA International (Formerly: IAS - International Approval Services) Division of Canadian Standards Association www.iasapprovals.org	(216) 524-4990
CSI	Construction Specifications Institute (The) www.csinet.org	(800) 689-2900 (703) 684-0300
CSSB	Cedar Shake & Shingle Bureau www.cedarbureau.org	(604) 462-8961
CTI	Cooling Tower Institute www.cti.org	(281) 583-4087
DHI	Door and Hardware Institute www.dhi.org	(703) 222-2010
EIA/TIA	Electronic Industries Alliance/Telecommunications Industry Association www.eia.org	(703) 907-7500
EIMA	EIFS Industry Members Association www.eifsfacts.com	(800) 294-3462 (770) 968-7945
EJMA	Expansion Joint Manufacturers Association, Inc. www.ejma.org	(914) 332-0040
FCI	Fluid Controls Institute www.fluidcontrolsinstitute.org	(216) 241-7333
FGMA	Flat Glass Marketing Association	

	(See GANA)	
FM	Factory Mutual System (See FMG)	
FMG	FM Global (Formerly: FM - Factory Mutual System) www.fmglobal.com	(401) 275-3000
GA	Gypsum Association www.gypsum.org	(202) 289-5440
GANA	Glass Association of North America (Formerly: FGMA - Flat Glass Marketing Association) www.glasswebsite.com/gana	(785) 271-0208
GRI	Geosynthetic Research Institute www.drexel.edu/gri	(610) 522-8440
GTA	Glass Tempering Division of Glass Association of North America (See GANA)	
HI	Hydraulic Institute	(888) 786-7744 (973) 267-9700
HI	Hydronics Institute Division of Gas Appliance Manufacturers Association www.gamanet.org	(908) 464-8200
HMMA	Hollow Metal Manufacturers Association Division of National Association of Architectural Metal Manufacturers (See NAAMM)	
HPVA	Hardwood Plywood & Veneer Association www.hpva.org	(703) 435-2900
HPW	H. P. White Laboratory, Inc.	(410) 838-6550
IAS	International Approval Services (See CSA International)	
ICEA	Insulated Cable Engineers Association, Inc. www.icea.net	(508) 394-4424
ICRI	International Concrete Repair Institute www.icri.org	(703) 450-0116
IEC	International Electrotechnical Commission www.iec.ch	41 22 919 02 11
IEEE	Institute of Electrical and Electronics Engineers, Inc. (The) www.ieee.org	(212) 419-7900

IESNA	Illuminating Engineering Society of North America (The) www.iesna.org	(212) 248-5000
IGCC	Insulating Glass Certification Council www.igcc.org	(315) 938-7444
ILI	Indiana Limestone Institute of America, Inc. www.iliai.com	(812) 275-4426
IRI	HSB Industrial Risk Insurers www.industrialrisk.com	(800) 520-7300 (860) 520-7300
ITS	Intertek Testing Services www.itsglobal.com	(800) 345-3851 (607) 753-6711
IWS	Insect Screening Weavers Association (Now defunct)	
KCMA	Kitchen Cabinet Manufacturers Association www.kcma.org	(703) 264-1690
LGSI	Light Gage Structural Institute www.loseke.com	(972) 625-4560
LMA	Laminating Materials Association (Formerly: ALA - American Laminators Association) www.lma.org	(201) 664-2700
LPI	Lightning Protection Institute www.lightning.org	(800) 488-6864 (847) 577-7200
LSGA	Laminated Safety Glass Association (See GANA)	
MBMA	Metal Building Manufacturers Association www.mbma.com	(216) 241-7333
MFMA	Maple Flooring Manufacturers Association www.maplefloor.org	(847) 480-9138
MFMA	Metal Framing Manufacturers Association	(312) 644-6610
MHIA	Material Handling Industry of America www.mhia.org	(800) 345-1815 (704) 676-1190
MIA	Marble Institute of America www.marble-institute.com	(614) 228-6194
ML/SFA	Metal Lath/Steel Framing Association (See SSMA)	
MSS	Manufacturers Standardization Society of The Valve and Fittings Industry, Inc. www.mss-hq.com	(703) 281-6613

NAAMM	National Association of Architectural Metal Manufacturers www.naamm.org	(312) 332-0405
NAAMM	North American Association of Mirror Manufacturers (See GANA)	
NACE	NACE International (National Association of Corrosion Engineers International) www.nace.org	(281) 228-6200
NAIMA	North American Insulation Manufacturers Association (The) www.naima.org	(703) 684-0084
NAMI	National Accreditation and Management Institute, Inc.	(304) 258-5100
NAPM	National Association of Photographic Manufacturers (See PIMA)	
NBGQA	National Building Granite Quarries Association, Inc. www.nbgqa.com	(800) 557-2848
NCMA	National Concrete Masonry Association www.ncma.org	(703) 713-1900
NCPI	National Clay Pipe Institute www.ncpi.org	(414) 248-9094
NCTA	National Cable Television Association www.ncta.com	(202) 775-3669
NEBB	National Environmental Balancing Bureau www.nebb.org	(301) 977-3698
NECA	National Electrical Contractors Association www.necanet.org	(301) 657-3110
NeLMA	Northeastern Lumber Manufacturers' Association www.nelma.org	(207) 829-6901
NEMA	National Electrical Manufacturers Association www.nema.org	(703) 841-3200
NETA	InterNational Electrical Testing Association www.electricnet.com/neta	(303) 697-8441
NFPA	National Fire Protection Association www.nfpa.org	(800) 344-3555 (617) 770-3000
NFRC	National Fenestration Rating Council www.nfrc.org	(301) 589-6372
NGA	National Glass Association www.glass.org	(703) 442-4890

NHLA	National Hardwood Lumber Association www.natlhardwood.org	(901) 377-1818
NLGA	National Lumber Grades Authority www.nlga.org	(604) 524-2393
NOFMA	National Oak Flooring Manufacturers Association www.nofma.org	(901) 526-5016
NPA	National Particleboard Association (See CPA)	
NRCA	National Roofing Contractors Association www.nrca.net	(800) 323-9545 (847) 299-9070
NRMCA	National Ready Mixed Concrete Association www.nrmca.org	(301) 587-1400
NSA	National Stone Association www.aggregates.org	(800) 342-1415 (202) 342-1100
NSF	NSF International (National Sanitation Foundation International) www.nsf.org	(800) 673-6275 (734) 769-8010
NTMA	National Terrazzo & Mosaic Association (The) www.ntma.com	(800) 323-9736 (703) 779-1022
NWWDA	National Wood Window and Door Association (See WDMA)	
PCI	Precast/Prestressed Concrete Institute www.pci.org	(312) 786-0300
PDCA	Painting and Decorating Contractors of America www.pdca.com	(800) 332-7322 (703) 359-0826
PDI	Plumbing & Drainage Institute www.pdionline.org	(800) 589-8956 (508) 230-3516
PGI	PVC Geomembrane Institute/Technology Program University of Illinois-Urbana Champaign //pgi-tp.ce.uiuc.edu	(217) 333-3929
PIMA	Photographic & Imaging Manufacturers Association (Formerly: NAPM - National Association of Photographic Manufacturers) www.pima.net	(914) 698-7603
RCSC	Research Council on Structural Connections c/o AISC www.boltcouncil.org	
RFCI	Resilient Floor Covering Institute	(Contact by mail only)

RIS	Redwood Inspection Service Division of the California Redwood Association www.calredwood.org	(888) 225-7339 (415) 382-0662
RMA	Rubber Manufacturers Association www.rma.org	(800) 220-7620 (202) 682-4800
SAE	SAE International www.sae.org	(724) 776-4841 (724) 776-4960 (publications)
SDI	Steel Deck Institute www.sdi.org	(847) 462-1930
SDI	Steel Door Institute www.steeldoor.org	(440) 899-0010
SEFA	Scientific Equipment and Furniture Association www.sefalabfurn.com	(843) 689-6878
SGCC	Safety Glazing Certification Council www.sgcc.org	(315) 938-7444
SIGMA	Sealed Insulating Glass Manufacturers Association www.sigmaonline.org/sigma	(312) 644-6610
SJI	Steel Joist Institute www.steeljoist.org	(843) 626-1995
SMA	Screen Manufacturers Association	(561) 533-0991
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association www.smacna.org	(703) 803-2980
SPI	The Society of the Plastics Industry, Inc. www.plasticsindustry.org	(202) 974-5200
SPIB	Southern Pine Inspection Bureau (The) www.spib.org	(850) 434-2611
SPI/SPFD	The Society of the Plastics Industry, Inc. Spray Polyurethane Foam Division (See SPI)	
SPRI	SPRI (Single Ply Roofing Institute) www.spri.org	(781) 444-0242
SSINA	Specialty Steel Industry of North America www.ssina.com	(800) 982-0355 (202) 342-8630
SSMA	Steel Stud Manufacturers Association	(312) 456-5590

	(Formerly: ML/SFA - Metal Lath/Steel Framing Association) www.ssma.com	
SSPC	SSPC: The Society for Protective Coatings www.sspc.org	(800) 837-8303 (412) 281-2331
STI	Steel Tank Institute www.steeltank.com	(847) 438-8265
SWI	Steel Window Institute www.steelwindows.com	(216) 241-7333
SWRI	Sealant, Waterproofing & Restoration Institute www.swrionline.org	(816) 472-7974
TCA	Tile Council of America, Inc. www.tileusa.com	(864) 646-8453
TPI	Truss Plate Institute	(608) 833-5900
TPI	Turfgrass Producers International www.turfgrasssod.org	(800) 405-8873 (847) 705-9898
UFAC	Upholstered Furniture Action Council www.ufac.org	(336) 885-5065
UL	Underwriters Laboratories Inc. www.ul.com	(800) 704-4050 (847) 272-8800
UNI	Uni-Bell PVC Pipe Association //members.aol.com/unibell	(972) 243-3902
USG	United States Gypsum Company A Subsidiary of USG Corporation www.usg.com	(800) 874-4968 (312) 606-4000
USITT	United States Institute for Theatre Technology, Inc. www.culturenet.ca/usitt	(800) 938-7488 (315) 463-6463
USP	U.S. Pharmacopeia www.usp.org	(800) 822-8772 (301) 881-0666
WASTEC	Waste Equipment Technology Association www.wastec.org	(800) 424-2869 (202) 244-4700
WCLIB	West Coast Lumber Inspection Bureau www.wclib.org	(800) 283-1486 (503) 639-0651
WCMA	Window Covering Manufacturers Association (Formerly: AWCMA - American Window Covering Manufacturers Association) www.windowcoverings.org	(212) 661-4261
WDMA	Window & Door Manufacturers Association	(800) 223-2301

	(Formerly: NWWDA - National Wood Window and Door Association) www.wdma.com	(847) 299-5200
WIC	Woodwork Institute of California www.wicnet.org	(916) 372-9943
WMMPA	Wood Moulding & Millwork Producers Association www.wmmpa.com	(800) 550-7889 (530) 661-9591
WWPA	Western Wood Products Association www.wwpa.org	(503) 224-3930

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01 50 00 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes requirements for temporary facilities and controls, including temporary utilities, support facilities, and security and protection facilities.

1.3 DEFINITIONS

A. Permanent Enclosure: As determined by Architect, permanent or temporary roofing is complete, insulated, and weather-tight; exterior walls are insulated and weather-tight; and all openings are closed with permanent construction or substantial temporary closures.

1.4 USE CHARGES

A. General: Cost or use charges for temporary facilities are not chargeable to Owner or Architect and shall be included in the Contract Sum. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Architect, testing and inspecting agencies and personnel of authorities having jurisdiction.

B. Water Service: Obtain and pay for all permits and periodic charges to provide water service to the temporary and construction facilities.

C. Electric Power Service: Obtain and pay for all permits and periodic charges to provide electric power to the temporary and construction facilities.

1.5 QUALITY ASSURANCE

A. Standards: Comply with ANSI A10.6, NECA's "Temporary Electrical Facilities," and NFPA 241.

1. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.6 PROJECT CONDITIONS

A. Temporary Utilities: At earliest feasible time, when acceptable to Owner, change over from use of temporary service to use of permanent service.

1. Temporary Use of Permanent Facilities: Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

B. Conditions of Use: The following conditions apply to use of temporary services and facilities by all parties engaged in the Work:

1. Keep temporary services and facilities clean and neat.
2. Relocate temporary services and facilities as required by progress of the Work.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Provide new materials. Undamaged, previously used materials in serviceable condition may be used if approved by Architect. Provide materials suitable for use intended.

B. Walkways: Comply with Division 2 Section "Cement Concrete Pavement."

C. Lumber and Plywood: Comply with requirements in Division 6 Section " Miscellaneous Carpentry."

D. Water: Potable.

2.2 EQUIPMENT

A. Field Offices: Prefabricated, mobile units, or job-built construction with lockable entrances, operable windows, and serviceable finishes; heated and air conditioned; on foundations adequate for normal loading.

B. Job Signage: 4’ x 8’ exterior grade plywood, double sided, in layout and lettering/logo(s)/etc. as indicated by Architect, including, but not limited to, Owner and/or Occupant name, address, etc., Architects and Consultants name, address, etc., and General Contractor name, address, etc.

C. Fire Extinguishers: Hand carried, portable, UL rated. Provide class and extinguishing agent as indicated or a combination of extinguishers of NFPA-recommended classes for exposures.

1. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.

D. Self-Contained Toilet Units: Single-occupant units of chemical, aerated recirculation, or combustion type; vented; fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.

E. Drinking-Water Fixtures: Containerized, tap-dispenser, bottled-water, drinking-water units, including paper cup supply.

1. Where power is accessible, provide electric water coolers to maintain dispensed water temperature at 45 to 55 deg F.

F. Heating Equipment: Unless Owner authorizes use of permanent heating system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.

1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
2. Heating Units: Listed and labeled, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use for type of fuel being consumed.

G. Electrical Outlets: Properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120-V plugs into higher-voltage outlets; equipped with ground-fault circuit interrupters, reset button, and pilot light.

H. Power Distribution System Circuits: Where permitted and overhead and exposed for surveillance, wiring circuits, not exceeding 125-V ac, 20-A rating, and lighting circuits may be nonmetallic sheathed cable.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.

B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: Engage appropriate local utility company to install temporary service. Where utility company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with utility company recommendations.

1. Provide adequate capacity at each stage of construction. Before temporary utility is available, provide trucked-in services.
2. Obtain easements to bring temporary utilities to Project site where Owner's easements cannot be used for that purpose.

B. Sewers and Drainage: If sewers are available, provide temporary connections to remove effluent that can be discharged lawfully. If sewers are not available or cannot be used, provide drainage ditches, dry wells, stabilization ponds, and similar facilities. If neither sewers nor drainage facilities can be lawfully used for discharge of effluent, provide containers to remove and dispose of effluent off-site in a lawful manner.

1. Filter out excessive soil, construction debris, chemicals, oils, and similar contaminants that might clog sewers or pollute waterways before discharge.
2. Connect temporary sewers to municipal system as directed by sewer department officials.
3. Maintain temporary sewers and drainage facilities in a clean, sanitary condition. After heavy use, restore normal conditions promptly.
4. Provide temporary filter beds, settlement tanks, separators, and similar devices to purify effluent to levels acceptable to authorities having jurisdiction.

C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction until permanent water service is in use. Sterilize temporary water piping before use.

D. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking-water fixtures. Comply with regulations and health codes for type, number, location, operation, and maintenance of fixtures and facilities.

1. Disposable Supplies: Provide toilet tissue, paper towels, paper cups, and similar disposable materials for each facility. Maintain adequate supply. Provide covered waste containers for disposal of used material.
2. Toilets: Install self-contained toilet units. Shield toilets to ensure privacy. Provide separate facilities for male and female personnel.
3. Wash Facilities: Install wash facilities supplied with potable water at convenient locations for personnel who handle materials that require wash up. Dispose of drainage properly. Supply cleaning compounds appropriate for each type of material handled.

4. Drinking-Water Facilities: Provide bottled-water, drinking-water units.

    a. Where power is accessible, provide electric water coolers to maintain dispensed water temperature at 45 to 55 deg F.

E. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment from that specified that will not have a harmful effect on completed installations or elements being installed.

1. Maintain a minimum temperature of 50 deg F in permanently enclosed portions of building for normal construction activities, and 65 deg F for finishing activities and areas where finished Work has been installed.

F. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment from that specified that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.

G. Electric Power Service: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period. Include meters, transformers, overload-protected disconnecting means, automatic ground-fault interrupters, and main distribution switchgear.

1. Install electric power service underground, unless overhead service must be used.
2. Install power distribution wiring overhead and rise vertically where least exposed to damage.

H. Electric Distribution: Provide receptacle outlets adequate for connection of power tools and equipment.

1. Provide waterproof connectors to connect separate lengths of electrical power cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.

I. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations and traffic conditions.

1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
2. Provide one 100-W incandescent lamp per 500 sq. ft., uniformly distributed, for general lighting, or equivalent illumination.
3. Provide one 100-W incandescent lamp every 50 feet in traffic areas.
4. Provide one 100-W incandescent lamp per story in stairways and ladder runs, located to illuminate each landing and flight.
5. Install exterior-yard site lighting that will provide adequate illumination for construction operations, traffic conditions, and signage visibility when the Work is being performed.

J. Telephone Service: Provide temporary telephone service throughout construction period for common-use facilities used by all personnel engaged in construction activities. Install separate telephone line for each field office and first-aid station.

1. Provide additional telephone lines for the following:

a. In field office with more than two occupants, install a telephone for each additional occupant or pair of occupants.
b. Provide a dedicated telephone line for each facsimile machine and computer with modem in each field office.

2. At each telephone, post a list of important telephone numbers, including police and fire departments ambulance service Contractor's home office Architect's office Engineers' offices Owner's office and principal subcontractors' field and home offices.
3. Provide voice-mail service on superintendent's telephone.
4. Provide a portable cellular telephone for superintendent's use in making and receiving telephone calls when away from field office.

3.3 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:

1. Locate field offices, storage sheds, sanitary facilities, and other temporary construction and support facilities for easy access.
2. Provide incombustible construction for offices, shops, and sheds located within construction area or within 30 feet of building lines. Comply with NFPA 241.
3. Maintain support facilities until near Substantial Completion. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

B. Job Signage:
1. Locate and orient job signage as coordinated with Architect.
2. Furnish\install job signage complete with associated support members and hardware as required; paint support members to coordinate with job signage.

3. No other signage may be posted or attached, and/or adjacent, to job signage to ensure non-clutter of information.

C. Dewatering Facilities and Drains: Comply with requirements in applicable Division 2 Sections for temporary drainage and dewatering facilities and operations not directly associated with construction activities included in individual Sections. Where feasible, use same facilities. Maintain Project site, excavations, and construction free of water.

D. Project Identification and Temporary Signs: Prepare Project identification and other signs in sizes indicated. Install signs where indicated to inform public and persons seeking entrance to Project. Do not permit installation of unauthorized signs.

1. Engage an experienced sign painter to apply graphics for Project identification signs. Comply with details indicated.
2. Prepare temporary signs to provide directional information to construction personnel and visitors.

E. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Containerize and clearly label hazardous, dangerous, or unsanitary waste materials separately from other waste. Comply with Division 1 Section "Execution Requirements " for progress cleaning requirements.

1. If required by authorities having jurisdiction, provide separate containers, clearly labeled, for each type of waste material to be deposited.
2. Develop a waste management plan for Work performed on Project. Indicate types of waste materials Project will produce and estimate quantities of each type. Provide detailed information for on-site waste storage and separation of recyclable materials. Provide information on destination of each type of waste material and means to be used to dispose of all waste materials.

F. Temporary Stairs: Until permanent stairs are available, provide temporary stairs where ladders are not adequate. Cover finished, permanent stairs with protective covering of plywood or similar material so finishes will be undamaged at time of acceptance.

G. Lifts and Hoists: Provide facilities for hoisting materials and personnel. Truck cranes and similar devices used for hoisting materials are considered “tools and equipment” and not temporary facilities.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects. Avoid using tools and equipment that produce harmful noise. Restrict use of noisemaking tools and equipment to hours that will minimize complaints from persons or firms near Project site.

B. Stormwater Control: Provide earthen embankments and similar barriers in and around excavations and sub-grade construction, sufficient to prevent flooding by runoff of stormwater from heavy rains.

C. Security Enclosure and Lockup: Install substantial temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.

D. Barricades, Warning Signs, and Lights: Comply with standards and code requirements for erecting structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and public of possible hazard. Where appropriate and needed, provide lighting, including flashing red or amber lights.

E. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.

1. Where heating or cooling is needed and permanent enclosure is not complete, provide insulated temporary enclosures. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
2. Vertical Openings: Close openings of 25 sq. ft. or less with plywood or similar materials.
3. Horizontal Openings: Close openings in floor or roof decks and horizontal surfaces with load-bearing, wood-framed construction.
4. Install tarpaulins securely using fire-retardant-treated wood framing and other materials.

F. Temporary Partitions: Erect and maintain dustproof partitions and temporary enclosures to limit dust and dirt migration and to separate areas from fumes and noise.

1. Construct dustproof, floor-to-ceiling partitions of not less than nominal 4-inch studs, 2 layers of 3-mil polyethylene sheets, inside and outside temporary enclosure. Cover floor with 2 layers of 3-mil polyethylene sheets, extending sheets 18 inches up the side walls. Overlap and tape full length of joints. Cover floor with 3/4-inch fire-retardant plywood.

    a. Construct a vestibule and airlock at each entrance to temporary enclosure with not less than 48 inches between doors. Maintain water-dampened foot mats in vestibule.
2. Protect air-handling equipment.

G. Temporary Fire Protection: Until fire-protection needs are supplied by permanent facilities, install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.

1. Provide fire extinguishers, installed on walls on mounting brackets, visible and accessible from space being served, with sign mounted above.

    a. Locate fire extinguishers where convenient and effective for their intended purpose; provide not less than one extinguisher on each floor at or near each usable stairwell.

2. Store combustible materials in containers in fire-safe locations.
3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire-protection facilities, stairways, and other access routes for firefighting. Prohibit smoking in hazardous fire-exposure areas.
4. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition.
5. Provide hoses for fire protection of sufficient length to reach construction areas. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

3.5 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage caused by freezing temperatures and similar elements.

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
2. Prevent water-filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.

C. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are the property of Contractor. Owner reserves right to take possession of Project identification signs.
2. At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements in Division 1 Section "Closeout Procedures."

END OF SECTION 01500

SECTION 01 60 00 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following administrative and procedural requirements: Selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties.

B. Related Sections include the following:

1. Division 1 Section "References" for applicable industry standards for products specified.
2. Division 1 Section "Closeout Procedures" for submitting warranties for contract closeout.
3. Divisions 2 through 16 Sections for specific requirements for warranties on products and installations specified to be warranted.

1.2 DEFINITIONS

A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation, shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
2. New Products: Items that have not previously been incorporated into another project or facility, except that products consisting of recycled-content materials are allowed, unless explicitly stated otherwise. Products salvaged or recycled from other projects are not considered new products.

B. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

C. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.

D. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.

1.3 SUBMITTALS

A. Substitution Requests: Submit one copy of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Substitution Request Form: Use CSI Form 13.1A or a form provided by Owner or the form provided at end of Section.
2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

    a. Statement indicating why specified material or product cannot be provided.
    b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
    c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
    d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
    e. Samples, where applicable or requested.
    f. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
    g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
    h. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.
    i. Detailed comparison of Contractor's Construction Schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.
    j. Cost information, including a proposal of change, if any, in the Contract Sum.
    k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
    l. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 7 days of receipt of request, or 3 days of receipt of additional information or documentation, whichever is later.

    a. Form of Acceptance: Change Order.
    b. Use product specified if Architect cannot make a decision on use of a proposed substitution within time allocated.

1.4 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
5. Store products to allow for inspection and measurement of quantity or counting of units.
6. Store materials in a manner that will not endanger Project structure.
7. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
8. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
9. Protect stored products from damage.

1.6 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
2. Refer to Divisions 2 through 16 Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Division 1 Section "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT OPTIONS

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged, and unless otherwise indicated, that are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Architect will make selection.
5. Where products are accompanied by the term "match sample," sample to be matched is Architect's.
6. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.

B. Product Selection Procedures: Procedures for product selection include the following:

1. Product: Where Specification paragraphs or subparagraphs titled "Product" name a single product and manufacturer, provide the product named.

    a. Comparables, Equivalents, Equals or Substitutions may not be considered.

2. Manufacturer/Source: Where Specification paragraphs or subparagraphs titled "Manufacturer" or "Source" name single manufacturers or sources, provide a product by the manufacturer or from the source named that complies with requirements.

    a. Comparables, Equivalents, Equals or Substitutions may not be considered.

3. Products: Where Specification paragraphs or subparagraphs titled "Products" introduce a list of names of both products and manufacturers, provide one of the products listed that complies with requirements.

    a. Comparables, Equivalents, Equals or Substitutions may not be considered.

4. Manufacturers: Where Specification paragraphs or subparagraphs titled "Manufacturers" introduce a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements.

    a. Comparables, Equivalents, Equals or may not be considered.

5. Product Options: Where Specification paragraphs titled "Product Options" indicate that size, profiles, and dimensional requirements on Drawings are based on a specific product or system, provide the specific product or system indicated .

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 60 00

SECTION 01 70 00 - EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:

1. Construction layout.
2. Field engineering and surveying.
3. General installation of products.
4. Coordination of Owner-installed products.
5. Progress cleaning.
6. Starting and adjusting.
7. Protection of installed construction.
8. Correction of the Work.

B. Related Sections include the following:

1. Division 1 Section "Project Management and Coordination" for procedures for coordinating field engineering with other construction activities.
2. Division 1 Section "Submittal Procedures" for submitting surveys.
3. Division 1 Section "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.

1.3 SUBMITTALS

A. Certificates: Submit certificate signed by professional engineer certifying that location and elevation of improvements comply with requirements.

B. Certified Surveys: Submit two copies signed by professional engineer.

1.4 QUALITY ASSURANCE

A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.

1. Before construction, verify the location and points of connection of utility services.

B. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
2. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
3. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
4. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Existing Utility Information: Furnish information to Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents. Submit requests on CSI Form 13.2A, "Request for Interpretation."

3.3 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.

B. General: Engage a professional engineer to lay out the Work using accepted surveying practices.

1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
2. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
3. Inform installers of lines and levels to which they must comply.
4. Check the location, level and plumb, of every major element as the Work progresses.
5. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
6. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.

C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and invert elevations.

D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.

E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

3.4 FIELD ENGINEERING

A. Identification: Owner will identify existing benchmarks, control points, and property corners.

B. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

1. Do not change or relocate existing benchmarks or control points without prior written approval of Architect. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect before proceeding.
2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.

C. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.

1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

3.5 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
4. Maintain minimum headroom clearance of 8 feet in spaces without a suspended ceiling.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
2. Allow for building movement, including thermal expansion and contraction.

F. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

G. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.6 OWNER-INSTALLED PRODUCTS

A. Site Access: Provide access to Project site for Owner's construction forces.

B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's construction forces.

1. Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.

2. Preinstallation Conferences: Include Owner's construction forces at preinstallation conferences covering portions of the Work that are to receive Owner's work. Attend preinstallation conferences conducted by Owner's construction forces if portions of the Work depend on Owner's construction.

3.7 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F.
3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills promptly.
2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Cutting and Patching: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

1. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.

H. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.

I. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

J. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

K. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.8 STARTING AND ADJUSTING

A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.

C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Division 1 Section "Quality Requirements."

3.9 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions for temperature and relative humidity.

3.10 CORRECTION OF THE WORK

A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements in Division 1 Section "Cutting and Patching."

1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Restore permanent facilities used during construction to their specified condition.

C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 01700

SECTION 01 77 00 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Inspection procedures.
2. Project Record Documents.
3. Operation and maintenance manuals.
4. Warranties.
5. Instruction of Owner's personnel.
6. Final cleaning.

B. See Division 1 Section "Payment Procedures" for requirements for Applications for Payment for Substantial and Final Completion.

C. See Division 1 Section "Project Record Documents" for requirements for As Built Drawings and Specifications.

D. See Division 1 Section "Operation and Maintenance Data" for submitting OP&M manuals and other requirements.

E. See Division 1 Section "Construction Progress Documentation" for submitting Final Completion construction photographs and negatives.

F. See Divisions 2 through 33 Sections for specific closeout and special cleaning requirements for products of those Sections.

1.3 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.

1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
2. Advise Owner of pending insurance changeover requirements.
3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.

5. Prepare and submit Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
7. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
8. Complete startup testing of systems.
9. Submit test/adjust/balance records.
10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
11. Advise Owner of changeover in heat and other utilities.
12. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
13. Complete final cleaning requirements, including touchup painting.
14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, which must be completed or corrected before certificate will be issued.

1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Final Completion.

1.4 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:

1. Submit a final Application for Payment according to Division 1 Section "Payment Procedures."
2. Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.5 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Preparation: Submit three copies of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction. Use CSI Form 14.1A.

1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.

1.6 WARRANTIES

A. Submittal Time: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.

B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.

1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

C. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:

    a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
    b. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
    c. Remove tools, construction equipment, machinery, and surplus material from Project site.
    d. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
    e. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
    f. Sweep concrete floors broom-clean in unoccupied spaces.
    g. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
    h. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
    i. Remove labels that are not permanent.
    j. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.

        1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.

    k. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
    l. Replace parts subject to unusual operating conditions.
    m. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
    n. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
    o. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
    p. Leave Project clean and ready for occupancy.

C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION 01770

SECTION 03 30 00 – CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies cast-in place concrete, including formwork, reinforcement, concrete materials, mix design, placement procedures, and finishes.

1.2 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume.

1.3 SUBMITTALS

A. Product Data: For each type of manufactured material and product indicated.

B. Design Mixes: For each concrete mix. Include mix designs when characteristics of materials project conditions, weather, test results, or other circumstances warrant adjustments.

C. Steel Reinforcement Shop Drawings: Details of fabrication, bending, and placement, prepared according to ACI 315, "Details and Detailing of Concrete Reinforcement." Include material, grade, bar schedules, stirrup spacing, bent bar diagrams, arrangement, and supports of concrete reinforcement. Include special reinforcement required for openings through concrete structures.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed concrete Work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.

C. ACI Publications: Comply with the following, unless more stringent provisions are indicated:
1. ACI 301, "Specification for Structural Concrete."

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle steel reinforcement to prevent bending and damage.
1. Avoid damaging steel reinforcement when placed on site.

PART 2 - PRODUCTS

2.1 FORM-FACING MATERIALS

A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
1. Plywood, metal, or other approved panel materials.

B. Form Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely effect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

2.2 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615, Grade 60, deformed.

B. Deformed –Steel Welded Wire Fabric: ASTM A 497, flat sheet.

2.3 CONCRETE MATERIALS

A. Portland Cement: ASTM C 150, Type I.

B. Normal Weight Aggregate: ASTM C 33, uniformly graded, and as follows:
1. Nominal Maximum Aggregate Size: Size: 1-1/2 inches.

C. Water: Potable and complying with ASTM C 94.

2.4 CURING MATERIALS – NOT PERMITTED

2.5 CONCRETE MIXING

A. Ready Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94 and ASTM C 1116, and furnish batch ticket information.

PART 3 - EXECUTION

3.1 FORMWORK

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until concrete structure can support such loads.

B. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical. Kerf wood inserts for forming keyways, reglets, recesses, and the like, for easy removal.

C. Chamfer exterior corners and edges of permanently exposed concrete.

3.2 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials.

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

3.3 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.

B. Before placing concrete, water may be added at Project site, subject to limitations of ACI 301.

C. Deposit concrete continuously or in layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as specified. Deposit concrete to avoid segregation.

3.4 FINISHING- FORMED SURFACES

A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defective areas repaired and patched. Remove fins and other projections exceeding ACI 347R limits for class of surface specified.

B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defective areas. Remove fins and other projections exceeding 1/8 inch in height.

3.5 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 305R.

3.6 JOINT FILLING

A. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.

3.7 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when approved by Engineer. Remove and replace concrete that cannot be repaired and patched to Engineer's approval.

B. Perform structural repairs of concrete, subject to Engineer/Engineer’s approval, using epoxy adhesive and patching mortar.

C. Repair materials and installation not specified above may be used, subject to Engineer/Engineer’s approval.

3.8 FIELD QUALITY CONTROL

A. Testing Agency: Contractor shall engage a qualified independent testing and inspecting agency to sample materials, perform tests, and submit test reports during concrete placement. Sampling and testing for quality control shall include pile caps, slabs, grade beams, pit walls, pavement, curbs and any other miscellaneous items not specified but integral to the work. Tests shall include compression tests, slump tests

B. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.

END OF SECTION 03300

SECTION 03 35 00 – CONCRETE FINISHING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Decorative concrete floor finish system as specified or scheduled.
   1. Polymer stain for interior and exterior horizontal and vertical surfaces as specified or scheduled.
   2. Acrylic Polymer Wax for interior concrete floor surfaces as specified or scheduled.
   3. Concrete floor sealer as specified or scheduled.
   4. Clear topcoats for concrete finishes as specified or scheduled.
   5. Clear penetrant for concrete finishes as specified or scheduled.
   6. UV cured floor coating finish for interior concrete floors.
   7. Cleaners and strippers for surface preparation as required.

1.2 RELATED SECTIONS

A. Section 03300 - Cast-in-Place Concrete.

B. Section 09960 - High Performance Coatings.

1.3 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Surface preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.

C. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

D. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.

E. Installer's Project References: Submit list of successfully completed projects, including project name and location, name of architect, and type and quantity of decorative concrete floor finish systems applied.

F. Maintenance Instructions: Submit manufacturer's maintenance and cleaning instructions.

1.4 QUALITY ASSURANCE

A. Installer Qualifications:
   1. Successful experience in application of similar decorative concrete floor finish systems.
   2. Employ persons trained for application of decorative concrete floor finish systems.

B. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
   1. Finish areas designated by Architect.
   2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
   3. Refinish mock-up area as required to produce acceptable work.

C. Single Source Responsibility: Concrete floor finish materials shall be products of a single manufacturer.

D. -installation Meeting: Convene a meeting before the start of the application of concrete floor finish system. Require attendance of parties directly affecting work of this section, including Contractor, Architect, and applicator. Review surface preparation, application, protection, and coordination with other work.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

C. Concrete Floor Wax and Concrete Floor Sealer: Keep away from ignition sources. Do not allow to freeze.

D. Handling: Protect materials during handling and application to prevent damage or contamination.

1.6 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

B. Exterior Surfaces: Do not apply materials in wet weather.

C. Concrete Floor Wax: Do not apply when air or surface temperature is below 55 degrees F (13 degrees C).

D. Concrete Floor Stain: Do not apply when air or surface temperature is below 40 degrees F (4 degrees C).

E. Concrete Floor Sealer: Do not apply when air or surface temperature is below 55 degrees F (13 degrees C).

1.7 SEQUENCING

A. Prepare surface and apply concrete floor stain after other interior finish work is completed and before baseboards and trim are installed.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: EPMAR Corporation, which is located at: 13240 Barton Circle ; Whittier, CA 90605-3254; Tel: 562-236-1175; Email: request info (villaw@quakerchem.com); Web: www.epmar.com

B. Substitutions: Not permitted.

C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 CONCRETE FLOOR STAIN

A. Product: Kemiko Stone Tone Stain as manufactured by Epmar Corporation.

1. Type: Combination of acid solution, wetting agents, and metallic ions. When mixed with water, chemically combines with Portland cement to form permanent colors.
2. Color: Golden Wheat.

2.3 CONCRETE FLOOR FINISH

A. Acrylic Polymer Wax: Kemiko Easy Shine Mop On as manufactured by Epmar Corporation.
   1. Type: A low-VOC single component waterborne acrylic polymer wax. Designed to repel water, reduce scuffing and marring, allows substrate to breath, is low odor, and produces a deep rich shine.
   2. Clear gloss.

B. Floor Sealer: Kemiko Stone Tone Sealer II as manufactured by Epmar Corporation.
   1. Type: Acrylic water-based urethane clear sealer.
   2. Solids Content: 30 percent.
   3. Non-yellowing.
   4. Resistant to blush.
   5. Clear gloss.
   6. VOC compliant.
   7. Quick drying.

C. Clear Topcoat: High Gloss Clear Epoxy.
   1. Product: Kemiko SS3700 WB.
   2. Type: High-gloss, quick-dry, amine-cured, water-extended, epoxy coating.
   3. Color: White.

2.4 CLEANER/ STRIPPER

A. Water Base Cleaner (alkaline concentrate in water): Kemiko Neutra Clean as manufactured by Epmar Corporation.
   1. Type: Industrial strength, low VOC, high performance water base sodium metasilicate cleaner for the preparation of bare concrete and coated substrates.
   2. Biodegradable with low odor.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Protection:
   1. Protect walls and surrounding surfaces not to receive decorative concrete floor finish.
   2. Do not allow products to come in contact with wood or metal surfaces.

D. Concrete shall be as specified in Section 03300. Verify concrete is a minimum of 28 days old.

E. Confirm that concrete surface is clean, dry, structurally sound, and free from dirt, dust, oil, grease, solvents, paint, wax, asphalt, concrete curing compounds, sealing compounds, surface hardeners, bond breakers, adhesive residue, and other surface contaminants.

F. Do not acid wash or use heavy alkali cleaners.

3.3 STRIPPING

A. Bare Concrete: Apply water base stripper to substrate and let stand for 2 to 3 minutes. Work into surface with brooms, brushes or floor scrubbing machines. Do not allow stripper to dry on floor. Rinse with clean water and repeat stripping operation until surface is free of wax contaminants. Substrate shall be allowed to dry thoroughly prior to re-coating application.

B. Existing Coatings/Sealers: Apply water base stripper to substrate and let stand for 2 to 3 minutes. Do not allow cleaner to dry on floor. Rinse with clean water and repeat cleaning operation until substrate is free of contaminants. Substrate shall be allowed to dry thoroughly prior to coating application. Stripping of acrylic sealers may result from stripping operation. Test compatibility with existing sealers if scheduled to remain.

C. Reduction:
1. Light Duty: 1 part Kemiko East Strip to 2 part water.
2. Medium Duty: 1 part Kemiko East Strip to 1 part water.
3. Heavy Duty: Applied without dilution.

3.4 CLEANING

A. Bare Concrete: Apply water base cleaner to substrate and let stand for 2 to 3 minutes. Work into surface with brooms, brushes or floor scrubbing machines. Do not allow cleaner to dry on floor. Rinse with clean water and repeat cleaning operation until substrate is free of contaminants. Substrate shall be allowed to dry thoroughly prior to coating application.

B. Existing Coatings/Sealers: Apply water base cleaner to substrate and let stand for 5 to 10 minutes. Do not allow cleaner to dry on floor. Rinse with clean water and repeat cleaning operation until substrate is free of contaminants. Substrate shall be allowed to dry thoroughly prior to coating application. Stripping of acrylic sealers may result from cleaning operation. Test compatibility with existing sealers if scheduled to remain.

C. Reduction:
1. Light Duty: 1 part Kemiko Neutra Clean to 10 part water.
2. Medium Duty: 1 part Kemiko Neutra Clean to 5 part water.
3. Heavy Duty: 1 part Kemiko Neutra Clean to 2 part water.

3.5 POLYMER STAIN APPLICATION

A. Apply polymer stain in accordance with manufacturer's instructions at locations indicated on the drawings.

B. Concrete, Plaster, and Polymer Cement Substrate:
1. Remove dirt, dust, oil, grease, and other surface contaminants before abrasive surface preparation, acid etching, and water washing.
2. Confirm surfaces are cured, dry, and free from alkali stain and laitance.
3. Verify concrete is a minimum of 28 days old.

C. Wood Substrate: Ensure surfaces are clean, dry, and free from mildew, organic matter, and surface contaminants.

D. Apply polymer stain as a stain finish.

E. Apply polymer stain as a wash finish.

F. Apply polymer stain as a faux finish.

G. Do not add thinners or dilute polymer stain.

H. Keep material containers closed when not in use to avoid contamination.

I. Use application equipment, tools, pressure settings, and techniques in accordance with manufacturer's instructions.

J. Apply polymer stain to be free of film characteristics and defects that would adversely affect performance or appearance.

K. Apply clear topcoat over polymer stain in accordance with manufacturer's instructions.

3.6 FLOOR SEALER APPLICATION

A. Apply sealer in accordance with manufacturer's instructions at locations indicated on the drawings.

B. Do not dilute sealer.

C. Apply sealer in a thin uniform film.

D. Apply second coat of sealer if required by manufacturer's instructions. Apply second coat after first coat is dry.

E. Keep sealer film build-up to a minimum.

F. Keep material containers closed when not in use to avoid contamination.

3.7 FLOOR WAX APPLICATION

A. Apply and buff wax in accordance with manufacturer's instructions at locations indicated on the drawings.

B. Keep material containers closed when not in use to avoid contamination.

3.8 PROTECTION

A. Protect decorative concrete floor finishes from damage during construction.

B. Protect concrete surfaces from foot traffic for a minimum of 24 hours.

C. Avoid washing concrete surfaces for a minimum of 48 hours.

D. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 033500

SECTION 04 00 12 - MAINTENANCE OF UNIT MASONRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes maintenance of unit masonry consisting of brick clay masonry restoration and cleaning as follows:

1. Repairing unit masonry, including replacing units.
2. Re-pointing joints.
3. Preliminary cleaning, including removing plant growth.
4. Cleaning exposed unit masonry surfaces.

1.2 DEFINITIONS

A. Low-Pressure Spray: 100 to 400 psi.

B. Medium-Pressure Spray: 400 to 800 psi..

1.3 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction testing on masonry units as follows.

1. Existing Brick: Test each type of existing masonry unit indicated for replacement, according to testing methods in ASTM C 67 for compressive strength, 24-hour cold-water absorption, 5-hour boil absorption, saturation coefficient, and initial rate of absorption (suction). Carefully remove five **e**xisting units from locations designated by Architect. Take testing samples from these units.
2. Existing Mortar: Test according to ASTM C 295, modified as agreed by testing service and Architect for Project requirements, to determine proportional composition of original ingredients, sizes and colors of aggregates, and approximate strength. Use X-ray diffraction, infrared spectroscopy, and differential thermal analysis as necessary to supplement microscopical methods. Carefully remove existing mortar from within joints at five locations designated by testing service.
3. Temporary Patch: As directed by Architect, provide temporary materials at locations from which existing samples were taken.
4. Replacement Brick: Test each proposed type of replacement masonry unit, according to sampling and testing methods in ASTM C 67 for compressive strength, 24-hour cold-water absorption, 5-hour boil absorption, saturation coefficient, and initial rate of absorption (suction).

1.4 SUBMITTALS

A. Product Data: For each type of product indicated. First paragraph below assumes manufacturer's standard-size Samples are acceptable. Revise to suit Project.

B. Samples: For each exposed product and for each color and texture specified.

1.5 QUALITY ASSURANCE

A. Restoration Specialist Qualifications: Engage an experienced masonry restoration and cleaning firm to perform work of this Section. Firm shall have completed work similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance. Experience installing standard unit masonry is not sufficient experience for masonry restoration work.

1. At Contractor's option, work may be divided between two specialist firms: one for cleaning work and one for repair work.
2. Field Supervision: Restoration specialist firms shall maintain experienced full-time supervisors on Project site during times that clay masonry restoration and cleaning work is in progress.
3. Restoration Worker Qualifications: Persons who are experienced in restoration work of types they will be performing. When masonry units are being patched, assign at least one worker among those performing patching work who is trained and certified by manufacturer of patching compound to apply its products

B. Mockups: Prepare mockups of restoration and cleaning to demonstrate aesthetic effects and set quality standards for materials and execution and for fabrication and installation.

1. Masonry Repair: Prepare sample areas for each type of masonry material indicated to have repair work performed. If not otherwise indicated, size each mockup not smaller than 2 adjacent whole units or approximately 48 inches in least dimension. Erect sample areas in existing walls unless otherwise indicated, to demonstrate quality of materials, workmanship, and blending with existing work. Include the following as a minimum:

    a. Replacement:

        1) Four brick units replaced.

    b. Patching: Three small holes at least 1 inch in diameter for each type of masonry material indicated to be patched, so as to leave no evidence of repair.

2. Re-pointing: Rake out joints in 2 separate areas each approximately 36 inches high by 48 inches wide for each type of re-pointing required and re-point one of the areas.
3. Cleaning: Clean an area approximately 25 sq. ft for each type of masonry and surface condition.

C. Preinstallation Conference: Conduct conference at Project site.

PART 2 - PRODUCTS

2.1 MASONRY MATERIALS

A. Face Brick: Provide face brick, including specially molded, ground, cut, or sawed shapes where required to complete masonry restoration work.

1. Provide units with physical properties, colors, color variation within units, surface texture, size, and shape to match existing brickwork.

a. Physical Properties per ASTM C 67:

b. For existing brickwork that exhibits a range of colors or color variation within units, provide brick that proportionally matches that range and variation rather than brick that matches an individual color within that range.

B. Building Brick: Provide building brick complying with ASTM C 62, Grade SW where in contact with earth, Grade SW, MW, or NW for concealed backup; and of same vertical dimension as face brick, for masonry work concealed from view.

2.2 MORTAR MATERIALS

A. Portland Cement: ASTM C 150, Type I or Type II, white or gray or both where required for color matching of exposed mortar.

1. Provide cement containing not more than 0.60 percent total alkali when tested according to ASTM C 114.

B. Hydrated Lime: ASTM C 207, Type S.

C. Mortar Sand: ASTM C 144 unless otherwise indicated.

1. Color: Provide natural sand or ground marble, granite, or other sound stone of color necessary to produce required mortar color.
2. For pointing mortar, provide sand with rounded edges.
3. Match size, texture, and gradation of existing mortar sand as closely as possible. Blend several sands if necessary to achieve suitable match.

D. Mortar Pigments: Natural and synthetic iron oxides, compounded for mortar mixes. Use only pigments with a record of satisfactory performance in masonry mortars.

E. Water: Potable.

2.3 MANUFACTURED REPAIR MATERIALS

A. Masonry Patching Compound: Factory-mixed cementitious product that is custom manufactured for patching masonry.

1. Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

a. Cathedral Stone Products, Inc.; Jahn M100 Terra Cotta and Brick Repair Mortar.
b. Conproco Corporation;.
c. Edison Coatings, Inc.; Custom System 45.

2. Use formulation that is vapor- and water permeable (equal to or more than the masonry unit), exhibits low shrinkage, has lower modulus of elasticity than the masonry units being repaired, and develops high bond strength to all types of masonry.
3. Formulate patching compound used for patching brick in colors and textures to match each masonry unit being patched.

2.4 PAINT REMOVERS

A. Covered or Skin-Forming Alkaline Paint Remover: Manufacturer's standard covered or skin-forming alkaline formulation for removing paint coatings from masonry.

1. Products:

a. ABR Products, Inc.; Grip 'N Strip 800 Fast Acting.
b. Diedrich Technologies Inc.; 606 Multi-Layer Paint Remover or 606X Extra Thick Multi-Layer Paint Remover with pull-off removal system.
c. Dumond Chemicals, Inc.; Peel Away 1 System.
d. PROSOCO] with Enviro Klean Overcoat.

B. Solvent-Type Paint Remover: Manufacturer's standard water-rinseable, solvent-type gel formulation for removing paint coatings from masonry.

1. Products:

a. ABR Products, Inc.; Super Bio Strip Gel.
b. Diedrich Technologies Inc.; 505 Special Coatings Stripper.
c. Dumond Chemicals, Inc.; Peel Away 2.
d. Hydroclean, Hydrochemical Techniques, Inc.; Hydroclean HT-300 Solvent Paint Remover.
e. Price Research, Ltd.; Price Strip-All.
f. PROSOCO; Sure Klean Fast Acting Stripper.

C. Low-Odor, Solvent-Type Paint Remover: Manufacturer's standard low-odor, water-rinsable solvent-type gel formulation, containing no methanol or methylene chloride, for removing paint coatings from masonry.

1. Products:

a. ABR Products, Inc.; Super Bio Strip Gel.
b. Cathedral Stone Products, Inc.;
c. Dumond Chemicals, Inc
d. PROSOCO

2.5 CLEANING MATERIALS

A. Water: Potable.

B. Hot Water: Water heated to a temperature of 140 to 160 deg F.

C. Job-Mixed Detergent Solution: Solution prepared by mixing 2 cups of tetrasodium polyphosphate, ½ cup of laundry detergent, and 20 quarts of hot water for every 5 gal. of solution required.

D. Job-Mixed Mold, Mildew, and Algae Remover: Solution prepared by mixing 2 cups of tetrasodium polyphosphate, 5 quarts of 5 percent sodium hypochlorite (bleach), and 15 quarts of hot water for every 5 gal. of solution required.

E. Nonacidic Gel Cleaner: Manufacturer's standard gel formulation, with pH between 6 and 9, that contains detergents with chelating agents and is specifically formulated for cleaning masonry surfaces.

1. Products:

    a. Price Research, Ltd.; Price Marble Cleaner-Gel.
    b. PROSOCO; Sure Klean 942 Limestone and Marble Cleaner.

F. Nonacidic Liquid Cleaner: Manufacturer's standard mildly alkaline liquid cleaner formulated for removing mold, mildew, and other organic soiling from ordinary building materials, including polished stone, brick, aluminum, plastics, and wood.

1. Products:

    a. Diedrich Technologies Inc.; Diedrich 910PM Polished Marble Cleaner.
    b. Dominion Restoration Products, Inc.; Bio-Cleanse.
    c. Dumond Chemicals, Inc.; Safe n' Easy Architectural Cleaner/Restorer.
    d. Price Research, Ltd.; Price Non-Acid Masonry Cleaner.
    e. PROSOCO; Enviro Klean 2010 All Surface Cleaner.

G. Mild Acidic Cleaner: Manufacturer's standard mildly acidic cleaner containing no muriatic (hydrochloric), hydrofluoric, or sulfuric acid; or ammonium bifluoride or chlorine bleaches.

1. Products:

    a. ABR Products, Inc.; X-190 Limestone & Concrete Cleaner.
    b. Diedrich Technologies Inc.; Envirorestore 100.
    c. Dominion Restoration Products, Inc.; DR-60 Stone and Masonry Cleaner.
    d. PROSOCO; Enviro Klean BioWash.

H. Acidic Cleaner:

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

    a. ABR Products, Inc.; 801 Heavy Duty Masonry Cleaner.
    b. Diedrich Technologies Inc.; .
    c. Dumond Chemicals, Inc.; .
    d. EaCo Chem, Inc.; [
    e. Hydroclean, Hydrochemical Techniques, Inc.; Hydroclean Brick, Granite, Sandstone and Terra Cotta Cleaner (HT-626).
    f. Price Research, Ltd.;
    g. PROSOCO;

2.6 ACCESSORY MATERIALS

A. Setting Buttons: Resilient plastic buttons, nonstaining to masonry, sized to suit joint thicknesses and bed depths of masonry units without intruding into required depths of pointing materials.

2.7 MORTAR MIXES

A. Measurement and Mixing: Measure cementitious materials and sand in a dry condition by volume or equivalent weight. Do not measure by shovel; use known measure. Mix materials in a clean, mechanical batch mixer.

1. Mixing Pointing Mortar: Thoroughly mix cementitious materials and sand together before adding any water. Then mix again adding only enough water to produce a damp, unworkable mix that will retain its form when pressed into a ball. Maintain mortar in this dampened condition for 15 to 30 minutes. Add remaining water in small portions until mortar reaches desired consistency. Use mortar within one hour of final mixing; do not retemper or use partially hardened material.

B. Colored Mortar: Produce mortar of color required by using specified ingredients. Do not alter specified proportions without Architect's approval.

1. Mortar Pigments: Where mortar pigments are indicated, do not exceed a pigment-to-cement ratio of 1:10 by weight.

C. Do not use admixtures in mortar unless otherwise indicated.

D. Mortar Proportions: Mix mortar materials in the following proportions:

1. Pointing Mortar for Brick: 1 part portland cement, 2 parts lime, and 6 parts sand.

a. Add mortar pigments to produce mortar colors required.

2. Rebuilding (Setting) Mortar: Same as pointing mortar except mortar pigments are not required.
3. Rebuilding (Setting) Mortar: 1 part portland cement, 2 parts lime, and 6 parts sand.
4. Rebuilding (Setting) Mortar: Comply with ASTM C 270, Proportion Specification, Type N unless otherwise indicated; with cementitious material limited to portland cement and lime.

2.8 CHEMICAL CLEANING SOLUTIONS

A. Dilute chemical cleaners with water to produce solutions not exceeding concentration recommended by chemical-cleaner manufacturer.

B. Acidic Cleaner Solution for Brick: Dilute with water to produce hydrofluoric acid content of 3 percent or less, but not greater than that recommended by chemical-cleaner manufacturer.

C. Acidic Cleaner Solution for Glazed Terra Cotta: Dilute with water to concentration demonstrated by testing that does not etch or otherwise damage terra cotta surface, but not greater than that recommended by chemical-cleaner manufacturer.

PART 3 - EXECUTION

3.1 PROTECTION

A. Protect persons, motor vehicles, surrounding surfaces of building being restored, building site, plants, and surrounding buildings from harm resulting from masonry restoration work.

B. Comply with chemical-cleaner manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products. Prevent chemical-cleaning solutions from coming into contact with people, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.

1. Cover adjacent surfaces with materials that are proven to resist chemical cleaners used unless chemical cleaners being used will not damage adjacent surfaces. Use materials that contain only waterproof, UV-resistant adhesives. Apply masking agents to comply with manufacturer's written instructions. When no longer needed, promptly remove masking to prevent adhesive staining.
2. Keep wall wet below area being cleaned to prevent streaking from runoff.

3.2 BRICK REMOVAL AND REPLACEMENT

A. At locations indicated, remove bricks that are damaged, spalled, or deteriorated or are to be reused. Carefully demolish or remove entire units from joint to joint, without damaging surrounding masonry, in a manner that permits replacement with full-size units.

B. Support and protect remaining masonry that surrounds removal area. Maintain flashing, reinforcement, lintels, and adjoining construction in an undamaged condition.

C. Notify Architect of unforeseen detrimental conditions including voids, cracks, bulges, and loose units in existing masonry backup, rotted wood, rusted metal, and other deteriorated items.

D. Remove in an undamaged condition as many whole bricks as possible.

1. Remove mortar, loose particles, and soil from brick by cleaning with hand chisels, brushes, and water.
2. Remove sealants by cutting close to brick with utility knife and cleaning with solvents.

E. Clean bricks surrounding removal areas by removing mortar, dust, and loose particles in preparation for replacement.

F. Replace removed damaged brick with other removed brick in good quality, where possible, or with new brick matching existing brick, including size. Do not use broken units unless they can be cut to usable size.

G. Install replacement brick into bonding and coursing pattern of existing brick. If cutting is required, use a motor-driven saw designed to cut masonry with clean, sharp, unchipped edges.

1. Maintain joint width for replacement units to match existing joints.
2. Use setting buttons or shims to set units accurately spaced with uniform joints.

H. Lay replacement brick with completely filled bed, head, and collar joints. Butter ends with sufficient mortar to fill head joints and shove into place. Wet both replacement and surrounding bricks that have ASTM C 67 initial rates of absorption (suction) of more than30 gal./30 sq. in. per min.. Use wetting methods that ensure that units are nearly saturated but surface is dry when laid.

1. Tool exposed mortar joints in repaired areas to match joints of surrounding existing brickwork.

2. Rake out mortar used for laying brick before mortar sets and point new mortar joints in repaired area to comply with requirements for re-pointing existing masonry, and at same time as re-pointing of surrounding area.
3. When mortar is sufficiently hard to support units, remove shims and other devices interfering with pointing of joints.

3.3 MASONRY UNIT PATCHING

A. Patching Bricks:

1. Remove loose material from masonry surface. Carefully remove additional material so patch will not have feathered edges but will have square or slightly undercut edges on area to be patched and will be at least ¼ in. thick, but not less than recommended by patching compound manufacturer.
2. Mask adjacent mortar joint or rake out for re-pointing if patch will extend to edge of masonry unit.
3. Mix patching compound in individual batches to match each unit being patched.
4. Rinse surface to be patched and leave damp, but without standing water.
5. Brush-coat surfaces with slurry coat of patching compound according to manufacturer's written instructions.
6. Place patching compound in layers as recommended by patching compound manufacturer, but not less than ¼ in. or more than 2 inches thick. Roughen surface of each layer to provide a key for next layer.
7. Trowel, scrape, or carve surface of patch to match texture and surrounding surface plane or contour of the masonry unit. Shape and finish surface before or after curing, as determined by testing, to best match existing masonry unit.
8. Keep each layer damp for 72 hours or until patching compound has set.

3.4 CLEANING MASONRY, GENERAL

A. Proceed with cleaning in an orderly manner; work from bottom to top of each scaffold width and from one end of each elevation to the other. Ensure that dirty residues and rinse water will not wash over cleaned, dry surfaces.

B. Use only those cleaning methods indicated for each masonry material and location.

1. Do not use wire brushes or brushes that are not resistant to chemical cleaner being used. Do not use plastic-bristle brushes if natural-fiber brushes will resist chemical cleaner being used.
2. Use spray equipment that provides controlled application at volume and pressure indicated, measured at spray tip. Adjust pressure and volume to ensure that cleaning methods do not damage masonry.

    a. Equip units with pressure gages.

3. For chemical-cleaner spray application, use low-pressure tank or chemical pump suitable for chemical cleaner indicated, equipped with cone-shaped spray tip.
4. For water-spray application, use fan-shaped spray tip that disperses water at an angle of 25 to 50 degrees.
5. For heated water-spray application, use equipment capable of maintaining temperature between 140 to 160 deg. F. at flow rates indicated.

C. Perform each cleaning method indicated in a manner that results in uniform coverage of all surfaces, including corners, moldings, and interstices, and that produces an even effect without streaking or damaging masonry surfaces.

D. Water-Spray Application Method: Unless otherwise indicated, hold spray nozzle at least 6 inches from surface of masonry and apply water in horizontal back and forth sweeping motion, overlapping previous strokes to produce uniform coverage.

E. Chemical-Cleaner Application Methods: Apply chemical cleaners to masonry surfaces to comply with chemical-cleaner manufacturer's written instructions; use brush or spray application. Do not spray apply at pressures exceeding 50 psi Do not allow chemicals to remain on surface for periods longer than those indicated or recommended by manufacturer.

F. Rinse off chemical residue and soil by working upward from bottom to top of each treated area at each stage or scaffold setting. Periodically during each rinse, test pH of rinse water running off of cleaned area to determine that chemical cleaner is completely removed.

1. Apply neutralizing agent and repeat rinse if necessary to produce tested pH of between 6.7 and 7.5.

3.5 PRELIMINARY CLEANING

A. Removing Plant Growth: Completely remove visible plant, moss, and shrub growth from masonry surfaces. Carefully remove plants, creepers, and vegetation by cutting at roots and allowing to dry as long as possible before removal. Remove loose soil and debris from open masonry joints to whatever depth they occur.

B. Preliminary Cleaning: Before beginning general cleaning, remove extraneous substances that are resistant to cleaning methods being used. Extraneous substances include paint, calking, asphalt, and tar.

1. Carefully remove heavy accumulations of material from surface of masonry with a sharp chisel. Do not scratch or chip masonry surface.
2. Remove paint and calking with alkaline paint remover.

    a. Comply with requirements in "Paint Removal" Article.
    b. Repeat application up to two times if needed.

3. Remove asphalt and tar with solvent-type paint remover.

    a. Comply with requirements in "Paint Removal" Article.
    b. Apply paint remover only to asphalt and tar by brush without prewetting.
    c. Allow paint remover to remain on surface for 10 to 30 minutes.
    d. Repeat application if needed.

3.6 PAINT REMOVAL

A. Paint Removal with Covered or Skin-Forming Alkaline Paint Remover:

1. Remove loose and peeling paint using low pressure spray, scrapers, stiff brushes, or a combination of these. Let surface dry thoroughly.

2. Apply paint remover to dry, painted masonry with trowel, spatula, or as recommended by manufacturer.
3. Apply cover, if required by manufacturer, per manufacturer's written instructions.
4. Allow paint remover to remain on surface for period recommended by manufacturer or as determined in test panels.
5. Scrape off paint and remover and collect for disposal.
6. Rinse with cold water applied by low-pressure spray to remove chemicals and paint residue.
7. Apply acidic cleaner or manufacturer's recommended after-wash to masonry, while surface is still wet, using low-pressure spray equipment or soft-fiber brush. Let cleaner or afterw-ash remain on surface as a neutralizing agent for period recommended by chemical-cleaner or after-wash manufacturer.
8. Rinse with cold water applied by low-pressure spray to remove chemicals and soil.

B. Paint Removal with Solvent-Type Paint Remover:

1. Remove loose and peeling paint using low-pressure spray, scrapers, stiff brushes, or a combination of these. Let surface dry thoroughly.
2. Apply thick coating of paint remover to painted masonry with natural-fiber cleaning brush, deep-nap roller, or large paint brush.
3. Allow paint remover to remain on surface for period recommended by manufacturer
4. Some manufacturers advise that heated water may improve stripping efficiency.
5. Rinse with cold water applied by low-pressure spray to remove chemicals and paint residue.

3.7 CLEANING MASONRY

A. Detergent Cleaning:

1. Wet masonry with cold water applied by low-pressure spray.
2. Scrub masonry with detergent solution using medium-soft brushes until soil is thoroughly dislodged and can be removed by rinsing. Use small brushes to remove soil from mortar joints and crevices. Dip brush in solution often to ensure that adequate fresh detergent is used and that masonry surface remains wet.
3. Rinse with cold water applied by low-pressure spray to remove detergent solution and soil.
4. Repeat cleaning procedure above where required to produce cleaning effect established by mockup.

B. Mold, Mildew, and Algae Removal:

1. Wet masonry with [**cold**] [**hot**] water applied by low-pressure spray.
2. Apply mold, mildew, and algae remover by brush[**or low-pressure spray**].
3. Scrub masonry with medium-soft brushes until mold, mildew, and algae are thoroughly dislodged and can be removed by rinsing. Use small brushes for mortar joints and crevices. Dip brush in mold, mildew, and algae remover often to ensure that adequate fresh cleaner is used and that masonry surface remains wet.
4. Rinse with cold water applied by low-pressure spray to remove mold, mildew, and algae remover and soil.
5. Repeat cleaning procedure above where required to produce cleaning effect established by mockup.

C. Nonacidic Gel Chemical Cleaning:

1. Wet masonry with cold water applied by low-pressure spray.
2. Apply non-acidic gel cleaner in 1/8 inch thickness by brush, working into joints and crevices. Apply quickly and do not brush out excessively so area will be uniformly covered with fresh cleaner and dwell time will be uniform throughout area being cleaned.
3. Let cleaner remain on surface for period indicated below:

    a. As recommended by chemical-cleaner manufacturer.
    b. As established by mockup.

4. Remove bulk of non-acidic gel cleaner by squeegeeing into containers for disposal.
5. Rinse with [cold water applied by low-pressure spray to remove chemicals and soil.
6. Repeat cleaning procedure above where required to produce cleaning effect established by mockup. Do not repeat more than once.

D. Nonacidic Liquid Chemical Cleaning:

1. Wet masonry with cold water applied by low-pressure spray.
2. Apply cleaner to masonry in two applications by brush or low-pressure spray. Let cleaner remain on surface for period indicated below:

    a. As recommended by chemical-cleaner manufacturer.
    b. As established by mockup.

3. Rinse with cold water applied by [low-pressure spray to remove chemicals and soil.
4. Repeat cleaning procedure above where required to produce cleaning effect established by mockup. Do not repeat more than once.

E. Acidic Chemical Cleaning:

1. Wet masonry with cold water applied by low-pressure spray.
2. Apply cleaner to masonry in two applications by brush or low-pressure spray. Let cleaner remain on surface for period indicated below:

    a. As recommended by chemical-cleaner manufacturer.
    b. As established by mockup.

3. Rinse with cold water applied by low-pressure spray to remove chemicals and soil.
4. Repeat cleaning procedure above where required to produce cleaning effect established by mockup. Do not repeat more than once.

3.8 REPOINTING MASONRY

A. Rake out and re-point joints to the following extent:

1. All joints in areas indicated.
2. Joints where mortar is missing or where they contain holes.
3. Cracked joints where cracks can be penetrated at least ¼ inch by a knife blade 0.027 inch thick.
4. Cracked joints where cracks are 1/16 inch or more in width and of any depth.
5. Joints where they sound hollow when tapped by metal object.
6. Joints where they are worn back ¼ inch or more from surface.

7. Joints where they are deteriorated to point that mortar can be easily removed by hand, without tools.
8. Joints where they have been filled with substances other than mortar.
9. Joints indicated as sealant-filled joints.

B. Do not rake out and re-point joints where not required.

C. Rake out joints as follows, according to procedures demonstrated in approved mockup:

1. Remove mortar from joints to depth of joint width plus 1/8 inch, but not less than ½ inch or not less than that required to expose sound, un-weathered mortar.
2. Remove mortar from masonry surfaces within raked-out joints to provide reveals with square backs and to expose masonry for contact with pointing mortar. Brush, vacuum, or flush joints to remove dirt and loose debris.
3. Do not spall edges of masonry units or widen joints. Replace or patch damaged masonry units as directed by Architect.

    a. Cut out mortar by hand with chisel and resilient mallet. Do not use power-operated grinders.
    b. Cut out center of mortar bed joints using angle grinders with diamond-impregnated metal blades. Remove remaining mortar by hand with chisel and resilient mallet.

D. Notify Architect of unforeseen detrimental conditions including voids in mortar joints, cracks, loose masonry units, rotted wood, rusted metal, and other deteriorated items.

E. Pointing with Mortar:

1. Rinse joint surfaces with water to remove dust and mortar particles. Time rinsing application so, at time of pointing, joint surfaces are damp but free of standing water. If rinse water dries, dampen joint surfaces before pointing.
2. Apply pointing mortar first to areas where existing mortar was removed to depths greater than surrounding areas. Apply in layers not greater than 3/8 inch until a uniform depth is formed. Fully compact each layer thoroughly and allow it to become thumbprint hard before applying next layer.
3. After low areas have been filled to same depth as remaining joints, point all joints by placing mortar in layers not greater than 3/8 inch. Fully compact each layer and allow to become thumbprint hard before applying next layer. Where existing masonry units have worn or rounded edges, slightly recess finished mortar surface below face of masonry to avoid widened joint faces. Take care not to spread mortar beyond joint edges onto exposed masonry surfaces or to featheredge the mortar.
4. When mortar is thumbprint hard, tool joints to match original appearance of joints as demonstrated in approved mockup. Remove excess mortar from edge of joint by brushing.
5. Cure mortar by maintaining in thoroughly damp condition for at least 72 consecutive hours including weekends and holidays.

    a. Acceptable curing methods include covering with wet burlap and plastic sheeting, periodic hand misting, and periodic mist spraying using system of pipes, mist heads, and timers.

6. Hairline cracking within the mortar or mortar separation at edge of a joint is unacceptable. Completely remove such mortar and re-point.

F. Where re-pointing work precedes cleaning of existing masonry, allow mortar to harden at least 30 days before beginning cleaning work.

3.9 FINAL CLEANING

A. After mortar has fully hardened, thoroughly clean exposed masonry surfaces of excess mortar and foreign matter; use wood scrapers, stiff-nylon or -fiber brushes, and clean water, spray applied at low pressure.

1. Do not use metal scrapers or brushes.
2. Do not use acidic or alkaline cleaners.

END OF SECTION 04 00 12

SECTION 05 52 13 - PIPE AND TUBE RAILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Steel pipe and tube handrails

B. Related Sections include the following:

1.3 PERFORMANCE REQUIREMENTS

A. General: In engineering handrails and railings to withstand structural loads indicated, determine allowable design working stresses of handrail and railing materials based on the following:

   1. Structural Steel: AISC S335, "Specification for Structural Steel Buildings Allowable Stress Design and Plastic Design with Commentary."
   2. Cold-Formed Structural Steel: AISI SG-673, Part I, "Specification for the Design of Cold-Formed Steel Structural Members."

B. Structural Performance of Handrails: Provide handrails and railings complying with requirements of ASTM E 985 for structural performance, based on testing performed according to ASTM E 894 and ASTM E 935.

C. Structural Performance of Handrails: Provide handrails and railings capable of withstanding structural loads required by ASCE 7 without exceeding allowable design working stresses of materials for handrails, railings, anchors, and connections.

D. Structural Performance of Handrails: Provide handrails and railings capable of withstanding the following structural loads without exceeding allowable design working stresses of materials for handrails, railings, anchors, and connections:

   1. Top Rail of Guards: Capable of withstanding the following loads applied as indicated:

      a. Concentrated load of 200 lbf applied at any point and in any direction.
      b. Uniform load of 50 lbf/ft. applied horizontally and concurrently with uniform load of 100 lbf/ft. applied vertically downward.
      c. Concentrated and uniform loads above need not be assumed to act concurrently.

   2. Handrails Not Serving As Top Rails: Capable of withstanding the following loads applied as indicated:

      a. Concentrated load of 200 lbf applied at any point and in any direction.

b. Uniform load of 50 lbf/ft. applied in any direction.
c. Concentrated and uniform loads above need not be assumed to act concurrently.

3. Infill Area of Guards: Capable of withstanding a horizontal concentrated load of 200 lbf applied to 1 sq. ft. at any point in system, including panels, intermediate rails, balusters, or other elements composing infill area.

a. Load above need not be assumed to act concurrently with loads on top rails in determining stress on guard.

E. Thermal Movements: Provide handrails and railings that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

F. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

1.4 SUBMITTALS

A. Product Data: For the following:

1. Manufacturer's product lines of mechanically connected handrails and railings.
2. Grout, anchoring cement, and paint products.

B. Shop Drawings: Show fabrication and installation of handrails and railings. Include plans, elevations, sections, component details, and attachments to other Work.

1. For installed handrails and railings indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

C. LEED Submittals:

1. Credit MR 4.1 & 4.2: Manufacturers’ product data indicating post-consumer recycled content and pre-consumer recycled content for brick only. Include statement indicating costs for each product having recycled content.

2. Credit EQ 4.1: Product data of sealants and adhesives used at Project site, including printed statement of VOC content

D. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

E. Product Test Reports: From a qualified testing agency indicating products comply with requirements, based on comprehensive testing of current products.

F. Product Test Reports: From a qualified testing agency indicating handrails and railings comply with ASTM E 985, based on comprehensive testing of current products.

1.5 QUALITY ASSURANCE

A. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of handrails and railings that are similar to those indicated for this Project in material, design, and extent.

B. Testing Agency Qualifications: An independent testing agency with the experience and capability to conduct the testing indicated, as documented according to ASTM A751-01.

C. Source Limitations: Obtain each type of handrail and railing through one source from a single manufacturer.

1.6 STORAGE

A. Store handrails and railings in a dry, well-ventilated, weathertight place.

1.7 PROJECT CONDITIONS

A. Field Measurements: Verify handrail and railing dimensions by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating handrails and railings without field measurements. Coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.8 COORDINATION

A. Coordinate installation of anchorages for handrails and railings. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

1.9 SCHEDULING

A. Schedule installation so handrails and railings are mounted only on completed walls. Do not support temporarily by any means that does not satisfy structural performance requirements.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Steel Pipe and Tube Railings:

a. Humane Equipment Co.
b. Wagner: R & B Wagner, Inc.

2.2 METALS

A. General: Provide metal free from pitting, seam marks, roller marks, stains, discolorations, and other imperfections where exposed to view on finished units.

B. Steel and Iron: Provide steel and iron in the form indicated, complying with the following requirements:

1. Steel Pipe: ASTM A 53; finish, type, and weight class as follows:

a. Black finish, unless otherwise indicated.
b. Type F, or Type S, Grade A, standard weight (Schedule 40), unless another grade and weight are required by structural loads.

2. Steel Tubing: Cold-formed steel tubing, ASTM A 500, Grade A, unless another grade is required by structural loads.
3. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
4. Iron Castings: Gray iron complying with ASTM A 48, Class 30.

C. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails, unless otherwise indicated.

2.3 WELDING MATERIALS, FASTENERS, AND ANCHORS

A. Welding Electrodes and Filler Metal: Provide type and alloy of filler metal and electrodes as recommended by producer of metal to be welded and as required for color match, strength, and compatibility in fabricated items.

B. Fasteners for Anchoring Handrails and Railings to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring handrails and railings to other types of construction indicated and capable of withstanding design loads.

1. For aluminum handrails and railings, use fasteners fabricated from Type 316 stainless steel.
2. For stainless-steel handrails and railings, use fasteners fabricated from Type 316 stainless steel.
3. For steel handrails, railings, and fittings, use plated fasteners complying with ASTM B 633, Class Fe/Zn 25 for electrodeposited zinc coating.

C. Fasteners for Interconnecting Handrail and Railing Components: Use fasteners fabricated from same basic metal as fastened metal, unless otherwise indicated. Do not use metals that are corrosive or incompatible with materials joined.

1. Provide concealed fasteners for interconnecting handrail and railing components and for attaching them to other work, unless otherwise indicated.

2. Provide concealed fasteners for interconnecting handrail and railing components and for attaching them to other work, unless exposed fasteners are unavoidable or are the standard fastening method for handrails and railings indicated.
3. Provide Phillips flat-head machine screws for exposed fasteners, unless otherwise indicated.

D. Cast-in-Place and Postinstalled Anchors: Anchors of type indicated below, fabricated from corrosion-resistant materials with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry and equal to four times the load imposed when installed in concrete, as determined by testing per ASTM E 488 conducted by a qualified independent testing agency.

1. Cast-in-place anchors.
2. Chemical anchors.
3. Expansion anchors.

2.4 PAINT

A. Shop Primers: Provide primers to comply with applicable requirements in Division 9 Section "Painting."

B. Shop Primer for Ferrous Metal: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with performance requirements in FS TT-P-664; selected for good resistance to normal atmospheric corrosion, compatibility with finish paint systems indicated, and capability to provide a sound foundation for field-applied topcoats despite prolonged exposure.

C. Bituminous Paint: Cold-applied asphalt mastic complying with SSPC-Paint 12, except containing no asbestos fibers, or cold-applied asphalt emulsion complying with ASTM D 1187.

2.5 GROUT AND ANCHORING CEMENT

A. Non-shrink, Nonmetallic Grout: Premixed, factory-packaged, non-staining, non-corrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

B. Interior Anchoring Cement: Factory-packaged, non-shrink, non-staining, hydraulic-controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound. Use for interior applications only.

C. Erosion-Resistant Anchoring Cement: Factory-packaged, non-shrink, non-staining, hydraulic-controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound. Provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended by manufacturer for exterior use.

2.6 FABRICATION

A. General: Fabricate handrails and railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.

B. Assemble handrails and railings in the shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.

C. Form changes in direction of railing members as follows:
   1. By mitering at elbow bends.

D. Form simple and compound curves by bending members in jigs to produce uniform curvature for each repetitive configuration required; maintain cylindrical cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of handrail and railing components.

E. Welded Connections: Fabricate handrails and railings for connecting members by welding. Cope components at perpendicular and skew connections to provide close fit, or use fittings designed for this purpose. Weld connections continuously to comply with the following:

   1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
   2. Obtain fusion without undercut or overlap.
   3. Remove flux immediately.
   4. At exposed connections, finish exposed surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces.

F. Nonwelded Connections: Fabricate handrails and railings by connecting members with concealed mechanical fasteners and fittings, unless otherwise indicated. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.

   1. Fabricate splice joints for field connection using an epoxy structural adhesive where this is manufacturer's standard splicing method.

G. Welded Connections for Aluminum Pipe: Fabricate pipe handrails and railings to interconnect members with concealed internal welds that eliminate surface grinding, using manufacturer's standard system of sleeve and socket fittings.

H. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect handrail and railing members to other work, unless otherwise indicated.

I. Provide inserts and other anchorage devices for connecting handrails and railings to concrete or masonry work. Fabricate anchorage devices capable of withstanding loads imposed by handrails and railings. Coordinate anchorage devices with supporting structure.

J. For railing posts set in concrete, provide preset sleeves of steel not less than 6 inches long with inside dimensions not less than 1/2 inch greater than outside dimensions of post, and steel plate forming bottom closure.

K. For removable railing posts, fabricate slip-fit sockets from steel tube whose ID is sized for a close fit with posts; limit movement of post without lateral load, measured at top, to not more than one-fortieth of post height. Provide socket covers designed and fabricated to resist being dislodged.

   1. Provide chain with eye, snap hook, and staple across gaps formed by removable railing sections at locations indicated. Fabricate from same metal as railings.

L. Shear and punch metals cleanly and accurately. Remove burrs from exposed cut edges.

M. Ease exposed edges to a radius of approximately 1/32 inch, unless otherwise indicated. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing the Work.

N. Cut, reinforce, drill, and tap components, as indicated, to receive finish hardware, screws, and similar items.

O. Provide weep holes or another means to drain entrapped water in hollow sections of handrail and railing members that are exposed to exterior or to moisture from condensation or other sources.

P. Fabricate joints that will be exposed to weather in a watertight manner.

Q. Close exposed ends of handrail and railing members with prefabricated end fittings.

R. Provide wall returns at ends of wall-mounted handrails, unless otherwise indicated. Close ends of returns, unless clearance between end of railing and wall is 1/4 inch or less.

S. Toe Boards: Where indicated, provide toe boards at railings around openings and at edge of open-sided floors and platforms. Fabricate to dimensions and details indicated.

T. Fillers: Provide fillers made from steel plate, or other suitably crush-resistant material, where needed to transfer wall bracket loads through wall finishes to structural supports. Size fillers to suit wall finish thicknesses and to produce adequate bearing area to prevent bracket rotation and overstressing of substrate.

2.7 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

D. Provide exposed fasteners with finish matching appearance, including color and texture, of handrails and railings.

2.8 STEEL FINISHES

A. Fill vent and drain holes that will be exposed in finished Work, unless indicated to remain as weep holes, by plugging with zinc solder and filing off smooth.

B. For nongalvanized steel handrails and railings, provide nongalvanized ferrous-metal fittings, brackets, fasteners, and sleeves, except galvanize anchors to be embedded in exterior concrete or masonry.

C. Preparation for Shop Priming: After galvanizing, thoroughly clean handrails and railings of grease, dirt, oil, flux, and other foreign matter, and treat with metallic-phosphate process.

D. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with minimum requirements indicated below for SSPC surface-preparation specifications and environmental exposure conditions of installed handrails and railings:

1. Exteriors (SSPC Zone 1B): SSPC-SP 6, "Commercial Blast Cleaning."
2. Interiors (SSPC Zone 1A): SSPC-SP 7, "Brush-off Blast Cleaning."

E. Apply shop primer to prepared surfaces of handrail and railing components, unless otherwise indicated. Comply with requirements in SSPC-PA 1, "Paint Application Specification No. 1," for shop painting. Primer need not be applied to surfaces to be embedded in concrete or masonry.

1. Do not apply primer to galvanized surfaces.
2. Stripe paint edges, corners, crevices, bolts, and welds.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine plaster and gypsum board assemblies, where reinforced to receive anchors, to verify that locations of concealed reinforcements have been clearly marked for Installer. Locate reinforcements and mark locations if not already done.

3.2 INSTALLATION, GENERAL

A. Fit exposed connections together to form tight, hairline joints.

B. Perform cutting, drilling, and fitting required to install handrails and railings. Set handrails and railings accurately in location, alignment, and elevation; measured from established lines and levels and free from rack.

1. Do not weld, cut, or abrade surfaces of handrail and railing components that have been coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
2. Set posts plumb within a tolerance of 1/16 inch in 3 feet .
3. Align rails so variations from level for horizontal members and from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet .

C. Corrosion Protection: Coat concealed surfaces of aluminum that will be in contact with grout, concrete, masonry, wood, or dissimilar metals with a heavy coat of bituminous paint.

D. Adjust handrails and railings before anchoring to ensure matching alignment at abutting joints. Space posts at interval indicated, but not less than that required by structural loads.

E. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing handrails and railings and for properly transferring loads to in-place construction.

3.3 RAILING CONNECTIONS

A. Nonwelded Connections: Use mechanical or adhesive joints for permanently connecting railing components. Use wood blocks and padding to prevent damage to railing members and fittings. Seal recessed holes of exposed locking screws using plastic cement filler colored to match finish of handrails and railings.

B. Welded Connections: Use fully welded joints for permanently connecting railing components. Comply with requirements for welded connections in "Fabrication" Article whether welding is performed in the shop or in the field.

C. Expansion Joints: Install expansion joints at locations indicated but not farther apart than required to accommodate thermal movement. Provide slip-joint internal sleeve extending 2 inches beyond joint on either side, fasten internal sleeve securely to one side, and locate joint within 6 inches of post.

3.4 ANCHORING POSTS

A. Use steel pipe sleeves preset and anchored into concrete for installing posts. After posts have been inserted into sleeves, fill annular space between post and sleeve with the following anchoring material, mixed and placed to comply with anchoring material manufacturer's written instructions:

B. Form or core-drill holes not less than 5 inches deep and 3/4 inch larger than OD of post for installing posts in concrete. Clean holes of loose material, insert posts, and fill annular space between post and concrete with the following anchoring material, mixed and placed to comply with anchoring material manufacturer's written instructions:

1. Non-shrink, nonmetallic grout.
2. Non-shrink, nonmetallic grout or anchoring cement.

C. Cover anchorage joint with flange of same metal as post, attached to post as follows:

1. Welded to post after placing anchoring material.
2. By set screws.

D. Leave anchorage joint exposed; wipe off surplus anchoring material; and leave 1/8-inch build-up, sloped away from post.

E. Anchor posts to metal surfaces with oval flanges, angle type, or floor type as required by conditions, connected to posts and to metal supporting members as follows:

1. For aluminum pipe railings, attach posts as indicated using fittings designed and engineered for this purpose.
2. For stainless-steel pipe railings, weld flanges to post and bolt to metal supporting surfaces.
3. For steel pipe railings, weld flanges to post and bolt to metal supporting surfaces.

F. Install removable railing sections, where indicated, in slip-fit metal sockets cast in concrete.

3.5 ANCHORING RAILING ENDS

A. Anchor railing ends into concrete and masonry with round flanges connected to railing ends and anchored into wall construction with postinstalled anchors and bolts.

B. Anchor railing ends to metal surfaces with flanges bolted to metal surfaces.

1. Weld flanges to railing ends.

3.6 ATTACHING HANDRAILS TO WALLS

A. Attach handrails to wall with wall brackets. Provide bracket with 1-1/2-inch clearance from inside face of handrail and finished wall surface.

B. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.

C. Secure wall brackets to building construction as follows:

1. For concrete and solid masonry anchorage, use drilled-in expansion shields and hanger or lag bolts.
2. For hollow masonry anchorage, use toggle bolts.
3. For wood stud partitions, use hanger or lag bolts set into wood backing between studs. Coordinate with carpentry work to locate backing members.
4. For steel-framed gypsum board assemblies, use hanger or lag bolts set into wood backing between studs. Coordinate with stud installation to locate backing members.
5. For steel-framed gypsum board assemblies, fasten brackets directly to steel framing or concealed reinforcements using self-tapping screws of size and type required to support structural loads.

3.7 CLEANING

A. Clean aluminum and stainless steel by washing thoroughly with clean water and soap and rinsing with clean water.

B. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material.

C. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Division 9 Section "Painting."

D. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

3.8 PROTECTION

A. Protect finishes of handrails and railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at the time of Substantial Completion.

B. Restore finishes damaged during installation and construction period so no evidence remains of correction work. Return items that cannot be refinished in the field to the shop; make required alterations and refinish entire unit, or provide new units.

END OF SECTION 055213

SECTION 06 10 00 – ROUGH CARPENTRY

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:
1. Rough framing for building structural
2. Wood grounds, nailers, and blocking.
3. Plywood roof, deck and wall shafting

1.2 SUBMITTALS

A. Product Data: Submit the following:
1. Construction adhesives (Applicable for flooring, sheathing roofing).
2. Manufacturer's product specifications and handling and storage recommendations for treated wood.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Delivery and Storage: Keep materials under cover and dry. Protect against exposure to weather and contact with damp or wet surfaces. Stack lumber as well as plywood and other panels; provide for air circulation within and around stacks and under temporary coverings including polyethylene and similar materials.

PART 2 – PRODUCTS

2.1 LUMBER, GENERAL

A. Lumber Standards: Furnish lumber manufactured to comply with PS 20 "American Softwood Lumber Standard" and with applicable grading rules of inspection agencies certified by American Lumber Standards Committee's (ALSC) Board of Review.

B. Inspection Agencies: Inspection agencies and the abbreviations used to reference them with lumber grades and species include the following:
1. SPIB - Southern Pine Inspection Bureau.
2. WCLIB - West Coast Lumber Inspection Bureau.
3. WWPA - Western Wood Products Association.

C. Nominal sizes are indicated, except as shown by detail dimensions. Provide actual sizes as required by PS 20, for moisture content specified for each use.
1. Provide dressed lumber, S4S, unless otherwise indicated.
2. Provide seasoned lumber with 19 percent maximum moisture content at time of dressing and shipment for sizes 2 inches or less in nominal thickness, unless otherwise indicated.

2.2 LUMBER

A. General: Provide lumber for support or attachment of other construction including curbs and support bases, cant strips, blocking, furring, grounds, stripping, and similar members.

B. Material: Fabricate miscellaneous lumber from dimension lumber and boards of sizes and grades indicated and into arrangements shown.

C. Moisture Content: 19 percent maximum for lumber items not specified to receive wood preservative treatment.

D. Grade: "Standard" grade light-framing-size lumber of any species or board-size lumber as required. "No. 3 Common" or "Standard" grade boards per WCLIB or WWPA rules or "No. 2 Boards" per SPIB rules.

2.3 CONSTRUCTION PANELS

A. Trademark: Furnish plywood construction panels that are each factory-marked with APA trademark evidencing compliance with grade requirements.

B. Particle Panels: For building sheathing and mounting electrical or telephone equipment, provide fire-retardant-treated plywood panels with grade designation, APA C-D PLUGGED EXPOSURE 1, in thickness indicated, or, if not otherwise indicated, not less than 15/32 inch.

C. Roof Sheathing: Minimum 5/8" thick or thicker as indicated on drawings APA-rated, Structural I panels, EXPOSURE EXTERIOR.

E. Wall Sheathing: Minimum 1/2" thick or thicker as indicated on drawings APA-rated, Structural I panels, EXPOSURE EXTERIOR.

2.4 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
   1. Where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners with a hot-dip zinc coating per ASTM A 153 or of AISI Type 304 stainless steel.

B. Nails, Wire, Brads, and Staples: FS FF-N-105.

C. Power Driven Fasteners: National Evaluation Report NER-272.

D. Wood Screws: ANSI B18.6.1.

E. Lag Bolts: ANSI B18.2.1.

F. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and where indicated, flat washers.

G. Adhesives: For field gluing plywood panels to framing, provide formulation complying with APA AFG-01.

2.5 PRESERVATIVE WOOD TREATMENT BY PRESSURE PROCESS

A. General: Where lumber or plywood is indicated as preservative-treated wood or is specified herein to be treated, comply with applicable requirements of AWPA Standards C2 (Lumber) and C9 (Plywood). Mark each treated item with the AWPB or SPIB Quality Mark Requirements.

B. Pressure Treatment: Comply with applicable requirements of AWPA C2 (lumber) and AWPA C9 (plywood). Mark each treated item with the Quality Mark Requirements of an inspection agency approved by ALSC/s Board of Review. Pressure-treat all lumber with waterborne preservatives to a minimum retention of 0.40 lb/cu. ft (6.4 kg/cu. m). Treat indicated items and the following:
   1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
   2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.

3. Wood floor plates installed over concrete slabs directly in contact with earth.

C. Complete fabrication of treated items prior to treatment, where possible. If cut after treatment, coat cut surfaces to comply with AWPA M4. Inspect each piece of lumber or plywood after drying and discard damaged or defective pieces.

2.6 ACCESSORIES

A. Nails: Hot-dip galvanized steel, 0.120-inch- (3-mm-) diameter barbed shank, sharp-pointed, conventional roofing nails with a minimum 3/8-inch- (9.5-mm-) diameter head and of sufficient length to penetrate 3/4 inch (19 mm) into solid decking or at least 1/8 inch (3 mm) through plywood sheathing.

PART 3 – EXECUTION

3.1 INSTALLATION, GENERAL

A. Material Selection: Discard material with defects and that are too small to use with minimum joints or optimum joint arrangement.

B. Material Installation: Set rough carpentry to required levels and lines, with members plumb and true to line and cut and fitted.
1. Fit rough carpentry to other construction; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds, and similar supports to allow attachment of other construction.

C. Fasteners: Securely attach rough carpentry by anchoring and fastening as indicated.
1. Use common wire nails, unless otherwise indicated. Use finishing nails for finish work. Select fasteners of size that will not penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting of wood; pre-drill as required.

3.2 WOOD GROUNDS, NAILERS, BLOCKING, AND SLEEPERS

A. Installation: Install wood grounds, nailers, blocking, and sleepers where shown and where required for screeding or attachment of other work. Arrange as shown and shim as necessary for true line and level of work to be attached.

B. Anchorage: Attach to substrates as required to support applied loading. Countersink bolts and nuts flush with surfaces, unless otherwise indicated. Build into masonry during installation of masonry work. Where possible, anchor to formwork before concrete placement.

C. Plaster Grounds: Install permanent grounds of dressed, preservative treated, key-beveled lumber not less than 1-1/2 inches wide and of thickness required to bring face of ground to exact thickness of finish material involved. Remove temporary grounds when no longer required.

3.3 INSTALLATION OF CONSTRUCTION PANELS

A. General: Comply with applicable recommendations contained in Form No. E30, "APA Design/Construction Guide - Residential & Commercial," for types of construction panels and applications indicated.

B. Fastening Methods: Fasten panels as indicated below:
1. Attach to metal framing with self-drilling, self-tapping, corrosion-resistant screws.

END OF SECTION 061000

SECTION 06 40 00 - ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawing and general provisions of the Contract, including General and Supplementary Conditions, Division 1 Specification Sections, Addenda, Supplemental Instructions, and Change Orders, apply to work of this section.

1.2 SUMMARY

A. This Section includes the following:
   1. Plastic-laminate countertops.
   2. Interior trim.

B. Related Sections include the following:

   1. Division 6 Section "Miscellaneous Carpentry" for wood furring, blocking, shims, and hanging strips required for installing woodwork and concealed within other construction before woodwork installation.
   2. Division 8 Section "Flush Wood Doors."
   3. Division 9 Section "Painting" for finishing of interior architectural woodwork to be painted.

1.3 DEFINITIONS

A. Interior architectural woodwork includes wood furring, blocking, shims, and hanging strips for installing woodwork items, unless concealed within other construction before woodwork installation.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated, including cabinet hardware, accessories and panel products.

B. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.

   1. Show details full size.
   2. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
   3. Show locations and sizes of cutouts and holes for items installed in architectural woodwork.
   4. Show veneer leaves with dimensions, grain direction, exposed face, and identification numbers indicating the flitch and sequence within the flitch for each leaf.

C. Samples for Initial Selection: Manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available for each type of material indicated. Revise list below to suit Project.

1. Plastic laminates.

D. Samples for Verification: Provide 3 samples for finish range for the following:

1. Lumber with or for transparent finish, 5 inches wide by 24 inches long, for each species and cut, finished on 1 side and 1 edge.
2. Veneer leaves representative of and selected from flitches to be used for transparent-finished woodwork.
3. Wood-veneer-faced panel products with or for transparent finish, 8 by 10 inches, for each species and cut. Include at least one face-veneer seam and finish as specified.
4. Corner pieces as follows:

    a. Cabinet front frame joints between stiles and rail, as well as exposed end pieces, 18 inches (450 mm) high by 18 inches (450 mm) wide by 6 inches (150 mm) deep.
    b. Miter joints for standing trim.

5. Exposed cabinet hardware and accessories, one unit for each type and finish.

E. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed architectural woodwork similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

B. Fabricator Qualifications: A firm experienced in producing architectural woodwork similar to that indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

C. Source Limitations: Engage a qualified woodworking firm to assume undivided responsibility for production and installation of interior architectural woodwork and transparent finishing of the same.

D. Quality Standard: Unless otherwise indicated, comply with AWI's "Architectural Woodwork Quality Standards" , current version, for grades of interior architectural woodwork

1. Minimum AWI grade: Custom, unless indicated otherwise.

2. Provide AWI Quality Certification Program label indicating that woodwork complies with requirements of grades specified.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver woodwork until painting and similar operations that could damage woodwork have been completed in installation areas. If woodwork must be stored in other than installation areas, store only in areas where environmental conditions comply with requirements specified in "Project Conditions" Article.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install woodwork until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

B. Field Measurements: Where woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being enclosed and indicate measurements on Shop Drawings.
2. Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating woodwork without field measurements. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.8 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that interior architectural woodwork can be supported and installed as indicated.

1.9 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace doors or hardware that fail in materials or workmanship, or have warped (bow, cup, or twist) more than 1/4 inch (6.4 mm) in a 42-by-84-inch (1067-by-2134-mm) section.

1. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors or hardware.
2. Warranty shall be in effect during the following period of time from date of Substantial Completion:
   a. 30 years.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Provide materials that comply with requirements of the AWI quality standard for each type of woodwork and quality grade specified, unless otherwise indicated.

B. Wood Species Transparent Finish: Poplar

C. Wood Products: Comply with the following:

1. Hardboard: AHA A135.4.
2. Medium-Density Fiberboard: ANSI A208.2, Grade MD.
3. Softwood Plywood: DOC PS 1, Medium Density Overlay.
4. Hardwood Plywood and Face Veneers: HPVA HP-1.

D. High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated, or if not indicated, as required by woodwork quality standard.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering high-pressure decorative laminates that may be incorporated into the Work include, but are not limited to, the following:

a. Formica Corporation.
b. Wilsonart International; Div. of Premark International, Inc.
c. Nevamar.

2.2 INSTALLATION MATERIALS

A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln-dried to less than 15 percent moisture content

B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide nonferrous-metal or hot-dip galvanized anchors and inserts on inside face of exterior walls and elsewhere as required for corrosion resistance. Provide toothed-steel or lead expansion sleeves for drilled-in-place anchors.

2.3 FABRICATION, GENERAL

A. Interior Woodwork Grade: Provide AWI Premium grade interior woodwork for all woodwork to receive transparent finish. All others Custom grade.

B. Wood Moisture Content: Comply with requirements of referenced quality standard for wood moisture content in relation to ambient relative humidity during fabrication and in installation areas.

C. Fabricate woodwork to dimensions, profiles, and details indicated.

D. Shop cut openings, to maximum extent possible, to receive hardware, appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

1. Seal edges of openings in countertops with a coat of varnish.

2.4 INTERIOR STANDING AND RUNNING TRIM FOR TRANSPARENT FINISH

A. Quality Standard: Comply with AWI Section 300.

B. Wood Species: Red or White Oak, as selected by Architect from samples supplied by Contractor.

C. For trim items wider than available lumber, use veneered construction. Do not glue for width.

D. For rails wider or thicker than available lumber, use veneered construction. Do not glue for width or thickness.

E. Backout or groove backs of flat trim members and kerf backs of other wide, flat members, except for members with ends exposed in finished work.

2.5 PLASTIC-LAMINATE COUNTERTOPS

A. Quality Standard: Comply with AWI Section 400 requirements for high-pressure decorative laminate countertops.

B. Grade: Custom.

C. High-Pressure Decorative Laminate Grade: HGS.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering high-pressure decorative laminates that may be incorporated into the Work include the following:

a. Formica Corporation.
b. Wilsonart International; Div. of Premark International, Inc.
c. Nevamar.

D. Colors, Patterns, and Finishes: As selected by Architect from laminate manufacturer's full range of finish.

E. Edge Treatment: Same as laminate cladding on horizontal surfaces, or as indicated.

F. Core Material: Veneer core plywood at sinks and wet areas. Seal edges.

2.6 INTERIOR ORNAMENTAL WORK FOR TRANSPARENT FINISH

A. Quality Standard: Comply with AWI Section 700.

B. Grade: Premium.

C. Wood Species and Cut: Red or White Oak, rift sawn or cut, as selected by Architect from samples submitted by Contractor.

2.7 CASED OPENINGS FOR TRANSPARENT FINISH

A. Quality Standard: Comply with AWI Section 900.

B. Grade: Premium.

C. For frames or jambs wider than available lumber, use veneered construction. Do not glue for width.

2.8 INTERIOR STANDING AND RUNNING TRIM FOR OPAQUE FINISH

A. Quality Standard: Comply with AWI Section 300.

B. Grade: Custom.

C. Backout or groove backs of flat trim members and kerf backs of other wide, flat members, except for members with ends exposed in finished work.

D. Assemble moldings in plant to maximum extent possible. Miter corners in plant and prepare for field assembly with bolted fittings designed to pull connections together.

E. Wood Species: Any closed-grain hardwood complying with AWI quality standard indicated.

PART 3 - EXECUTION

3.1 PREPARATION

A. Condition woodwork to average prevailing humidity conditions in installation areas before installation.

B. Before installing architectural woodwork, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming.

3.2 INSTALLATION

A. Install in strict accordance with manufacturer/fabricator written recommendations and the standards and specifications indicated herein, whichever is the most stringent.

B. Quality Standard: Install woodwork to comply with AWI Section 1700 for the same grade specified in Part 2 of this Section for type of woodwork involved.

C. Install woodwork level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb (including tops) to a tolerance of 1/8 inch in 96 inches.

D. Scribe and cut woodwork to fit adjoining work, and refinish cut surfaces and repair damaged finish at cuts.

E. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing as required for complete installation. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork and matching final finish if transparent finish is indicated.

F. Standing and Running Trim: Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to greatest extent possible. Do not use pieces less than 60 inches long, except where shorter single-length pieces are necessary. Scarf running joints and stagger in adjacent and related members.

1. Fill gaps, if any, between top of base and wall with plastic wood filler, sand smooth, and finish same as wood base, if finished.
2. Install standing and running trim with no more variation from a straight line than 1/8 inch in 96 inches.

G. Countertops: Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop.

1. Align adjacent solid-surfacing-material countertops and form seams to comply with manufacturer's written recommendations using adhesive in color to match countertop. Carefully dress joints smooth, remove surface scratches, and clean entire surface.
2. Install countertops with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.
3. Secure backsplashes to tops with concealed metal brackets at 16 inches o.c. and to walls with adhesive.
4. Caulk space between backsplash and wall with sealant specified in Division 7 Section "Joint Sealants."

H. Complete the finishing work specified in this Section to extent not completed at shop or before installation of woodwork. Fill nail holes with matching filler where exposed. Apply specified finish coats, including stains and paste fillers if any, to exposed surfaces where only sealer/prime coats were applied in shop.

I. Refer to Division 9 Sections for final finishing of installed architectural woodwork.

3.3 ADJUSTING AND CLEANING

A. Repair damaged and defective woodwork, where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.

B. Clean, lubricate, and adjust hardware.

C. Clean woodwork on exposed and semiexposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

END OF SECTION 06400

SECTION 07 16 00 - CRYSTALLINE WATERPROOFING

PART 1 - GENERAL

1.1. RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2. SUMMARY

A. Section Includes:

1. Substrate preparation.
2. Primers and detailing of substrate.
3. Cementitious waterproofing (Capillary/Crystalline Type).
4. Edge and penetration detailing material.
5. Expanding waterstops.

B. Application areas include but are not limited to the following:

1. Elevator Pits.

C. Related Sections:

1. Division 1 Section “Quality Requirements” for quality control of building envelope.
2. Division 3 Section “Cast-In Place Concrete” for concrete work.
3. Division 15 Mechanical Sections and 16 for Electrical Sections applicable.

1.3 REFERENCES

A. Applicable standards; standards of the following as referenced herein:

1. American Society for Testing and Materials (ASTM).
2. Army Corps of Engineers (CRD).

1.4 DEFINITIONS

A. Cementitious crystalline waterproofing: Mix of Portland cement, fine treated silica sand and active proprietary chemicals which when mixed with water and applied as a cementitious coating, causes a catalytic reaction which generates a non-soluble crystalline

formation of dendritic fibers within the pores and capillary tracts of concrete. This process shall cause concrete to become permanently sealed against the penetration of water or liquids from any direction.

1.5 SYSTEM DESCRIPTION

A. Testing Requirements: Systems shall meet the performance of the following tests.

1. Testing shall be performed by an independent laboratory meeting requirements of ASTM E329-90 and certified by the United States Bureau of Standards. Testing Laboratory shall obtain concrete samples and waterproofing product samples.
2. Perform independent testing according to CRD C48-73 Permeability of Concrete under the following conditions:

a. Concrete samples shall be 6 inches (150 mm) in diameter and no thicker than 2 inches (50 mm).
b. Coatings shall be a maximm thickness of 0.05 inches (1 mm) per coat with up to 2 coats permitted.
c. Concrete samples shall have a design strength of 2000 psi or less. No admixtures will be permitted.
d. A minimum of four samples shall be tested; 2 treated and 2 untreated. Untreated samples shall exhibit leakage at 10 psi or less.
e. Test samples to a pressure of 175 psi (405 foot head of water). Treated samples, after crystalline growth has occurred, shall exhibit no measurable leakage whatsoever.

1.6 PERFORMANCE REQUIREMENTS

A. Water Permeability: U.S. Army Corps of Engineers CRD-C-48-73; no measurable leakage when pressure tested up to 175 psi on two inch thick 2000 psi concrete samples.

B. Potable Water Approval: NSF certification (NSF Standard 61).

1.7 SUBMITTALS

A. Product Data: Written technical product information and installation methods, for each type of product required, as necessary to demonstrate products comply with Contract Documents.

B. Test Reports: Submit copy of test reports by an independent testing laboratory certifying that products meet the performance requirements. Submit results of flood tests.

C. Manufacturer's Certification: Provide a copy of the manufacturer representative's report certifying that the surfaces to which waterproofing is to be applied are in a condition suitable to receive same, that the materials to be installed comply in all respects with the requirements of this specification, and that the applicator has the experience to install the materials in complete accordance with the manufacturer's current recommendations and product data.

1.8 QUALITY ASSURANCE

A. Manufacturer Qualifications: A company that has produced waterproofing materials and accessories of the type included in this section for at least 10 years.

B. Applicator: Waterproofing applicator shall be certified by the manufacturer or shall be experienced in the installation of cementitious crystalline waterproofing as demonstrated by previous successful installation. Waterproofing applicator shall be acceptable to the manufacturer and such acceptance shall be indicated in writing.

1. Review Contract Document requirements for waterproofing and waterproofing manufacturer's product data and application instructions.
2. Before start of waterproofing application, review installed substrate surfaces for compliance with preparation requirements. Document necessary actions for correcting unacceptable surface conditions.

C. Subsequent Work: Notify all trades installing work on, over, or attached to waterproofed surfaces of special requirements for waterproofing fastener holes and penetrations. Coordinate with elevator installation, electrical, and other work affecting waterproofing.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Store manufacturer's sealed and labeled material containers in dry, well-ventilated space.

1.10 PROJECT CONDITIONS

A. Complete substrate construction, including work which will penetrate waterproofing, before start of waterproofing application.

B. Comply with manufacturer's recommendations regarding condition of the substrate to receive waterproofing, and protection of the installed waterproofing system.

1.11 WARRANTY

A. Special Warranty: The Contractor shall warrant the work against defects arising due to faulty workmanship and materials for a period of five (5) years after substantial completion. The Contractor, individually and separate from the performance bonds, shall guarantee his work from the date of substantial completion, covering the surfaces treated, and binding him to repair, at his expense, any and all leaks through the surfaces treated which are not due to structural weaknesses or other causes beyond his control, such as fire, earthquake, tornado, hurricanes, etc., for a period of five years. The warranty shall read as follows:

1. Warranty: The Contractor warrants that, upon completion of the work, the surfaces treated by its application will be and will remain free from water penetrations and spalling resulting from defective workmanship or defective materials for a period of five (5) years from date of substantial completion. If any water penetration or spalling does occur within such period from such causes, the Contractor shall, at his sole expense, repair, replace, or otherwise correct such defective workmanship or materials. The Contractor shall have no responsibility with respect to damage, water penetration, or spalling caused by structural failure or movement of the structure, or any other causes beyond its control.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following

1. Penetron Systems, Inc.
2. Vandex Sales and Service, Inc.
3. Xypex Chemical Corporation.

B. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

1. "ICS Penetrating Systems"; Penetron Systems, Inc.

2. "Standard Construction Joint Details", "Elevator Pit / Sump Pit Details" and "Standard Metal Pipe Detail"; "Xypex" by the Xypex Chemical Corporation, as the basis of design.

3. "Vandex Super" by Vandex Sales & Services, Inc.

C. Associated products and systems as recommend by manufacturer for specific applications.

2.2 INSTALLATION ACCESSORIES

A. Waterstops, if required as part of system, as a basis of design.

1. "Expaseal Waterbar" by Vandex.
2. "Injecto Tube" by De Neef Construction Chemicals.

B. Other accessories as recommended by prime manufacturer.

2.3 MIXES

A. General:

1. Mix waterproofing material by volume with clean water, which is free from salt and deleterious materials. Mix materials in quantities which can be applied within 20 to 30 minutes from the time of mixing. As mixture thickens, stir frequently, but do not add additional water.
2. Do not mix bonding agents or admixtures, with crystalline waterproofing materials.

B. Brush Application Mix:

1. Measure dry powder and place in mixing container. Measure water and mix into powder with a paddle on a slow speed electric drill (250 RPM) or other type mixer which will ensure mixing and is acceptable to manufacturer.
2. Mixing proportions shall be as follows:

Coverage	Proportions (By Vol.)
1.5 lbs. per sq. yd.	5 powder to 2 water
2.0 lbs. per sq. yd.	3 powder to 1 water

C. Spray Application Mix:

1. Mixing shall be same as specified for brush application, except that mix shall be thinner. Use the following proportions only as a guide. Adjust proportions in order to match type of equipment and pressures used.
2. Mixing portions shall be as follows:

Coverage	Proportions (By Vol.)
1.5 lbs. per sq. yd.	5 powder to 3 water

D. Dry-Pac Mix:

1. Using a trowel, mix 1 part clean water with 6 parts waterproofing powder for 10 to 15 seconds. Lumps may be present in mixture and will be acceptable. Mix only as much as can be applied in 15 minutes.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Prior to start of waterproofing installation arrange a visit to project site by waterproofing material manufacturer's representative. Representative shall inspect and certify that surfaces to which waterproofing is to be applied are in acceptable condition.

B. Verify that concrete surfaces have an open capillary system to ensure chemical penetration and maximum bonding, and are sound, clean and moist, and that components which will penetrate waterproofing are complete and rigidly installed.

C. Verify that form release agents and methods and materials used to cure concrete surfaces are compatible with waterproofing products.

D. Verify that pre-formed grooves are in required locations at construction joints.

3.2 PREPARATION

A. General: Examine surfaces to be waterproofed for form tie holes and structural defects such as honeycombing, rock pockets, faulty construction joints, and cracks. Repair these defects in accord with manufacturer's product data and as follows:

1. Form tie holes, faulty construction joints and cracks: Chip defective areas in a "U" shaped slot 3/4 inch to 1 inch wide and a minimum of 1 inch deep. Clean slot of debris and dust. Soak with water and remove surface water. Apply a slurry coat of waterproofing materials at the rate of 1.5 lb. per sq. yd. to the slot. Allow slurry to reach an initial set, then fill cavity with Dry-Pac. Compress into cavity using pneumatic packer or block and hammer.
2. Rock pockets, honeycombing or other defective concrete: Rout out defective areas to sound concrete. Remove loose materials and saturate with water. Remove surface water and apply one slurry coat of waterproofing material. After slurry has set, but while it is still "green", fill cavity to surface with non-shrink grout.

B. Construction Joints:

1. Apply waterproofing materials in slurry form at rate of 2.0 lb. per sq. yd. to joint surfaces between pours. Moisten surfaces prior to slurry application.
2. Where joint surfaces are not accessible prior to pouring new concrete, consult manufacturer for application.

C. Coves and Sealings Strips:

1. Prepare concrete surfaces which will come into contact with coves and sealing strips by applying one coat of waterproofing material in slurry form at rate of 1.5 lb. sq. per yd. Apply Dry-Pac or mortar while slurry coat is still "green" but after it has reached an initial set. Install flexible sealant in expansion joints as specified in Sealant section.
2. Coves: Trowel and pack waterproofing mortar into cove shape where indicated on drawings. This application relates to block/slab interfaces or planter construction joints only.
3. Sealing strips: At performed grooves 1 inch wide by a minimum of 1 inch deep, located at construction joints, shall be filled with waterproofing Dry-Pac and compacted using a pneumatic packer or hammer and block.
4. Waterbars/waterstops at pipe or conduit penetrations and construction joints if required as part of system.

D. Concrete Finish:

1. Concrete surfaces shall have an open capillary system to provide tooth and suction and shall be clean; free from scale, excess form oil, laitance, curing compounds and foreign matter. Lightly sandblast, waterblast, or acid-etched with muriatic acid as necessary to provide a clean absorbent surface. Saturate surfaces to be acid-etched with water prior to application of acid.
2. Formed surfaces may have a smooth form finish.
3. On horizontal surfaces provide a broom finish. Do not apply waterproofing material to this surface if concrete is less than 20 hours old.

4. Apply waterproofing material to "green" concrete as soon as possible after forms have been stripped, or to existing concrete which has been saturated with water. Moisten surfaces to be treated prior to application, as required to ensure migration of crystalline chemicals into capillary voids in concrete. Remove free water prior to treatment with waterproofing material.

E. Surface Application: After repair, patching and sealing strip placement has been completed in accord with manufacturer's product data and as specified herein, treat concrete surfaces with waterproofing material slurry applied at rates and locations indicated on drawings and in accord with manufacturer's product data.

F. Brushing: Use a semi-stiff bristle brush or broom to work slurry into concrete surface, filling hairline cracks and surface pores.

G. Spraying: Hold spray nozzle close enough to ensure that slurry is forced into surface pores, and hairline cracks.

H. Second Coat: When indicated on drawings or required by manufacturer's product data, a second coat of waterproofing material may be necessary. Apply while first coat is still "green", but after it has reached an initial set. Lightly pre-water when rapid drying conditions occur.

3.3 CURING

A. General:

1. Begin curing as soon as waterproofing materials have set up sufficiently so as not to be damaged by a fine spray. Fog-spray treated surfaces three times a day for a two day period, or cover treated surfaces with damp burlap for the prescribed period.

    a. In warm climates, more than 3 sprayings per day may be necessary to prevent excessive drying of coating.
    b. Do not lay plastic sheeting directly on waterproofing coating as air contact is required for proper curing.
    c. Cure waterproofing materials for 3 days and then allow to set for 12 days before filling structure with liquid.
    d. If there is poor air circulation in treated areas, provide fans or blown air to aid in curing of waterproofing.

B. If moist curing is not possible, a chemical curing agent manufactured for or compatible with each approved waterproofing material shall be available for the work. Chemical agent shall have at least 2 years of successful field use to be eligible for acceptance.

C. Protect cured surfaces from damage to wind, sun, rain and temperatures below 36 degrees F. for a period of not less than 48 hours after application. If plastic sheeting is used as protection, it shall be raised off waterproofing coating to allow air circulation.

3.4 FIELD QUALITY CONTROL

A. Flood Testing:

1. Flood test completed installation when all construction, in pit, is complete that will not be damaged as a result of the water test.
2. Fill bottom of pit with 12 inches of water. Let stand for 24 hours.
3. If leaks are discovered, repair and re-test until no leaks are observed.

3.5 PROTECTION AND CLEANING

A. Protect completed coating from damage after application for balance of construction

period.

B. Do not permit traffic on unprotected coating.

C. Clean spillage and soilage from adjacent surfaces, using cleaning agents and procedures recommended by manufacturer of surface.

END OF SECTION 071600

SECTION 07 17 00 - WATERPROOFING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Liquid-applied rubberized asphalt above grade waterproofing and accessory products.

1.2 RELATED SECTIONS

A. Section 03300 - Cast-In-Place Concrete.

B. Section 04200 - Concrete masonry Units.

C. Section 05210 - Structural Steel.

D. Section 06100 - Rough Carpentry.

E. Section 07920 - Sealants.

F. Section 15050 - Mechanical Methods and Materials.

1.3 REFERENCES

A. American Society of Testing and Materials (ASTM):
1. ASTM C 67 Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile.
2. ASTM C 140 Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units.
3. ASTM C 272 Standard Test Method for Water Absorption of Core Materials for Structural Sandwich Constructions.
4. ASTM C 293 Standard Test Method for Flexural Strength of Concrete (Using Simple Beam With Center-Point Loading).
5. ASTM C 518 Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
6. ASTM C 578 Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.
7. ASTM C 836 Standard Test Methods for Crack Cycling at -32 C.
8. ASTM D 36 Standard Test Method for Softening Point of Bitumen (Ring-and-Ball Apparatus).
9. ASTM D 92 Standard Test Method for Flash and Fire Points by Cleveland Open Cup Tester.
10. ASTM D 412 Standard Test Method for Tensile Strength.
11. ASTM D 412 Standard Test Method for Elongation of Rubberized Asphalt.
12. ASTM D 570 Standard Test Method for Water Absorption.
13. ASTM D 751 Standard Test Method for Resistance to Hydrostatic Head.
14. ASTM D 882 Standard Test Method for Tensile Strength, Film.
15. ASTM D 896 Standard Practice for Resistance of Adhesive Bonds to Chemical Reagents.
16. ASTM D 903 Standard Test Method for Peel Resistance.
17. ASTM D 1191 Standard Test Method for Concrete Joint Sealers.
18. ASTM D 1621 .Standard Test Method for Compressive Properties of Rigid Cellular Plastics.

19. ASTM D 1777 Standard Test Method for Thickness of Textile Materials.
20. ASTM D 1876 Standard Test Method for Lap Adhesion.
21. ASTM D 1970 Standard Test Method for Flexibility at Cold Temperature.
22. ASTM D 1970 Standard Test Method for Crack Cycling at -32 C.
23. ASTM D 3407 Standard Test Methods for Joint Sealants, Hot-Poured, for Concrete and Asphalt Pavements.
24. ASTM D 3408 Method of Testing Joint Sealants, Hot Poured, Elastomeric-Type, for Portland Cement Concrete Pavements.
25. ASTM D 4263 Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method.
26. ASTM D 4491 Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
27. ASTM D 4586
28. ASTM D 4716 Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
29. ASTM D 4751 Standard Test Method for Determining Apparent Opening Size of a Geotextile.
30. ASTM D 5147 Standard Test Methods for Tensile Strength.
31. ASTM D 5147 Standard Test Methods for Ultimate Elongation.
32. ASTM D 5147 Standard Test Methods for Elongation of Rubberized Asphalt.
33. ASTM D 5147 Standard Test Methods for Flexibility at Cold Temperature.
34. ASTM D 5147 Standard Test Methods for Water Absorption.
35. ASTM D 5295 Preparation of Concrete Surfaces for Adhered (Bonded) Membrane Waterproofing Systems.
36. ASTM D 5329 Standard Test Methods for Sealants and Fillers, Hot-Applied, for Joints and Cracks in Asphaltic and Portland Cement Concrete Pavements.
37. ASTM D 5385 Standard Test Methods for Resistance to Hydrostatic Head
38. ASTM D 5601 Standard Test Methods for Tear Resistance.
39. ASTM D 5602 Standard Test Methods for Static Puncture.
40. ASTM D 5957 Standard Guide for Flood Testing Horizontal Waterproofing Installations.
41. ASTM E 96(B) Standard Test Method for Water Vapor Permeance.
42. ASTM E 154 Standard Test Method for Puncture Resistance.
43. ASTM D 5385 Standard Test Methods for Resistance to Hydrostatic Head.

B. Canadian General Standards Board (CGSB) 37.50-M89 - Hot Applied, Rubberized Asphalt for Roofing and Waterproofing.

C. International Organization for Standardization (ISO) 9001:2000 Quality Standard.

1.4 DEFINITIONS

A. Waterproofing Terminology: Refer to the following publications for terms related to waterproofing work not otherwise defined in this section.
   1. ASTM D 1079: Definitions of Terms Relating to Waterproofing, Roofing, and Bituminous Materials.
   2. National Roofing Contractors Association (NRCA): Roofing and Waterproofing Manual.
   3. Roof Consultants Institute Glossary of Terms.

1.5 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Product Data: Include physical properties of the specified materials and explanations about product installation, including installation techniques, restrictions, limitations

and manufacturer recommendations.

C. Warranty: Certification that all components of the waterproofing assembly are being supplied and warranted by a single manufacturer. Provide a specimen warranty from the manufacturer that includes all components of the waterproofing installation.

D. Shop Drawings: Include detailing for all assemblies, including walls, curbs, drains, penetrations, edges, and expansion and control joints. Include installation details of waterproofing, flashing, fastening and insulation as applicable.

1.6 QUALITY ASSURANCE

A. Installer Qualifications:
   1. The installer shall demonstrate its qualification to perform the work of this section by providing written evidence from the manufacturer providing the single-source warranty that the installer is an applicator in good standing and is authorized to install the specified waterproofing system on the project.
   2. Documentation of the installer's qualifications shall be written on the manufacturer's letterhead, include the name and address of the installer and the full name and physical address of the waterproofing installation in the body of the letter, and shall be signed by an authorized representative of the membrane manufacturer.

B. Manufacturer Qualifications:
   1. Shall have a minimum of 10-year experience manufacturing waterproofing membrane systems.
   2. Shall submit a current copy of their ISO 9002 manufacturing certification for the plant materials shall be manufactured and shipped from. Additionally, the sequential production log and the ISO 9002 production control record documents shall accompany the material shipment and made a permanent part of the job record and warranty file.
   3. Provide a factory-trained technician to attend site meetings and to perform final inspections of the waterproofing system.
   4. Provide a warranty upon satisfactory installation of the waterproofing system.

C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
   1. Finish areas designated by Architect.
   2. Do not proceed with remaining work until workmanship is approved by Architect.
   3. Correct mock-up area as required to produce acceptable work.

1.7 PRE-INSTALLATION CONFERENCE

A. Convene no less than five days prior to commencing Work at a time and location to be determined.
   1. All parties responsible for Work of this section shall be required to attend including the Architect, Owner, Contractor and any other trades affected by the waterproofing Work.
   2. Review installation procedures and coordination required with related work.
   3. Inspect and make notes of job conditions prior to installation:
      a. Minutes shall be taken at the conference and provided to all parties present.
      b. All outstanding issues shall be noted in writing designating the responsible party for follow-up action and the timetable for completion.
      c. Application of waterproofing system shall not take place until all

outstanding issues are resolved to the satisfaction of the Building Owner.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original unopened containers of packaging clearly labeled with manufacturer's name, brand name, instruction for use and all identifying numbers.

B. Store all materials upright, on pallets, in protected and well-ventilated areas. Only materials to be used the same day shall be removed from this location. Special care shall be required at temperatures below 40 degree F (4 degree C). Keep all materials away from open flame or welding sparks.

C. Pails of materials shall be carefully stored and adequately protected in accordance with the manufacturer's recommendations.

1.9 QUALITY CONTROL

A. Inspection: At a minimum, inspections shall be required at start-up and at intervals of approximately 30%, 60% and 90% completion. A final inspection shall be required.
   1. Warranty shall be issued upon approval of the installation.
   2. Inspections shall be performed by a Technical Representative employed full-time by the Manufacturer and whose primary job description is to assist, inspect and approve membrane installations for the Manufacturer only.
   3. A final inspection report from the Technical Representative, certifying that the waterproofing system has been satisfactorily installed according to the project specifications, Approved Details and good general waterproofing practice, shall be provided.
   4. At all times, the contractor shall permit and facilitate access to the site by the manufacturer's representative.

1.10 SITE PROTECTION

A. During waterproofing work, exposed surfaces of finished surfaces shall be protected with tarps to prevent damage. Contractor shall assume full responsibility for any damage.

B. Perform work only when existing and forecasted weather conditions are within the limits established by the manufacturer of the materials and products used.

C. The Contractor shall provide for adequate protection of the installed membrane preventing damage that might arise from work performed by the other trades.

D. Apply drainage/ protection board/ insulation as soon as possible after membrane installation.

E. Do not allow waste products, including but not limited to petroleum, grease, oil, solvents, vegetable or mineral oil, animal fat, to come in contact with the waterproofing membrane. Contaminated membrane shall be cut out and replaced in accordance with the Approved Details.

1.11 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.12 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in original unopened containers of packaging clearly labeled with manufacturer's name, brand name, instruction for use and all identifying numbers.

B. Store all materials in protected and well-ventilated areas. Only materials to be used the same day shall be removed from this location. Special care shall be required at temperatures below 40 degree F (4.5 degree C). Keep all materials away from open flame or welding sparks.

C. Pails of materials shall be carefully stored and adequately protected in accordance with the manufacturer's recommendations.

D. Store all adhesives at temperatures between 60 degree F (15.5 degree C) and 80 degree F (26.6 degree C).

PART 2 PRODUCTS

2.1 HOT APPLIED RUBBERIZED ASPHALT WATERPROOFING

A. Furnish and install a waterproofing system, vertically or horizontally as indicated, including substrate primer, a monolithic, fully reinforced rubberized asphalt membrane, flashings, separation layer, required accessories and assembly components as follows:
1. Protection course,
2. Drainage course.

B. Membrane: A modified, hot fluid applied rubberized asphalt composed of a specialty blend of refined asphalts, recycled crumb rubber, inert clay and other mineral stabilizers.
1. Product: SOPRASEAL H by SOPREMA.
2. The rubberized asphalt membrane product shall contain an inert clay filler to enable the product to be resistant to acids (fertilizers, building washes and acid rain).
3. Certification from an independent testing laboratory, that the material meets the CGSB-37.50-M89 standard for rubberized asphalt membranes, including all applicable ASTM procedures.
4. Color: Black.
5. Flash Point (CGSB 37.50-M89): 545 degree F (285 degree C).
6. Low Temp. Crack Bridging Capacity (CGSB 37.50- M89 & ASTM D-92): No cracking, splitting or adhesion loss.
7. Water Vapor Permeability (CGSB 37.50- M89 & ASTM E-96): 0.6ng/Pa.m^2s.
8. Water Resistance 50 degree C (122 degree F) for 4 days (CGSB 37.50- M89 & ASTM D-92): No delaminating, blistering, emulsification, deterioration or pinholes.
9. Water Absorption (CGSB 37.50- M89): 0.09 g gain.
10. Toughness (CGSB 37.50- M89):12 J.
11. Ration of Toughness to Peak Load (CGSB 37.50- M89): 0.04 minimum.
12. Viscosity (CGSB 37.50- M89): 4 seconds.
13. Heat Stability (CGSB 37.50- M89): No change in viscosity, penetration, flow or low temperature flex.
14. Low Temperature Flexibility & Adhesion (CGSB 37.50- M89): No cracking, delamination or adhesion loss.
15. Penetration (units) (CGSB 37.50- M89): 70 @ 77 degree F (25 degree C). 156 @ 122 degree F (50 degree C).
16. Flow (ASTM D-1191): 1/8 inch (3 mm) film on 75% angle for 5 hours @ 140

degree F: NO FLOW.
17. Elongation (ASTM D-5329): 1000%.
18. Resiliency (ASTM D-3407): 40% minimum.
19. Bond to Concrete (ASTM D-3408): Pass.
20. Acid Resistance (ASTM D-896): Pass 50% Nitric Acid and 50% Sulfuric Acid.
21. Resistance to Salt Water (ASTM D-896): No delaminating, blistering, deterioration, or emulsification.
22. Resistance to Fertilizer (ASTM-896): No delaminating, blistering, deterioration, or emulsification.
23. Specific Gravity: 1.2.
24. Softening Point (ASTM D-36): 181 degree F (83 degree C).
25. Solids Content (CGSB 37.50- M89): 100%.

C. Primer:
1. Surface Primer: Asphalt Primer conforming to ASTM D 41,
   a. Product: ELASTOCOL 500 by SOPREMA.

D. Flashing Reinforcement:
1. Reinforcing Fabric: Thermally bonded spunlaid polyester/nylon composite mat.
   a. Product: SOPRA-FLASH R by SOPREMA.
2. 60 mil thickness; uncured neoprene.
   a. Product: SOPRA-FLASH UN by SOPREMA.

E. Membrane Flashing:
1. Reinforcing Fabric: Thermally bonded spun laid polyester/nylon composite mat. Encapsulate with Sopraseal H.
   a. Product: SOPRA-FLASH R by SOPREMA, or.
2. 60 mil thickness; uncured neoprene. Embed in Sopraseal H or Bonding Adhesive.
   a. Product: SOPRA-FLASH UN by SOPREMA.
3. Fluid Applied Membrane: Single component polyurethane resin & polyester reinforcement.
   a. Product: ALSAN FLASHING by SOPREMA.

F. Adhesive:
1. Bonding Adhesive to adhere uncured neoprene flashing to substrate.
   a. Product: BONDING ADHESIVE by suitable mfg.
2. Splicing Adhesive to bond end laps of uncured neoprene flashings.
   a. Product: SPLICING ADHESIVE by suitable mfg.
3. Lap Seam Sealant to caulk lap edges.
   a. Product: LAP SEAM SEALANT by suitable mfg.

PART 3 EXECUTION

3.1 SURFACE INSPECTION

A. Do not begin installation until substrates have been properly prepared.

B. The installer shall examine conditions of substrates and other conditions under which this work is to be performed and notify Contractor, in writing, of circumstances detrimental to the proper completion of the work. Do not proceed with work until unsatisfactory conditions are completed.

C. Concrete Inspection:
1. All horizontal concrete surfaces shall be finished with a wood float or wood trowel. Very smooth surfaces (e.g., surfaces finished with a steel trowel) shall

be scarified or chemically etched prior to installation of the waterproofing membrane to ensure proper bonding.

2. All vertical concrete surfaces shall be free of voids, honeycombs and any sharp protrusions.
3. Verify that concrete has cured and aged for minimum time period recommended by membrane manufacturer.
4. Verify that substrate is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D-4263.
5. Determinations of bond strength and moisture content are the responsibility of the contractor and shall be performed periodically by the contractor throughout the course of work.
6. Do not install materials in conditions of inclement weather.

D. Concrete Inspection:
1. Strength/Density: Minimum 2,500 psi (17,235 kPa) Compressive Strength. Minimum 115 pcf (1842 kg/m3) Density.
2. Form Release Agents: Petroleum based products. Distillates are not to be used.

3.2 SURFACE PREPARATION

A. Surfaces shall be structurally sound and free of voids, spalled areas, looser aggregate and sharp protrusions. Remove contaminates such as grease, oil and wax from exposed surfaces. Remove dust, dirt, loose stone and debris. Use repair materials and methods which are acceptable to manufacturer of sheet membrane waterproofing.

B. Cast-In-Place Concrete Substrates:
1. Do not proceed with installation until concrete has properly cured and dried (minimum 7 days for normal structural concrete and minimum 14 days for lightweight structural concrete). Horizontal slabs should be sloped for positive drainage.
2. Fill form tie rod holes with concrete and finish flush with surrounding surface.
3. Repair void/holes over 0.5 inch (13 mm) in length and 0.25 inch (6 mm) deep and finish flush with surrounding surface.
4. Remove scaling to sound, unaffected concrete and repair exposed area with approved materials and methods which are acceptable to manufacturer of sheet membrane waterproofing.
5. Grind irregular construction joints to suitable flush surface.

C. Masonry Substrates: Apply waterproofing over suitable concrete block and brick with smooth trowel-cut mortar joints or parge coat.

D. Wood Substrates: Apply waterproofing membrane over securely fastened, sound surface. All joints and fasteners shall be flush to create a smooth surface.

E. Related Materials: Treat joints and install flashing as recommended by waterproofing membrane manufacturer.

3.3 ADHERED MEMBRANE WATERPROOFING INSTALLATION

A. Comply with membrane manufacturer's literature and approved details for installation, including but not limited to the following:
1. Apply primer by spray or roller at a rate recommended by the membrane manufacturer. Recoat areas not waterproofed if contaminated by dust. Allow primer to dry per membrane manufacturer's recommendations.
2. Joints shall have been properly grouted, sealed and have received the

appropriate water stop as required. Materials shall be fully cured and functioning as the primary joint seal, prepared to receive the waterproofing membrane. These joints, control joints, and any crack over 1/16 inch (1.6 mm) wide shall be void free and stripped in with a 9 inches (229 mm) wide strip of membrane.

3. Tee joints that occur during installation of the membrane shall be coated 6 inches (152 mm) in all directions with a bed of troweled Liquid Membrane, and as necessary to assure all lap edges in the tee-joint shall remain sealed. An additional layer of membrane shall be required to be embedded in the Liquid Membrane and extend past the joint 6 inches (152 mm) in all directions.
4. After cleaning, removal of all loose materials and proper surface preparation, all cuts, tears, abrasions, poor seam adhesion, and slit blemishes, fishmouths, wrinkles, and all other imperfections shall be repaired with membrane extending 6 inches (152 mm) in all directions from the point of repair. The edges of this patch shall receive a trowel application of Liquid Membrane, SBS Mastic, SBS Elastic Cement, or Flashing.

B. Horizontal Installation:

1. Shingle membrane, starting at the low point so the laps shall properly shed water. Side-laps shall be 3 inches (76 mm), end-laps shall be 6 inches (152 mm) and staggered a minimum 12 inches (304 mm) from adjacent seams. Roll in place using a weighted roller, as required. Ensure that all laps are firmly adhered and that there are no voids or fish mouths.
2. All drains are to be seated flush with the deck, immobilized and grouted as required to eliminate voids. At all drain locations, one reinforcing ply of membrane is to be centered over the drain, extending a minimum of 12 inches (305 mm) past the drain bowl in all directions, onto the substrate. Apply a continuous bead of Liquid Membrane at the perimeter edges of this ply. Cut out the drain opening to allow the reinforcing ply to extend past the clamping ring. Center a ply of field membrane creating a dual ply at drain locations, also cutting the field ply to extend past the clamping ring. Apply Liquid Membrane into the drain bowl sealing the edges of both plies of, and extended back 4 inches (102 mm) onto the horizontal surface where the clamping ring shall seat. After cure of the Liquid Membrane, set and seat the clamping ring engaging both plies as the ring is secured.
3. All angle changes (vertical wall to horizontal deck substrate; and inside corners, wall to wall) shall receive a bead of Liquid Membrane applied to extend 3 inches (76 mm) onto the vertical wall and 3 inches (76 mm) onto the horizontal deck. Install a 12 inches (305 mm) width of as a reinforcement membrane centered 6 inches (152 mm) up the wall and 6 inches (152 mm) onto the deck (wall to wall is to be centered 6 inches (152 mm) onto one wall and 6 inches (152 mm) onto the opposing wall). Apply pressure to insure membrane is fully adhered and sealed tightly. Outside corners shall receive a 12 inches (152 mm) width as reinforcement, wrapping the corner 6 inches (152 mm) in each direction (Liquid Membrane is not required). Corners shall be tightly seated and sealed from the finished side with Liquid Membrane as required. As the field membrane is installed, ensure all reinforcement membrane is covered, providing a full two ply finished assembly. All perimeter wall terminations are required, and shall meet local building code requirements and Approved Details.
4. Install the membrane in shingle fashion, starting at the low point so the laps shall properly shed water. Side-laps shall be 3 inches (76 mm) end-laps shall be 6 inches (152 mm) and staggered a minimum 12 inches (305 mm) from adjacent seams. Roll in place using a 75 lb (34 kg) minimum weighted roller. Ensure that all laps are firmly and smoothly adhered without voids, wrinkles,

or fishmouths.

5. All penetrations are to be firmly anchored from the underside, immobilized and grouted flush to eliminate voids.
6. Install membrane to within 1/2 inch (13 mm) of the penetration. Apply a continuous bead of Liquid Membrane at the base of the penetration extended onto the horizontal deck 3 inches (76 mm) and up the penetration to the height of the finish elevation.
7. Install membrane to within 1/2 inch (13 mm) of the penetration and apply Primer if needed. Apply Flashing base coat extended onto the deck 4 inches (102 mm) and up the penetration to the height of the finish elevation, Embed 6 inches (152 mm) wide reinforcing strip of fleece, extended 3 inches (76 mm) onto the deck and 3 inches (76 mm) vertically up the penetration. Apply Flashing top coat extended 4 inches (102 mm) onto the horizontal deck and vertically to the height of the finished elevation.

C. Vertical Installation:

1. Apply membrane as to promote positive drainage, starting at the lowest point with the higher membrane overlapping the lower membrane a minimum 6 inches (152 mm). Roll in place using firm pressure with a hand roller. Ensure that all laps are firmly adhered and that there are no voids or fish mouths.
2. Terminations: Membrane shall be terminated in accordance with Approved Details. Seal membrane terminations and T-joints with troweled bead of Sopramastic or other approved sealant.
3. Footer and all angle changes, (vertical wall to horizontal deck substrate; and inside corners, wall to wall) shall receive a bead of Liquid Membrane applied to extend 3 inches (76 mm) onto the vertical wall and 3 inches (76 mm) onto the horizontal deck. Install a 12 inches (305 mm) width as a reinforcement membrane centered 6 inches (152 mm) up the wall and 6 inches (152 mm) onto the footer/deck (wall to wall is to be centered 6 inches (152 mm) onto one wall and 6 inches (152 mm) onto the opposing wall). Apply pressure to insure membrane is fully adhered and sealed tightly. Outside corners shall receive a 12 inches (305 mm) width as reinforcement, wrapping the corner 6 inches (152 mm) in each direction (Liquid Membrane is not required). Corners shall be tightly seated and sealed from the finished side with Liquid Membrane as required. As the field membrane is installed, ensure all reinforcement membrane is covered, providing a full two ply finished assembly. All perimeter wall terminations are required and shall meet local building code requirements and Approved Details.
4. Install 3000 membrane with 3 inches (76 mm) minimum side laps, 6 inches (152 mm) minimum end laps, in maximum 8 feet (2.5 m) lengths. Roll in place using firm pressure with a hand roller. Ensure that all laps are firmly and smoothly adhered and that there are no voids or fishmouths. Trowel a bead of Liquid Membrane, Sopramastic SM-1, SBS Mastic, or SBS Elastic Cement to all horizontal and all vertical terminations at the end of each day, and to laps that occur within 12 inches (305 mm) of a corner.
5. All penetrations are to be firmly anchored from the interior, immobilized and grouted flush to eliminate voids. Install membrane to within 1/2 inch (13 mm) of the penetration. Apply a continuous bead of Liquid Membrane at the base of the penetration extended onto the vertical wall 3 inches (76 mm) and onto the penetration 12 inches (305 mm) minimum.
6. Install membrane to within 1/2 inch (13 mm) of the penetration and apply Primer if needed. Apply Flashing base coat extended onto the wall 4 inches (102 mm) and a minimum of 12 inches (305 mm) onto the penetration. Embed 6 inches (152 mm) wide reinforcing strip of Fleece, extended 3 inches (76 mm) onto the wall and 3 inches (76 mm) out onto the penetration. Apply Flashing top coat extended 4 inches (102 mm) onto the wall and onto the

penetration 12 inches (305 mm) minimum.

7. Terminations: Membrane shall be terminated in accordance with Approved Details. Membrane shall be terminated at or above grade by firmly seating and sealing top edge of the sheet, and applying a bead of mastic at the top edge of the sheet. The extruded aluminum termination bar shall be fastened with appropriate, approved fasteners on not less than 12 inches (305 mm) centers. The termination bar shall provide constant, adequate, even pressure to hold the membrane in place. Add additional fasteners as conditions (and assembly) require. Mastic shall be applied in the sealant ledge of the termination bar.

3.4 HOT APPLIED RUBBERIZED ASPHALT WATERPROOFING INSTALLATION

A. The rubberized asphalt membrane and accessories shall not during its service life be exposed to a constant temperature above 180 degree F (82 degree C).

B. Application of membrane shall be in a well ventilated area and shall not commence nor be continued during inclement weather. All surfaces shall be free of water, frost, snow and ice and the ambient temperature shall not be below 0 degree F (-17.7 degree C).

C. Surface Preparation: Surfaces shall be clean, dry, smooth, and free of voids per ASTM D 5295 "Preparation of Concrete Surfaces for Adhered (Bonded) Membrane Waterproofing Systems." Unapproved curing compound, form release agents, petroleum distillates and other contaminates are not allowed to come into contact with any approved substrate.
   1. Cast in-Place Concrete; Composite Deck/ Wall: All poured in place concrete shall be smooth and free of voids. All areas shall be free of honeycombs, sharp protrusions, fins, laitance, and shall be free of damaged, spalled areas. If the concrete pour is not monolithic, dissimilar materials, if any, shall receive reinforcing membrane.
   2. Precast Concrete Decks: All precast units shall be mechanically secured and all joints between units shall be grouted. All joints shall be treated with uncured neoprene, or fabric reinforcing prior to full membrane application.
   3. Renovation/Tear-Off Application: All existing membrane (existing waterproofing systems, coatings, coal tar pitch, and asphalt, etc.) shall be removed, restoring the substrate to a pristine condition. All surface areas shall be inspected and approved by manufacturer prior to the application of the new waterproofing system.
   4. Other: Metal, Wood, and Gypsum substrates, Contact SOPREMA.

D. Substrate cleaning: Verify the substrate is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D-4263. The substrate shall be swept, then blown clean to remove all loose debris. Prior to beginning the membrane installation, apply a test patch to the prepared substrate to confirm bond and adhesion.

E. Asphalt Primer/Conditioner Application
   1. Apply the specified primer to all horizontal and all vertical surfaces to be waterproofed. Apply at the rate of 300 to 600 sf per gallon, depending upon the porosity of the substrate. The primer coat should be tan in color.
   2. Prior to application of the waterproofing system, the primer shall be allowed sufficient time to thoroughly dry.

F. Hot Fluid Applied Rubber Membrane
   1. Heat rubberized asphalt membrane in an oil or air jacketed melter with

mechanical agitator, specifically designed for heating rubberized asphalt.

2. Membrane shall be heated to, and maintained at a temperature range between 350 degree F (176 degree C) and 400 degree F (204 degree C).
3. All rubberized asphalt membrane heated and maintained in excess of the specified temperature ranges shall be discarded and removed from the site.

G. Flashing/Detailing Installation
   1. All detailing and flashing shall be accomplished according to the membrane manufacturers written instructions and standard guideline details.
   2. All detailing and flashing reinforcement shall be accomplished prior to the installation of the field membrane.
   3. For non moving joints or cracks not exceeding 1/8 inch (3mm) wide: Embed a strip of reinforcing fabric extending a minimum of 3 inches (76mm) on each side of the non-moving joint or crack, embedded in, and then coated with hot rubberized asphalt.
   4. For non moving joints or cracks exceeding 1/8 inch (3mm) wide: Embed a strip of uncured neoprene or other specified reinforcement (not fabric), extending a minimum of 3 inches (76mm) on each side of the non-moving joint or crack, embedded in, and then coated with hot rubberized asphalt.
   5. Substrate board joints, blemishes, and other imperfections shall be pre-detailed with membrane and appropriate reinforcing prior to the application of the field membrane.
   6. All drains require uncured neoprene acceptreinforcement properly installed, extending a minimum of 6 inches past the drain bowl onto the surrounding substrate. Drain clamping rings shall be properly secured while hot rubberized asphalt is still free flowing. Refer to membrane manufacturer details for specific installation instructions.
   7. Refer to membrane manufacturer's installation guidelines for all detail flashing requirements.

H. Membrane Application
   1. Apply hot rubberized asphalt to the substrate and adjoining surfaces of previously installed flashing reinforcement and detailing. Apply a monolithic coat of hot rubberized asphalt, 90 mil (approximately 2.3 mm) thick; immediately embed a layer of reinforcing fabric, overlapping sheets 1 inch to 2 inches (25 mm to 51 mm) insuring membrane is applied between sheets at laps. Follow with an additional monolithically applied 125 mil uniform, (3.2 mm) thick layer of hot rubberized asphalt membrane, providing a reinforced, seamless membrane averaging 215 mils (5.5 mm) total thickness (180 mils minimum).

I. Separation Layer Installation:
   1. Separation layer shall be immediately installed as follows:
      a. Embed the separation layer into the waterproofing membrane detailed above, while it is still hot, to insure full adhesion.
      b. Install this layer in conjunction with the 125 mil top coating previously detailed, insuring there are no dry lap edges. Overlap separation layer a minimum of 2 inches (51 mm) at all side laps and 4 inches (102 mm) at all end laps. If rigid insulation board materials are used they shall not be overlapped, but shall be embedded in the still hot membrane to achieve full adhesion.
      c. It is recommended that the completed waterproofing assembly be covered with subsequent topping materials as soon as possible to avoid any unnecessary damage to the newly installed waterproofing system. Topping materials shall be installed no later than 30 days from completion of the waterproofing assembly.

3.5 WATER TEST

A. Flood Testing: Flood test each deck area for leaks, according to recommendations in ASTM D-5957, Standard Guide for Flood Testing Horizontal Waterproofing Installations, after completing and protecting waterproofing but before overlaying construction is placed. Install temporary containment assemblies, plug or dam drains, and flood with potable water.
   1. Flood to an average depth of 2-1/2 inches (64 mm) with a minimum depth of 1 inch (25 mm) and not exceeding a depth of 4 inches (102 mm). Maintain 2 inches (51 mm) of clearance from top of flashing membrane. Flood each deck area for 48 hours.

B. Verify that the structure can support the dead load weight of the areas to be water tested before flooding.

C. After flood testing, repair any leaks in the waterproofing system; repeat flood test.

D. Owner may engage an independent testing agency to observe flood testing procedures and results.

3.6 DRAINAGE / PROTECTION BOARD INSTALLATION

A. Horizontal Installation:
   1. Install the specified drainage layer directly on the waterproofing membrane with the filter fabric up, according to membrane manufacturer's written instructions. Use methods that do not penetrate the waterproofing assembly. Abut the drainage panels and overlap the shiplap filter fabric over the adjacent board. Carefully cut the drainage panels to fit the surface, ensuring that the waterproofing membrane is not damaged. Protect installed drainage panels during subsequent construction.

B. Vertical Installation:
   1. Place and secure prefabricated drainage panels with the filter fabric facing away from vertical wall substrate. Use methods that do not penetrate waterproofing. Lap edges and ends of geotextile to maintain continuity. Protect installed drainage panels during subsequent construction. Install drainage panels or approved protection board in accordance with membrane manufacturer's written instructions.
   2. Apply adhesive with spots 3 inches (75 mm) in diameter, every 36 inches (914 mm). Bottom panel should be supported or mechanically fixed. On the top row of protection board, apply a continuous bead of adhesive 1 inch (25 mm) wide to the top leading edge of the panels to be adhered. This bead shall protect the adhesive spots during initial cure by limiting the flow of moisture behind the board in case of rain.
   3. Backfilling shall commence immediately after installation of protection boards. Completed waterproofing assembly shall be protected during backfill operations and/or overburden installation.

3.7 PROTECTION OR DRAINAGE COURSE/INSULATION/PAVER PLACEMENT

A. Examine all areas to receive topping materials. Insure that all areas are free from defect and successfully completed a flood test. Verify that all components of the system are properly installed, fully completed, undamaged, and intact.

B. The protection course, drainage course, insulation, and all other topping materials shall be installed as each area is completed. Adhered as required with SopraTape DB, HV-III Adhesive, or other methods as approved by manufacturer.

C. Protection Course: All vertical flashings shall receive one layer spot adhered with hot rubberized asphalt. Install protection course to lay flat. Cut to fit all penetrations, curbs and perimeters within 3/4 inch (19 mm). Spot adhere as required with hot rubberized asphalt.

D. Drainage Course Installation: Install the drainage course directly on horizontal and vertical surfaces with the filter fabric up in accordance with the membrane manufacturer's written instructions. Properly position drainage course, carefully cutting and fitting panels to fit the surface. Cut and snuggly fit the drainage course at all perimeters, curbs and penetrations, Following the membrane manufacturer's installation procedures. Adhere each geotextile fabric overlap edge to adjacent drainage courses with an adhesive acceptable to the membrane manufacturer.

E. Insulation Placement: Install one or more layers of rigid insulation to required thickness and/or R-value.
   1. Stagger all joints, cut and fit to within 3/4 inch (19 mm) of all projections, perimeter walls and penetrations. Insulation is to be loose laid and tightly butted with joints not greater than 3/8 inch (9.5 mm). One layer Air Layer maybe required. Multi-layer insulation applications require the bottom layer of insulation to be the thickest layer and shall be a minimum of 2" thick (51 mm). All layers shall be loose laid with the joints of the second layer staggered and offset from all joints of the preceding layer. Each successive layer shall be offset from the underlying layer(s).
   2. Vertical insulation applications shall be spot adhered to the protection layer with appropriate adhesive or additional hot rubberized asphalt membrane.

3.8 PROTECTION AND CLEANING

A. Protect waterproofing from damage and wear during remainder of construction period.

B. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by membrane manufacturer of affected construction.

END OF SECTION 071700

SECTION 07 18 00 - TRAFFIC COATINGS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes traffic coatings for the following applications:

1. Exterior pedestrian traffic.

1.2 SUBMITTALS

A. Product Data: For each product indicated.

B. Shop Drawings: Show extent of each traffic coating. Include details for treating substrate joints and cracks, flashings, deck penetrations, and other termination conditions.

C. Samples for Initial Selection: For each type of finish indicated.

D. Samples for Verification: For each type of traffic coating required, prepared on rigid backing and of same thickness and material indicated for the Work.

E. Qualification data.

F. Material test reports.

G. Material certificates.

H. Maintenance data.

I. Warranty.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of traffic coatings required for this Project.

B. Source Limitations:

1. Obtain traffic coatings from a single manufacturer.
2. Obtain primary traffic coating materials, including primers, from traffic coating manufacturer. Obtain secondary materials including aggregates, sheet flashings, joint sealants, and substrate repair materials of type and from source recommended in writing by primary material manufacturer.

C. Fire-Test-Response Characteristics: Provide traffic coating materials with the fire-test-response characteristics as determined by testing identical products per test method below for deck type and slopes indicated by an independent testing and inspecting agency that is acceptable to authorities having jurisdiction.

1. Class A roof covering per ASTM E 108 or UL 790.

D. Mockups: Apply mockups to set quality standards for materials and execution.

1. Architect will select one representative surface for each traffic coating and each substrate to receive traffic coatings. Apply each coating to at least 200 sq. ft. (18.5 sq. m) of each substrate to demonstrate surface preparation, joint and crack treatment, thickness, texture, color, and standard of workmanship.
2. Remove and reapply mockups until they are approved by Architect.
3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.4 WARRANTY

A. Special Warranty: Manufacturer's standard form in which traffic coating manufacturer agrees to repair or replace traffic coatings that deteriorate during the specified warranty period. Warranty does not include deterioration or failure of traffic coating due to unusual weather phenomena, failure of prepared and treated substrate, formation of new substrate cracks exceeding 1/16 inch (1.6 mm) in width, fire, vandalism, or abuse by snowplow, maintenance equipment, and truck traffic.

1. Deterioration of traffic coatings includes the following:

a. Adhesive or cohesive failures.
b. Abrasion or tearing failures.
c. Surface crazing or spalling.
d. Intrusion of water, oils, gasoline, grease, salt, deicer chemicals, or acids into deck substrate.

2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Traffic Coatings: Complying with ASTM C 957.

B. VOC Content: Provide traffic coatings for use inside the weatherproofing system, with VOC content of 150 g/L when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

C. Material Compatibility: Provide primers; base, intermediate, and topcoats; and miscellaneous materials that are compatible with one another and with substrate under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

2.2 TRAFFIC COATING

A. Products: Subject to compliance with requirements, provide one of the following:
1. Carlisle Coatings & Waterproofing, Inc.; CCW-5013 Deck Coating System
2. Dex-O-Tex/Crossfield Products Corp.; Elastatex 500
3. Tremco Incorporated, Sealant/Waterproofing Division; TREMproof 201/60

B. Primer: Manufacturer's standard factory-formulated primer recommended for substrate and conditions indicated.

C. Preparatory and Base Coats: Single- or multicomponent, aliphatic liquid urethane elastomer.

D. Intermediate Coat: Single- or multicomponent, aliphatic liquid urethane elastomer]

E. Topcoat: Single- or multicomponent, aliphatic liquid urethane elastomer with UV inhibitors

1. Color: As selected by Architect from manufacturer's full range

F. Component Coat Thicknesses: As recommended by manufacturer for substrate and service conditions indicated

2.3 MISCELLANEOUS MATERIALS

A. Joint Sealants: As specified in Division 7 Section "Joint Sealants."

B. Sheet Flashing: Nonstaining.

1. Minimum Thickness: 50 mils
2. Material: Sheet material recommended in writing by traffic coating manufacturer

C. Adhesive: Contact adhesive recommended in writing by traffic coating manufacturer.

D. Reinforcing Strip: Fiberglass mesh recommended in writing by traffic coating manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements and for other conditions affecting performance of traffic coatings.

1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance.
2. Verify compatibility with and suitability of substrates.
3. Begin coating application only after minimum concrete curing and drying period recommended by traffic coating manufacturer has passed, after unsatisfactory conditions have been corrected, and after surfaces are dry.
4. Verify that substrates are visibly dry and free of moisture.

a. Test for moisture vapor transmission by plastic sheet method according to ASTM D 4263.
b. Test for moisture content by method recommended in writing by manufacturer

5. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Clean and prepare substrates according to ASTM C 1127 and manufacturer's written recommendations to produce clean, dust-free, dry substrate for traffic coating application.

B. Mask adjoining surfaces not receiving traffic coatings, deck drains, and other deck substrate penetrations to prevent spillage, leaking, and migration of coatings.

C. Concrete Substrates: Mechanically abrade concrete surfaces to a uniform profile according to ASTM D 4259. Do not acid etch.

1. Remove grease, oil, paints, and other penetrating contaminants from concrete.
2. Remove concrete fins, ridges, and other projections.
3. Remove laitance, glaze, efflorescence, curing compounds, concrete hardeners, form-release agents, and other incompatible materials that might affect coating adhesion.
4. Remove remaining loose material to provide a sound surface, and clean surfaces according to ASTM D 4258.

3.3 TERMINATIONS AND PENETRATIONS

A. Prepare vertical and horizontal surfaces at terminations and penetrations through traffic coatings and at expansion joints, drains, and sleeves according to ASTM C 1127 and manufacturer's written recommendations.

B. Provide sealant cants at penetrations and at reinforced and nonreinforced, deck-to-wall butt joints.

C. Terminate edges of deck-to-deck expansion joints with preparatory base-coat strip.

D. Install sheet flashings at deck-to-wall expansion and dynamic joints, and bond to deck and wall substrates according to manufacturer's written recommendations.

3.4 JOINT AND CRACK TREATMENT

A. Prepare, treat, rout, and fill joints and cracks in substrates according to ASTM C 1127 and manufacturer's written recommendations. Before coating surfaces, remove dust and dirt from joints and cracks according to ASTM D 4258.

1. Comply with recommendations in ASTM C 1193 for joint-sealant installation.

3.5 TRAFFIC COATING APPLICATION

A. Apply traffic coating material according to ASTM C 1127 and manufacturer's written recommendations.

1. Verify that wet film thickness of each component coat complies with requirements every 100 sq. ft. (9 sq. m).

B. Apply traffic coatings to prepared wall terminations and vertical surfaces to height indicated, and omit aggregate on vertical surfaces.

C. Cure traffic coatings according to manufacturer's written recommendations. Prevent contamination and damage during application and curing stages.

3.6 PROTECTING AND CLEANING

A. Protect traffic coatings from damage and wear during remainder of construction period.

B. Clean spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 071800

SECTION 07 21 00 - BUILDING INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Concealed building insulation in wall systems
2. Spray Applied Insulation
3. Sound attenuation insulation.

B. Related Sections include the following:

1. Division 5 Section "Cold-Formed Metal Framing" for installation in metal-framed assemblies.
2. Division 9 Section “Gypsum Board” for sound attenuation blankets.
3. Division 15 Sections for mechanical insulation.

1.3 DEFINITIONS

A. Mineral-Fiber Insulation: Insulation composed of rock-wool fibers, slag-wool fibers, or glass fibers; produced in boards and blanket with latter formed into batts (flat-cut lengths) or rolls.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain each type of building insulation through one source from a single manufacturer.

B. Application: For spray applied foam insulation, shall be installed by a qualified spray foam applicator who is familiar with the operation and maintenance of equipment and the properties of the system being applied.

C. Fire-Test-Response Characteristics: Provide insulation and related materials with the fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having

jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.

1. Surface-Burning Characteristics: ASTM E 84.
2. Fire-Resistance Ratings: ASTM E 119.
3. Combustion Characteristics: ASTM E 136.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Protect insulation materials from physical damage and from deterioration by moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

PART 2 - MANUFACTURER AND PRODUCTS

2.1 MANUFACTURER – GLASS-FIBER BLANKET INSULATION

A. Owens Corning, telephone: 1-800-Get-Pink; www.owenscoring.com

B. Johns Mansville, email: cziskind@linhartpr.com, (303) 383-4606; www.johnsmanville.com

C. Certain Teed Corporation Technical Center, 1400 Union Meeting Rd, Blue Bell, PA 19422 (610)341-7000; www.certainteed.com

2.2 GLASS-FIBER BLANKET INSULATION

A. Unfaced, Glass-Fiber Blanket Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics. Formaldehyde-free solutions

B. Where glass-fiber blanket insulation is indicated by the following thicknesses, provide blankets in batt or roll form with thermal resistances indicated:

1. Approximately 6 inches thick with a thermal resistance of 19 deg F x h x sq. ft./Btu at 75°F.

2.3 AUXILIARY INSULATING MATERIALS

A. Adhesive for Bonding Insulation: Product with demonstrated capability to bond insulation securely to substrates indicated without damaging insulation and substrates.

2.4 SPRAY-APPLIED CELLULOSIC INSULATION

A. Self-Supported, Spray-Applied Cellulosic Insulation: ASTM C 1149, Type I (materials applied with liquid adhesive; suitable for either exposed or enclosed applications), chemically treated for flame-resistance, processing, and handling characteristics. Material to have been tested in accordance with ASTM E 1042. Testing laboratory must be NVLAP accredited.

B. Basis of Design: International Cellulose Corp K-13, three inches, Black

C. Product requirements

1. R-Value shall be 3.8 per inch per ASTM C 518
2. Bond strength shall be greater than 100 psf per ASTM E 736
3. Product shall be Class 1 Class A per ASTM E 84/ UL 723.
4. Non-corrosive per ASTM C 739.
5. Bond Deflection per ASTM E 759: 6” Deflection in 10’ Span – No Spalling or Delamination

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements of Sections in which substrates and related work are specified and for other conditions affecting performance.

1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrates of substances harmful to insulation or of interfering with insulation attachment.

3.3 INSTALLATION, GENERAL

A. Comply with insulation manufacturer's written instructions applicable to products and application indicated.

B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed at any time to rain or moisture.

C. Extend insulation in thickness indicated to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

D. Water-Piping Coordination: If water piping is located within insulated exterior walls, coordinate location of piping to ensure that it is placed on warm side of insulation and insulation encapsulates piping.

E. For preformed insulating units, provide sizes to fit applications indicated and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units to produce thickness indicated unless multiple layers are otherwise shown or required to make up total thickness.

3.4 INSTALLATION OF GENERAL BUILDING INSULATION

A. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.

B. Install mineral-fiber insulation in cavities formed by framing members according to the following requirements:

1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill cavity, provide lengths that will produce a snug fit between ends.
2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
3. Maintain 3-inch clearance of insulation around wall mounted recessed lighting fixtures.
4. For metal-framed wall cavities where cavity heights exceed 96 inches, support unfaced blankets mechanically and support faced blankets by taping stapling flanges to flanges of metal studs.

3.5 INSTALLATION OF INSULATION IN CEILINGS FOR SOUND ATTENUATION

A. Install 3-inch- (76-mm-)thick, unfaced glass-fiber blanket insulation over suspended ceilings at partitions in a width that extends insulation 48 inches (1219 mm) on either side of partition.

3.6 PROTECTION

A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION 072100

SECTION 07 26 00 - WEATHER BARRIERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Building wrap.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.3 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: For water-resistive barrier, from ICC-ES.

PART 2 - PRODUCTS

2.1 WATER-RESISTIVE BARRIER

A. Building Wrap: ASTM E 1677, Type I air barrier; with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, when tested according to ASTM E 84; UV stabilized; and acceptable to authorities having jurisdiction.

   1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
      a. DuPont (E. I. du Pont de Nemours and Company); Tyvek CommercialWrap.
      b. Pactiv, Inc.; GreenGuard Ultra Wrap.

   2. Water-Vapor Permeance: Not less than 50 g through 1 sq. m of surface in 24 hours per ASTM E 96/E 96M, Desiccant Method (Procedure A).

B. Building-Wrap Tape: Pressure-sensitive plastic tape recommended by building-wrap manufacturer for sealing joints and penetrations in building wrap.

PART 3 - EXECUTION

3.1 WATER-RESISTIVE BARRIER INSTALLATION

A. Cover sheathing with water-resistive barrier as follows:

   1. Cut back barrier 1/2 inch (13 mm) on each side of the break in supporting members at expansion- or control-joint locations.

2. Apply barrier to cover vertical flashing with a minimum 4-inch (100-mm) overlap unless otherwise indicated.

B. Building Wrap: Comply with manufacturer's written instructions.

1. Seal seams, edges, fasteners, and penetrations with tape.
2. Extend into jambs of openings and seal corners with tape.

END OF SECTION 072600

SECTION 07311 - FIBERGLASS SHINGLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Fiberglass shingles.
2. Felt underlayment.
3. Self-adhering sheet underlayment.
4. Ridge vents.

B. Related Sections include the following:

1. Division 6 Section “Miscellaneous Carpentry" for roof deck wood structural panels.
2. Division 7 Section "Sheet Metal Flashing and Trim" for metal roof penetration flashings not part of this Section.

1.3 DEFINITIONS

A. Roofing Terminology: Refer to ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" for definitions of terms related to roofing work in this Section.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples for Initial Selection: For each type of asphalt shingle, [ridge and hip cap shingles] [ridge vent] [and] indicated.

1. Include similar Samples of trim and accessories involving color selection.

C. Research/Evaluation Reports: For fiberglass shingles.

D. Warranties: Special warranties specified in this Section.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A firm or individual that is approved, authorized, or licensed by asphalt shingle roofing system manufacturer to install roofing system indicated.

B. Source Limitations: Obtain ridge and hip cap shingles ridge vents felt underlayment and self-adhering sheet underlayment through one source from a single asphalt shingle manufacturer.

C. Fire-Test-Response Characteristics: Provide asphalt shingle and related roofing materials with the fire-test-response characteristics indicated, as determined by testing identical products per test method below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.

1. Exterior Fire-Test Exposure: Class [A] [C]; ASTM E 108 or UL 790, for application and roof slopes indicated.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store roofing materials in a dry, well-ventilated, weathertight location according to asphalt shingle manufacturer's written instructions. Store underlayment rolls on end on pallets or other raised surfaces. Do not double-stack rolls.

1. Handle, store, and place roofing materials in a manner to avoid significant or permanent damage to roof deck or structural supporting members.

B. Protect unused underlayment from weather, sunlight, and moisture when left overnight or when roofing work is not in progress.

1.7 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit asphalt shingle roofing to be performed according to manufacturer's written instructions and warranty requirements.

1. Install self-adhering sheet underlayment within the range of ambient and substrate temperatures recommended by manufacturer.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace fiberglass shingles that fail in materials or workmanship within specified warranty period. Materials failures include manufacturing defects and failure of fiberglass shingles to self-seal after a reasonable time.

1. Material Warranty Period: 30 years from date of Substantial Completion, prorated, with first 15 years nonprorated.
2. Wind-Speed Warranty Period: Fiberglass shingles will resist blow-off or damage caused by wind speeds up to 90 mph for 15 years from date of Substantial Completion.
3. Algae-Discoloration Warranty Period: Fiberglass shingles will not discolor 15 years from date of Substantial Completion.
4. Workmanship Warranty Period: 15 years from date of Substantial Completion.

B. Special Project Warranty: Roofing Installer's warranty, on warranty form at end of this Section, signed by roofing Installer, covering Work of this Section, in which roofing Installer agrees to repair or replace components of asphalt shingle roofing that fail in materials or workmanship within the following warranty period:

1. Warranty Period: Ten years from date of Substantial Completion.

1.9 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Fiberglass shingles: 100 sq. ft (9.3 sq. m) of each type, in unbroken bundles.

PART 2 - PRODUCTS

2.1 GLASS-FIBER-REINFORCED FIBERGLASS SHINGLES

A. Three-Tab-Strip, SBS-Modified Fiberglass shingles: ASTM D 3462, glass-fiber reinforced, mineral-granule surfaced, and self-sealing; complying with UL 2218, Class IV.

1. Products:
   a. Owens Corning; Oakridge Shingle with color to be selected by architect from manufacturer's full range of colors.

   b. Tamko Roofing Corporation, Heritage; Architectural Shingle with color to be selected by architect from manufacturer's full range of colors.

   c. Malarkey Roofing Company; Architectural Shingle with color to be selected by architect from manufacturer's full range of colors.

2. Strip Size: Manufacturer's standard.
3. Algae Resistance: Granules treated to resist algae discoloration.
4. Color and Blends: As selected by Architect from manufacturer's full range.

B. Hip and Ridge Shingles: Manufacturer's standard units to match fiberglass shingles.

2.2 UNDERLAYMENT MATERIALS

A. Felts: ASTM D 226 or ASTM D 4869, Type II, asphalt-saturated organic felts, or red rosin paper nonperforated.

B. Self-Adhering Sheet Underlayment, Granular Surfaced: ASTM D 1970, minimum of 55-mil- (1.4-mm-) thick sheet; glass-fiber-mat-reinforced, SBS-modified asphalt; mineral-granule surfaced; with release paper backing; cold applied. Provide primer for adjoining concrete or masonry surfaces to receive underlayment.

1. Products:
    a. Grace Ice and Water Sheild.
    b. GAF Materials Corporation; Weather Watch.
    c. Johns Manville International, Inc.; Roof Defender.
    d. NEI Advanced Composite Technology; AC Granular Ice and StormSeal.
    e. Owens Corning; WeatherLock G.

C. Granular-Surfaced Valley Lining: ASTM D 3909, mineral-granular-surfaced, glass-felt-based, asphalt roll roofing; 36 inches (914 mm) wide.

2.3 RIDGE VENTS

A. Flexible Ridge Vent: Manufacturer's standard compression-resisting, three-dimensional open-nylon or polyester-mat filter bonded to a nonwoven, nonwicking geotextile fabric cover.

1. Products:

    a. Celotex Corporation; Roll Vent.
    b. GAF Materials Corporation; Cobra.
    c. TAMKO Roofing Products, Inc.; Roll Vent.

2.4 ACCESSORIES

A. Asphalt Roofing Cement: ASTM D 4586, Type II, asbestos free.

B. Roofing Nails: ASTM F 1667; aluminum, stainless-steel, copper, or hot-dip galvanized steel wire shingle nails, minimum 0.120-inch- (3-mm-) diameter, barbed shank, sharp-pointed, with a minimum 3/8-inch-(9.5-mm-) diameter flat head and of sufficient length to penetrate 3/4 inch (19 mm) into solid wood decking or extend at least 1/8 inch (3 mm) through OSB or plywood sheathing.

1. Where nails are in contact with metal flashing, use nails made from same metal as flashing.

C. Felt Underlayment Nails: Aluminum, stainless-steel, or hot-dip galvanized steel wire with low profile capped heads or disc caps, 1-inch (25-mm) minimum diameter.

2.5 METAL FLASHING AND TRIM

A. Sheet Metal Flashing and Trim: Comply with requirements in Division 7 Section "Sheet Metal Flashing and Trim."

B. Fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.

1. Examine roof sheathing to verify that sheathing joints are supported by framing and blocking or metal clips and that installation is within flatness tolerances.
2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and completely anchored; and that provision has been made for flashings and penetrations through fiberglass shingles.
3. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 UNDERLAYMENT INSTALLATION

A. Double-Layer Felt or Red Rosin Paper Underlayment: Install double layers of felt or Red Rosin Paper underlayment on roof deck perpendicular to roof slope in parallel courses. Install a 19-inch- (485-mm-) wide starter course at eaves and completely cover with full-width second course. Install succeeding courses lapping previous courses 19 inches (485 mm) in shingle fashion. Lap ends a minimum of 6 inches (150 mm). Stagger end laps between succeeding courses at least 72 inches (1830 mm). Fasten with felt underlayment nails.

1. Apply a continuous layer of asphalt roofing cement over starter course and on underlayment surface to be concealed by succeeding courses as each felt course is installed. Apply over entire roof.
2. Install underlayment on roof sheathing not covered by self-adhering sheet underlayment. Lap edges over self-adhering sheet underlayment not less than 3 inches (75 mm) in direction to shed water.
3. Terminate underlayment extended up not less than 4 inches (100 mm) against sidewalls, curbs, chimneys and other roof projections.

B. Self-Adhering Sheet Underlayment: Install self-adhering sheet underlayment, wrinkle free, on roof deck. Comply with low-temperature installation restrictions of underlayment manufacturer if applicable. Install at locations indicated below, lapped in direction to shed water. Lap sides not less than 3-1/2 inches (89 mm). Lap ends not less than 6 inches (150 mm) staggered 24 inches (600 mm) between courses. Roll laps with roller. Cover underlayment within seven days.

1. Prime concrete and masonry surfaces to receive self-adhering sheet underlayment.
2. Eaves: Extend from edges of eaves 36 inches (914 mm) beyond interior face of exterior wall.
3. Rakes: Extend from edges of rake 36 inches (914 mm) beyond interior face of exterior wall.
4. Valleys: Extend from lowest to highest point 18 inches (450 mm) on each side.
5. Hips: Extend 18 inches (450 mm) on each side.
6. Ridges: Extend 36 inches (914 mm) on each side without obstructing continuous ridge vent slot.
7. Sidewalls: Extend beyond sidewall 18 inches (450 mm) and return vertically against sidewall not less than 4 inches (100 mm).
8. Dormers, Chimneys, Skylights, and other Roof-Penetrating Elements: Extend beyond penetrating element 18 inches (450 mm) and return vertically against penetrating element not less than 4 inches (100 mm).
9. Roof Slope Transitions: Extend [18 inches (450 mm)] <Insert dimension> on each roof slope.

C. Concealed Woven Valley Lining: Comply with ARMA and NRCA recommendations. Install a 36-inch-(914-mm-) wide felt underlayment centered in valley. Fasten to roof deck with felt underlayment nails.

1. Lap roof deck felt underlayment over valley felt underlayment at least 6 inches (150 mm).
2. Install a 36-inch- (914-mm-) wide strip of granular-surfaced valley lining centered in valley, with granular-surface face up. Lap ends of strips at least 12 inches (300 mm) in direction to shed water, and seal with asphalt roofing cement. Fasten to roof deck with roofing nails.

3.3 METAL FLASHING INSTALLATION

A. General: Install metal flashings and other sheet metal to comply with requirements in Division 7 Section "Sheet Metal Flashing and Trim."

1. Install metal flashings according to recommendations in ARMA's "Residential Asphalt Roofing Manual" and asphalt shingle recommendations in NRCA's "The NRCA Roofing and Waterproofing Manual."

3.4 SHINGLE INSTALLATION

A. Install fiberglass shingles according to manufacturer's written instructions, recommendations in ARMA's "Residential Asphalt Roofing Manual," and asphalt shingle recommendations in NRCA's "The NRCA Roofing and Waterproofing Manual."

B. Install starter strip along lowest roof edge, consisting of an asphalt shingle strip at least 7 inches (175 mm) wide with self-sealing strip face up at roof edge.

1. Extend fiberglass shingles 1/2 inch (13 mm) over fascia at eaves and rakes.
2. Install starter strip along rake edge.

C. Install first and remaining courses of fiberglass shingles stair-stepping diagonally across roof deck with manufacturer's recommended offset pattern at succeeding courses, maintaining uniform exposure.

D. Install fiberglass shingles by single-strip column or racking method, maintaining uniform exposure. Install full length first course followed by cut second course, repeating alternating pattern in succeeding courses.

E. Fasten asphalt shingle strips with a minimum of five roofing nails located according to manufacturer's written instructions.

1. Where roof slope exceeds 20:12, seal fiberglass shingles with asphalt roofing cement spots after fastening with additional roofing nails.
2. Where roof slope is less than 4:12, seal fiberglass shingles with asphalt roofing cement spots.
3. When ambient temperature during installation is below 50 deg F (10 deg C), seal fiberglass shingles with asphalt roofing cement spots.

F. Woven Valleys: Extend succeeding asphalt shingle courses from both sides of valley 12 inches (300 mm) beyond center of valley, weaving intersecting shingle-strip courses over each other. Use one-piece shingle strips without joints in the valley.

1. Do not nail fiberglass shingles within 6 inches (150 mm) of valley center.

G. Ridge Vents: Install continuous ridge vents over fiberglass shingles according to manufacturer's written instructions. Fasten with roofing nails of sufficient length to penetrate sheathing.

H. Ridge and Hip Cap Shingles: Maintain same exposure of cap shingles as roofing shingle exposure. Lap cap shingles at ridges to shed water away from direction of prevailing winds. Fasten with roofing nails of sufficient length to penetrate sheathing.

1. Fasten ridge cap fiberglass shingles to cover ridge vent without obstructing airflow.

END OF SECTION 073011

SECTION 07 46 20 – CEMENTITIOUS PANELS AND TRIM

PART 1 - GENERAL

SUMMARY

A. This Section includes the following:
   1. Fiber cement lap siding, panels, single, trim, fascia, moulding and accessories.
   2. Factory-finished fiber cement lap siding, panels, single, trim, fascia, moulding and accessories.

1.3 REFERENCES

A. ASTM D3359 - Standard Test Method for Measuring Adhesion by Tape Test, Tool and Tape.

B. ASTM E136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 degrees C.

1.4 SUBMITTALS

C. Product Data: Manufacturer's data sheets on each product to be used, including:
   Preparation instructions and recommendations.
   Storage and handling requirements and recommendations.
   Installation methods.

D. Shop Drawings: Provide detailed drawings of applications of cementitious siding materials.

E. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

F. Verification Samples: For each finish product specified, two samples, minimum size 4 by 6 inches (100 by 150 mm), representing actual product, color, and patterns.

1.5 QUALITY ASSURANCE

A. Installers Qualifications: Minimum of 2 years experience with installation of similar products.

1.6 MOCKUP

A. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
   Finish areas designated by Architect.
   Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
   Refinish mock-up area as required to produce acceptable work.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store siding on edge or lay flat on a smooth level surface. Protect edges and corners from chipping. Store sheets under cover and keep dry prior to installing.

C. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.7 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.8 WARRANTY

A. Product Warranty: Limited, non-pro-rated product warranty.
panels for 30 years.
boards for 15 years.

B. Finish Warranty: Limited product warranty against manufacturing finish defects.
When used for its intended purpose, properly installed and maintained according to published installation instructions, for a period of 15 years from the date of purchase: will not peel; will not crack; and will not chip. Finish warranty includes the coverage for labor and material.

C. Workmanship Warranty: Application limited warranty for 2 years.

PART 2 - PRODUCTS

MANUFACTURERS

1. Manufacturers:

A. James Hardie Building Products, Inc., which is located at: 26300 La Alameda Suite 400 ; Mission Viejo, CA 92691; Toll Free Tel: 866-274-3464; Tel: 949-367-4980; Email: request info (info@jameshardie.com); Web: www.jameshardiecommercial.com Basis of Design: Non-Vented Cedarmill and Cedarmill Trim

B. Cemplank, Inc.

C. CertainTeed

2.2 PRODUCTS

A. HardieSoffit HZ10 panels requirement for Materials:
1.1 Fiber-cement Siding - complies with ASTM C 1186 Type A Grade II.
1.2 Fiber-cement Siding - complies with ASTM E 136 as a noncombustible material
1.3 Fiber-cement Siding - complies with ASTM E 84 Flame Spread Index = 0, Smoke Developed Index = 5.

B. Trim:
1.1 HardieTrim HZ10 boards as manufactured by James Hardie Building Products, Inc.
1.2 HardieTrim HZ10 Fascia boards as manufactured by James Hardie Building Products, Inc.

2.3 FASTENERS

A. Wood Framing Fasteners:
1.1 As required to comply with manufacturer's requirements and wind load requirements per Legacy Report

NER-405.

B. Metal Framing:
1.1 As required to comply with manufacturer's requirements and wind load requirements per Legacy Report NER-405.

C. Masonry Walls:
1.1 Masonry Walls: Aerico Stud Nail, ET&F ASM No.-144-125, 0.14 inch (3.6 mm) shank by 0.30 inch (7.6 mm) head by 2 inches (51 mm) long corrosion resistant nails.

2.4 FINISHES

D. Factory Finish Color for Trim, Soffit and Siding Colors: From manufacturer's full range.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If framing preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

C. Minimum 20 gauge 3-5/8 inch (92 mm) C-Stud 16 inches maximum on center or 16 gauge 3-5/8 inches (92 mm) C-Stud 24 inches (610 mm) maximum on center metal framing complying with local building codes, including the use of water-resistive barriers and/or vapor barriers where required. Minimum 1-1/2 inches (38 mm) face and straight, true, of uniform dimensions and properly aligned.
1.1 Install water-resistive barriers and claddings to dry surfaces.
1.2 Repair any punctures or tears in the water-resistive barrier prior to the installation of the siding
1.3 Protect siding from other trades

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Install a water-resistive barrier is required in accordance with local building code requirements.

D. The water-resistive barrier must be appropriately installed with penetration and junction flashing in accordance with local building code requirements.

3.3 INSTALLATION - SOFFIT

A. Install materials in strict accordance with manufacturer's installation instructions.

B. Allow minimum clearances between the edge of soffit and any other material in strict accordance with the manufacturer's installation instructions.

C. Align vertical joints of the planks over framing members.

D. Wind Resistance: Where a specified level of wind resistance is required Soffit is installed to framing members and secured with fasteners described in Table No. 2 in National Evaluation Service Report No. NER-405.

E. Face nail to sheathing.

F. Factory Finish Touch Up: Apply touch up paint to cut edges in accordance with manufacturer's printed instructions.
1.1 Touch-up nicks, scrapes, and nail heads in pre-finished siding using the manufacturer's touch-up kit pen.
1.2 Touch-up of nails shall be performed after application, but before plastic protection wrap is removed to prevent spotting of touch-up finish.
1.3 Use touch-up paint sparingly. If large areas require touch-up, replace the damaged area with new pre-finished siding. Match touch up color to siding color through use of manufacturer's branded touch-up kits.

3.4 INSTALLATION –TRIM BOARDS

A. Install materials in strict accordance with manufacturer's installation instructions. Install flashing around all wall openings.

B. Fasten through trim into structural framing or code complying sheathing. Fasteners must penetrate minimum 3/4 inch (19 mm) or full thickness of sheathing. Additional fasteners may be required to ensure adequate security.

C. Place fasteners no closer than 3/4 inch (19 mm) and no further than 2 inches (51 mm) from side edge of trim board and no closer than 1 inch (25 mm) from end. Fasten maximum 16 inches (406 mm) on center.

D. Outside Corner Board Attach Trim on both sides of corner with 16 gage corrosion resistant finish nail 1/2 inch (13 mm) from edge spaced 16 inches (406 mm) apart, weather cut each end spaced minimum 12 inches (305 mm) apart.

E. Allow 1/8 inch gap between trim and adjacent material.

F. Seal gap with backer rod and high quality, paint-able caulk per Drawings.

G. Shim frieze board as required to align with corner trim..

H. Fasten through overlapping boards. Do not nail between lap joints.

I. Overlay siding with single board of outside corner board then align second corner board to outside edge of first corner board. Do not fasten Trim boards to Trim boards.

J. Shim frieze board as required to align with corner trim.

K. Install Trim Fascia boards to rafter tails or to sub fascia.

3.5 INSTALLATION – PROTECTION

A. Protect installed products until completion of project.

B. Touch up, repair or replace damaged products before Substantial Completion.

END OF SECTION 074620

SECTION 07 62 00 - SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following “exposed to the exterior” sheet metal flashing and trim:

1. Formed low-slope roof flashing and trim including roof edge flashing, copings, flashing and counter flashing, and roof penetration flashing
2. Formed wall flashing and trim.
3. Gutters and downspouts.

B. Related Sections include the following:

1. Division 1 Section “Quality Requirements” for quality control of building envelope.
2. Division 6 Section "Rough Carpentry" for wood nailers, curbs, and blocking.
3. Division 7 Section "Metal Wall Panels" for factory-formed metal wall panels and flashing and trim not part of sheet metal flashing and trim.
4. Division 7 Section "SBS-Modified Bituminous Membrane Roofing” for installing sheet metal flashing and trim integral with roofing membrane.
5. Division 7 Section "SBS-Modified Bituminous Plaza Deck Roofing System” for installing sheet metal flashing and trim integral with Plaza Deck System.
6. Division 7 Section "Roof Accessories" for set-on-type curbs, equipment supports, roof hatches, vents, and other manufactured roof accessory units.
7. Division 7 Section "Joint Sealants" for field-applied sheet metal flashing and trim sealants.
8. Division 9 Section "Portland Cement Plaster" for factory-formed metal accessories and trim not part of sheet metal flashing and trim.

1.3 PERFORMANCE REQUIREMENTS

A. General: Install sheet metal flashing and trim to withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failing, rattling, leaking, and fastener disengagement.

B. Fabricate and install roof edge flashing and copings capable of resisting the following forces according to recommendations in FMG Loss Prevention Data Sheet 1-49:

1. Wind Loads: Refer to the “General Notes” on Structural Drawings for wind velocity, pressures and other design requirements.

C. Thermal Movements: Provide sheet metal flashing and trim that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, hole elongation, overstressing of components, failure of

joint sealants, failure of connections, and other detrimental effects. Provide clips that resist rotation and avoid shear stress as a result of sheet metal and trim thermal movements. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

D. Water Infiltration: Provide sheet metal flashing and trim that do not allow water infiltration to building interior.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings: Show layouts of sheet metal flashing and trim, including plans and elevations. Distinguish between shop- and field-assembled work. Include the following:

1. Identify material, thickness, weight, and finish for each item and location in Project.
2. Details for forming sheet metal flashing and trim, including profiles, shapes, seams, and dimensions.
3. Details for fastening, joining, supporting, and anchoring sheet metal flashing and trim, including fasteners, clips, cleats, and attachments to adjoining work.

C. Samples for Initial Selection: For each type of sheet metal flashing and trim indicated with factory-applied color finishes.

1. Include similar Samples of trim and accessories involving color selection.

2. Sheet Metal Flashing: 12 inches (300 mm) long. Include fasteners, cleats, clips, closures, and other attachments.
3. Trim: 12 inches (300 mm) long. Include fasteners and other exposed accessories.
4. Accessories: Full-size Sample.

1.5 QUALITY ASSURANCE

A. Sheet Metal Flashing and Trim Standard: Comply with SMACNA's "Architectural Sheet Metal Manual." Conform to dimensions and profiles shown unless more stringent requirements are indicated.

B. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

1. Meet with Owner, Architect, Owner's insurer if applicable, Installer, and installers whose work interfaces with or affects sheet metal flashing and trim including installers of roofing materials, roof accessories, unit skylights, and roof-mounted equipment.
2. Review methods and procedures related to sheet metal flashing and trim.
3. Examine substrate conditions for compliance with requirements, including flatness and attachment to structural members.
4. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver sheet metal flashing materials and fabrications undamaged. Protect sheet metal flashing and trim materials and fabrications during transportation and handling.

B. Unload, store, and install sheet metal flashing materials and fabrications in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack materials on platforms or pallets, covered with suitable weathertight and ventilated covering. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage.

1.7 COORDINATION

A. Coordinate installation of sheet metal flashing and trim with interfacing and adjoining construction to provide a leakproof, secure, and noncorrosive installation.

PART 2 - PRODUCTS

2.1 SHEET METALS

A. Galvanized Metal Flashing.

B. Lead Sheet: ASTM B 749, Type L51121, copper-bearing lead sheet.

2.2 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, protective coatings, separators, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation.

B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads.
   1. Fasteners for Flashing and Trim: Blind fasteners or self-drilling screws, gasketed, with hex washer head.

C. Elastomeric Sealant: Refer to Division 7 Section “Joint Sealants” required to seal joints in sheet metal flashing and trim and remain watertight.

D. Epoxy Seam Sealer: Two-part, noncorrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior nonmoving joints, including riveted joints.

E. Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15-mil (0.4-mm) dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

F. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required for application.

2.3 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

A. Roof Edge Flashing (Gravel Stop) and Fascia Caps: Fabricate in minimum 96-inch- (2400-mm-) long, but not exceeding 10-foot- (3-m-) long, sections. Furnish with 6-inch- (150-mm-) wide joint cover plates.

B. Copings and covers: Fabricate in minimum 96-inch- (2400-mm-) long, but not exceeding 10-foot- (3-m-) long, sections. Fabricate joint plates of same thickness as copings. Furnish with continuous cleats to support edge of external leg and[drill elongated holes for fasteners on] interior leg. Miter corners and seal watertight.

1. Joint Style: Butt, with 6-inch- (150-mm-) wide exposed cover plates.
2. Fabricate copings from the following material and minimum thickness:

    a. Galvanized Steel: 0.0396 inch (1.0 mm) thick.

C. Base Flashing: Fabricate from the following material:

1. Prepainted, Metallic-Coated Steel: 0.0276 inch (0.7 mm) thick.

D. Counterflashing: Fabricate from the following material:

1. Prepainted, Metallic-Coated Steel: 0.0239 inch thick..

E. Flashing Receivers: Fabricate from the following material:

1. Prepainted, Metallic-Coated Steel: 0.0239 inch thick.

F. Roof-Penetration Flashing: Fabricate from the following material:

1. Prepainted, Metallic-Coated Steel: 0.0276 inch (0.7 mm) thick

G. Roof-Drain Flashing: Fabricate from the following material:

1. Lead: 4.0 lb/sq. ft. (1.6 mm thick), hard tempered.

2.4 WALL SHEET METAL FABRICATIONS

A. Through-Wall Flashing: Fabricate continuous flashings in minimum 96-inch- (2400-mm-) long, but not exceeding 12-foot- (3.6-m-) long, sections, under copings, at shelf angles, and where indicated. Fabricate discontinuous lintel, sill, and similar flashings to extend 6 inches (150 mm) beyond each side of wall openings. Form with 2-inch- (50-mm-) high, end dams where flashing is discontinuous. Fabricate from the following materials:
1. Metal: 0.016 inch (0.40 mm) thick.

B. Opening Flashings in Frame Construction: Fabricate head, sill,[jamb,] and similar flashings to extend 4 inches (100 mm) beyond wall openings. Form head and sill flashing with 2-inch- (50-mm-) high, end dams. Fabricate from the following materials:

1. Metal: 0.016 inch (0.40 mm) thick.

2.5 MISCELLANEOUS SHEET METAL FABRICATIONS

A. Equipment Support Flashing: Fabricate from the following material:

1. Prepainted, Metallic-Coated Steel: 0.0276 inch (0.7 mm) thick.

B. Gutters and downspouts: Fabricate from the following material:

1. Aluminum: 0.0276 inch (0.7 mm) thick.
2. Fabricate gutters in profile indicated; 5” profile unless noted otherwise, with 4”x3” downspouts.

2.6 FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions and other conditions affecting performance of work.

1. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.

1. Torch cutting of sheet metal flashing and trim is not permitted.

B. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating or by other permanent separation as recommended by fabricator or manufacturers of dissimilar metals.

1. Underlayment: Where installing metal flashing directly on cementitious or wood substrates, install a course of felt underlayment and cover with a slip sheet or install a course of polyethylene underlayment.
2. Bed flanges in thick coat of asphalt roofing cement where required for waterproof performance.

C. Install exposed sheet metal flashing and trim without excessive oil canning, buckling, and tool marks.

D. Install sheet metal flashing and trim true to line and levels indicated. Provide uniform, neat seams with minimum exposure of and butyl sealant.

E. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.

1. Space cleats not more than 12 inches (300 mm) apart. Anchor each cleat with two fasteners. Bend tabs over fasteners.

F. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet (3 m) with no joints allowed within 24 inches (600 mm) of corner or intersection. Where lapped or bayonet-type expansion provisions cannot be used or would not be sufficiently watertight, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with butyl sealant concealed within joints.

G. Fasteners: Use fasteners of sizes that will penetrate substrate not less than 1-1/4 inches (32 mm) for nails and not less than 3/4 inch (19 mm) for wood screws.

1. Galvanized or Prepainted, Metallic-Coated Steel: Use stainless-steel fasteners.

H. Seal joints with butyl sealant as required for watertight construction.

1. Where sealant-filled joints are used, embed hooked flanges of joint members not less than 1 inch (25 mm) into sealant. Form joints to completely conceal sealant. When ambient temperature at time of installation is moderate, between 40 and 70 deg F (4 and 21 deg C), set joint members for 50 percent movement either way. Adjust setting proportionately for installation at higher ambient temperatures. Do not install sealant-type joints at temperatures below 40 deg F (4 deg C).
2. Prepare joints and apply sealants to comply with requirements in Division 7 Section "Joint Sealants."

3.3 ROOF FLASHING INSTALLATION

A. General: Install sheet metal roof flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, set units true to line, and level as indicated. Install work with laps, joints, and seams that will be permanently watertight.

B. Roof Edge Flashing: Anchor to resist uplift and outward forces according to recommendations in FMG Loss Prevention Data Sheet 1-49 for specified wind zone and as indicated.

1. Interlock bottom edge of roof edge flashing with continuous cleats anchored to substrate at 16-inch (400-mm) centers.

C. Copings: Anchor to resist uplift and outward forces according to recommendations in FMG Loss Prevention Data Sheet 1-49 for specified wind zone and as indicated.

1. Interlock exterior bottom edge of coping with continuous cleats anchored to substrate at 16-inch (400-mm) centers.
2. Anchor interior leg of coping with screw fasteners and washers at 18-inch (450-mm) centers.

D. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Install flashing as follows:

1. Turn lead flashing down inside vent piping, being careful not to block vent piping with flashing.
2. Seal with butyl sealant and clamp flashing to pipes penetrating roof except for lead flashing on vent piping.

3.4 CLEANING AND PROTECTION

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

B. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed. On completion of installation, clean finished surfaces, including removing unused fasteners, metal filings, pop rivet stems, and pieces of flashing. Maintain in a clean condition during construction.

C. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 076200

SECTION 07 71 29 EXPANSION CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Architectural joint systems for building exteriors.

B. Related Sections include the following:

   1. Division 03 Section "Cast-in-Place Concrete" for cast-in architectural-joint-system frames furnished, but not installed, in this Section.
   2. Division 04 Section "Unit Masonry" for masonry wall joint systems.
   3. Division 07 Section "Sheet Metal Roofing" for sheet metal roof joint systems.
   4. Division 07 Section "Sheet Metal Flashing and Trim" for sheet metal wall joint systems.
   5. Division 07 Section "Fire-Resistive Joint Systems" for liquid-applied joint sealants in fire-resistive building joints.
   6. Division 07 Section "Joint Sealants" for liquid-applied joint sealants.

1.3 DEFINITIONS

A. Maximum Joint Width: Widest linear gap a joint system tolerates and in which it performs its designed function without damaging its functional capabilities.

B. Minimum Joint Width: Narrowest linear gap a joint system tolerates and in which it performs its designed function without damaging its functional capabilities.

C. Movement Capability: Value obtained from the difference between widest and narrowest widths of a joint.

D. Nominal Joint Width: The width of the linear opening specified in practice and in which the joint system is installed.

1.4 SUBMITTALS

A. Shop Drawings: Provide the following for each joint system specified and obtain approval prior to fabrication and shipment of materials to the job site:

   1. Placement Drawings: Include line diagrams showing plans, elevations, sections, details, splices, blockout requirement, entire route of each joint system, and attachments to other work. Where joint systems change planes, provide isometric or clearly detailed drawing depicting how components interconnect.

B. Product Data: Submit copies of manufacturer's latest published literature for materials specified herein for approval, and obtain approval before materials are fabricated and delivered to the site. Data to clearly indicate movement capability of cover assemblies and suitability of material used in exterior seal for UV exposure.

C. Samples for Initial Selection: For each type of joint system indicated.

1. Include manufacturer's color charts showing the standard range of colors and finishes available for each exposed metal and elastomeric seal material.

D. Certificates – Material test reports from qualified independent testing laboratory indicating and interpreting test results relative to compliance of fire-rated expansion joint assemblies with requirements indicated.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Approved by manufacturer.

B. Source Limitations: Obtain all architectural joint systems through one source from a single manufacturer.

C. Product Options: Drawings indicate size, profiles, and dimensional requirements of architectural joint systems and are based on the specific systems indicated. Refer to Division 01 Section "Product Requirements."

1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.

D. Loading Characteristics: Standard loading refers to covers that are capable of withstanding up to 500 lb. point loads. Heavy duty refers to covers that are capable of withstanding up to 2000 lb. point loads.

E. Fire-Test-Response Characteristics: Where indicated, provide architectural joint system and fire-barrier assemblies identical to those of assemblies tested for fire resistance per UL 2079 and/or ASTM E 1966 by a testing and inspecting agency acceptable to authorities having jurisdiction. Fire rating not less than the rating of adjacent construction.

F. Manufacturer to provide 5 year warranty for all joint covers.

1.6 SUBMITTALS

A. Template Drawings - Submit typical expansion joint cross-section(s) indicating pertinent dimensioning of opening, profile recess and adjacent construction.

B. Sample of written 5 year warranty

C. ASTM- E1399 test reports

PART 2 - PRODUCTS

2.1 MATERIALS

A. Aluminum: ASTM B 221, Alloy 6005A-T61, 6063-T5, 6061-T5, 6105-T5 for extrusions; ASTM B 209, Alloy 6061-T6, 3003-H14, 5005-H34 for sheet and plate.

1. Apply manufacturer's standard protective coating on aluminum surfaces to be placed in contact with cementitious materials.
2. Mill Finish: AA-M10 (Mechanical Finish: as fabricated, unspecified).
3. Class II, Clear Anodic Finish: AA-M12C22A31 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class II, clear coating 0.010 mm or thicker) complying with AAMA 611.
4. Class II, Color Anodic Finish: AA-M12C22A32/A34 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class II, integrally colored or electrolytically deposited color coating 0.010 mm or thicker) complying with AAMA 611.
5. High-Performance Organic Finish (Two-Coat Fluoropolymer): AA-C12C40R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: conversion coating; Organic Coating: manufacturer's standard two-coat, thermocured system consisting of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with AAMA 2604 and with coating and resin manufacturers' written instructions.

B. Stainless Steel: ASTM A 666, Type 304 for plates, sheet, and strips.

1. Finish: No.4, directional satin.

a. Grind and polish surfaces to produce uniform, directionally textured, polished finish indicated, free of cross scratches. Run grain with long dimension of each piece.
b. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

C. Elastomeric Seals: Preformed elastomeric membranes or extrusions to be installed in metal frames.

D. Compression Seals: ASTM D2000; preformed rectangular elastomeric extrusions having internal baffle system and designed to function under compression.

E. Fire Barriers: Any material or material combination, when fire tested after cycling, designated to resist the passage of flame and hot gases through a movement joint and to meet performance criteria for required rating period.

F. Moisture Barrier: 7-ply laminate reinforced Polyethylene.

G. Accessories: Manufacturer's standard anchors, clips, fasteners, set screws, spacers, and other accessories compatible with material in contact, as indicated or required for complete installations.

2.2 ARCHITECTURAL JOINT SYSTEMS, GENERAL

A. General: Provide architectural joint systems of design, basic profile, materials, and operation indicated. Provide units with capability to accommodate variations in adjacent surfaces.

2.3 ARCHITECTURAL JOINT SYSTEMS FOR BUILDING EXTERIORS

A. Architectural Joint Systems for Exterior Roofs:
1. Basis-of-Design Product: Construction Specialties, Inc. model BRJW
2. Type: Bellows.
   a. Metal Flange: Galvanized.
      1) Finish: Mill.
   b. Bellows: EPDM
   c. Secondary Seal: Manufacturer's standard.
3. Factory Fabricated Transitions: all end caps, transitions and miters to be factory fabricated to ensure weather integrity. Field fabrication is not acceptable.
4. Fire-Resistance Rating: Provide joint system and fire-barrier assembly with a rating not less than that of adjacent construction.

B. Architectural Joint Systems for Exterior walls:
1. Basis-of-Design Product: Construction Specialties, Inc. model VF
2. Type: open micro-cell polyurethane seal impregnated with a hydrophobic polymer sealing compound. Coated with a colorized, elastomeric layer of silicone.
3. Finish/color: manufacturer’s full range as selected by architect
4. Fire-Resistance Rating: Provide joint system and fire-barrier assembly with a rating not less than that of adjacent construction.

Physical Properties	Results
Density, lb/ft3	**10**
Thermal Conductivity	**0.05 W/m.°C**
Temperature Stability Range	**-40°F to 212°F**
Bleeding	**None at 212°F at 20%**
Tensile Strength	**ASTM 3574, 21 psi Min.**
Ultimate Elongation	**ASTM 3574 125% ±20%**
Resistance to Compression Set	**Max 2.5%**
Shear Strength	**Min. 8N/cm2**
Mildew Resistance	**Excellent**
Staining	**None**
Flammability Self-Extinguishing	**UL 94VO Meets CAL 117**
Flash Point	**590°F (310°C)**

2.4 FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces and blockouts where architectural joint systems will be installed for installation tolerances and other conditions affecting performance of work.

1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare substrates according to architectural joint system manufacturer's written instructions.

B. Repair concrete slabs and blockouts using manufacturer's recommended repair grout of compressive strength adequate for anticipated structural loadings.

C. Coordinate and furnish anchorages, setting drawings, and instructions for installing joint systems. Provide fasteners of metal, type, and size to suit type of construction indicated and to provide for secure attachment of joint systems.

D. Cast-In Frames: Coordinate and furnish frames to be cast into concrete.

3.3 INSTALLATION

A. Comply with manufacturer's written instructions for storing, handling, and installing architectural joint assemblies and materials unless more stringent requirements are indicated.

B. Metal Frames: Perform cutting, drilling, and fitting required to install joint systems.

1. Install in true alignment and proper relationship to joints and adjoining finished surfaces measured from established lines and levels.
2. Adjust for differences between actual structural gap and nominal design gap due to ambient temperature at time of installation. Notify Architect where discrepancies occur that will affect proper joint installation and performance.
3. Cut and fit ends to accommodate thermal expansion and contraction of metal without buckling of frames.
4. Locate in continuous contact with adjacent surfaces.
5. Standard-Duty Systems: Shim to level where required. Support underside of frames continuously to prevent vertical deflection when in service.
6. Heavy-Duty Systems: Repair or grout blockout as required for continuous frame support and to bring frame to proper level. Shimming is not allowed.
7. Locate anchors at interval recommended by manufacturer, but not less than 3 inches from each end and not more than 24 inches o.c.

C. Seals in Metal Frames: Install elastomeric seals and membranes in frames to comply with manufacturer's written instructions. Install with minimum number of end joints.

1. Provide in continuous lengths for straight sections.
2. Seal transitions according to manufacturer's written instructions. Vulcanize or heat-weld field-spliced joints as recommended by manufacturer.
3. Installation: Mechanically lock seals into frames or adhere to frames with adhesive or pressure-sensitive tape as recommended by manufacturer.

D. Compression Seals: Apply adhesive or lubricant adhesive as recommended by manufacturer before installing compression seals.

E. Terminate exposed ends of joint assemblies with field- or factory-fabricated termination devices.

F. Fire-Resistance-Rated Assemblies: Coordinate installation of architectural joint assembly materials and associated work so complete assemblies comply with assembly performance requirements.

1. Fire Barriers: Install fire barriers to provide continuous, uninterrupted fire resistance throughout length of joint, including transitions and field splices.

G. Water Barrier: Provide water barrier at exterior joints and where called for on Drawings. Provide drainage fittings where indicated.

3.4 PROTECTION

A. Do not remove protective covering until finish work in adjacent areas is complete. When protective covering is removed, clean exposed metal surfaces to comply with manufacturer's written instructions.

B. Protect the installation from damage by work of other Sections. Where necessary due to heavy construction traffic, remove and properly store cover plates or seals and install temporary protection over joints. Reinstall cover plates or seals prior to Substantial Completion of the Work.

END OF SECTION 077129

SECTION 07 84 00 - THROUGH-PENETRATION FIRESTOP SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes through-penetration firestop systems for penetrations through the following fire-resistance-rated assemblies, including both empty openings and openings containing penetrating items:

1. Walls and partitions.

B. Related Sections include the following:

1. Division 16 Sections specifying cable and conduit penetrations.

1.3 PERFORMANCE REQUIREMENTS

A. General: For the following constructions, provide through-penetration firestop systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of assembly penetrated.
1. Fire-resistance-rated non-load-bearing walls, including partitions, with fire-protection-rated openings.
2. Fire-resistance-rated floor assemblies.

B. F-Rated Systems: Provide through-penetration firestop systems with F-ratings indicated, as determined per ASTM E 814, but not less than that equaling or exceeding fire-resistance rating of constructions penetrated.

C. T-Rated Systems: For the following conditions, provide through-penetration firestop systems with T-ratings indicated, as well as F-ratings, as determined per ASTM E 814, where systems protect penetrating items exposed to potential contact with adjacent materials in occupiable floor areas:

1. Penetrations located outside wall cavities.
2. Penetrations located outside fire-resistive shaft enclosures.
3. Penetrations located in construction containing fire-protection-rated openings.
4. Penetrating items larger than 4-inch- (100-mm-) diameter nominal pipe or 16 sq. in. (100 sq. cm) in overall cross-sectional area.

D. For through-penetration firestop systems exposed to view, traffic, moisture, and physical damage, provide products that after curing do not deteriorate when exposed to these conditions both during and after construction.

1. For piping penetrations for plumbing and wet-pipe sprinkler systems, provide moisture-resistant through-penetration firestop systems.
2. For floor penetrations with annular spaces exceeding 4 inches (100 mm) in width and exposed to possible loading and traffic, provide firestop systems capable of supporting floor loads involved either by installing floor plates or by other means.
3. For penetrations involving insulated piping, provide through-penetration firestop systems not requiring removal of insulation.

E. For through-penetration firestop systems exposed to view, provide products with flame-spread ratings of less than 25 and smoke-developed ratings of less than 450, as determined per ASTM E 84.

1.4 SUBMITTALS

A. Product Data: For each type of through-penetration firestop system product indicated.

B. Shop Drawings: For each through-penetration firestop system, show each kind of construction condition penetrated, relationships to adjoining construction, and kind of penetrating item. Include firestop design designation of testing and inspecting agency acceptable to authorities having jurisdiction that evidences compliance with requirements for each condition indicated.

1. Submit documentation, including illustrations, from a qualified testing and inspecting agency that is applicable to each through-penetration firestop system configuration for construction and penetrating items.
2. Where Project conditions require modification of qualified testing and inspecting agency's illustration to suit a particular through-penetration firestop condition, submit illustration, with modifications marked, approved by through-penetration firestop system manufacturer's fire-protection engineer.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed through-penetration firestop systems similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

B. Installer Qualifications: An experienced installer who is qualified by having the necessary experience, staff, and training to install manufacturer's products per specified requirements. A manufacturer's willingness to sell its through-penetration firestop system products to Contractor or to an installer engaged by Contractor does not in itself confer qualification on buyer.

C. Source Limitations: Obtain through-penetration firestop systems, for each kind of penetration and construction condition indicated, from a single manufacturer.

D. Fire-Test-Response Characteristics: Provide through-penetration firestop systems that comply with the following requirements and those specified in "Performance Requirements" Article:

1. Firestopping tests are performed by a qualified testing and inspecting agency. A qualified testing and inspecting agency is UL, or another agency performing testing and follow-up inspection services for firestop systems acceptable to authorities having jurisdiction.
2. Through-penetration firestop systems are identical to those tested per ASTM E 814. Provide rated systems complying with the following requirements:.

a. Through-penetration firestop system products bear classification marking of qualified testing and inspecting agency.
b. Through-penetration firestop systems correspond to those indicated by reference to through-penetration firestop system designations listed by the following:

1) UL in "Fire Resistance Directory."

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver through-penetration firestop system products to Project site in original, unopened containers or packages with intact and legible manufacturers' labels identifying product and manufacturer; date of manufacture; lot number; shelf life, if applicable; qualified testing and inspecting agency's classification marking applicable to Project; curing time; and mixing instructions for multicomponent materials.

B. Store and handle materials for through-penetration firestop systems to prevent their deterioration or damage due to moisture, temperature changes, contaminants, or other causes.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not install through-penetration firestop systems when ambient or substrate temperatures are outside limits permitted by through-penetration firestop system manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.

B. Ventilate through-penetration firestop systems per manufacturer's written instructions by natural means or, where this is inadequate, forced-air circulation.

PART 2 - PRODUCTS

A. MANUFACTURERS

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering accessories that may be incorporated into the Work include, but are not limited to, the following:

a. Hilti, Inc., Tulsa, Oklahoma
(800) 879-8000
b. Tremco Sealants & Coatings, Beachwood, Ohio
(216) 292-5000
c. 3M Fire Protection Products, St. Paul, Minnesota
(612) 736-0203

2.2 FIRESTOPPING, GENERAL

A. Compatibility: Provide through-penetration firestop systems that are compatible with one another, with the substrates forming openings, and with the items, if any, penetrating through-penetration firestop systems, under conditions of service and application, as demonstrated by through-penetration firestop system manufacturer based on testing and field experience.

B. Accessories: Provide components for each through-penetration firestop system that are needed to install fill materials and to comply with "Performance Requirements" Article. Use only

components specified by through-penetration firestop system manufacturer and approved by the qualified testing and inspecting agency for firestop systems indicated. Accessories include, but are not limited to, the following items:

1. Permanent forming/damming/backing materials, including the following:

    a. Slag-/rock-wool-fiber insulation.
    b. Sealants used in combination with other forming/damming/backing materials to prevent leakage of fill materials in liquid state.
    c. Fire-rated form board.
    d. Safing Insulation

2. Temporary forming materials.
3. Substrate primers.
4. Collars.
5. Steel sleeves.

2.3 MIXING

A. For those products requiring mixing before application, comply with through-penetration firestop system manufacturer's written instructions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other items or procedures needed to produce products of uniform quality with optimum performance characteristics for application indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning: Clean out openings immediately before installing through-penetration firestop systems to comply with written recommendations of firestop system manufacturer and the following requirements:

1. Remove from surfaces of opening substrates and from penetrating items foreign materials that could interfere with adhesion of through-penetration firestop systems.
2. Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with through-penetration firestop systems. Remove loose particles remaining from cleaning operation.
3. Remove laitance and form-release agents from concrete.

B. Priming: Prime substrates where recommended in writing by through-penetration firestop system manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

C. Masking Tape: Use masking tape to prevent through-penetration firestop systems from contacting adjoining surfaces that will remain exposed on completion of Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove smears from firestop system materials. Remove tape as soon as possible without disturbing firestop system's seal with substrates.

3.3 THROUGH-PENETRATION FIRESTOP SYSTEM INSTALLATION

A. General: Install through-penetration firestop systems to comply with "Performance Requirements" Article and firestop system manufacturer's written installation instructions and published drawings for products and applications indicated.

B. Install forming/damming/backing materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.

1. After installing fill materials, remove combustible forming materials and other accessories not indicated as permanent components of firestop systems.

C. Install fill materials for firestop systems by proven techniques to produce the following results:

1. Fill voids and cavities formed by openings, forming materials, accessories, and penetrating items as required to achieve fire-resistance ratings indicated.
2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
3. For fill materials that will remain exposed after completing Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 IDENTIFICATION

A. Identify through-penetration firestop systems with preprinted metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches (150 mm) of edge of the firestop systems so that labels will be visible to anyone seeking to remove penetrating items or firestop systems. Use mechanical fasteners for metal labels. For plastic labels, use self-adhering type with adhesives capable of permanently bonding labels to surfaces on which labels are placed and, in combination with label material, will result in partial destruction of label if removal is attempted. Include the following information on labels:

1. The words "Warning - Through-Penetration Firestop System - Do Not Disturb. Notify Building Management of Any Damage."
2. Contractor's name, address, and phone number.
3. Through-penetration firestop system designation of applicable testing and inspecting agency.
4. Date of installation.
5. Through-penetration firestop system manufacturer's name.
6. Installer's name.

3.5 CLEANING AND PROTECTION

A. Clean off excess fill materials adjacent to openings as Work progresses by methods and with cleaning materials that are approved in writing by through-penetration firestop system manufacturers and that do not damage materials in which openings occur.

B. Provide final protection and maintain conditions during and after installation that ensure through-penetration firestop systems are without damage or deterioration at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated through-penetration firestop systems immediately and install new materials to produce through-penetration firestop systems complying with specified requirements.

END OF SECTION 078400

SECTION 07 92 00 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes sealants for the following applications, including those specified by reference to this Section:

B. This Section includes sealants for the following applications:

1. Exterior joints in the following vertical surfaces and nontraffic horizontal surfaces:
   a. Perimeter joints between dissimilar materials.
   b. Masonry control joints.
   c. Flashing.
   d. Other joints as indicated.
2. Joints at exterior substrate materials associated with dampproofing, flexible flashing and air barriers.
3. Exterior joints at traffic horizontal paving surfaces.
4. Interior joints in the following vertical surfaces and horizontal nontraffic surfaces:
   a. Perimeter joints between interior wall surfaces and other materials.
   b. Joints between plumbing fixtures and adjoining walls, floors, and counters.
   c. Other joints as indicated.

C. Related Sections include the following:

1. Division 2 Section "Pavement Joint Sealants”.
2. Division 4 Section “Unit Masonry Assemblies”.
3. Division 7 Section “Through-Penetration Firestop Systems”.
4. Division 7 Sections "Sheet Metal Flashing and Trim".
5. Division 8 Section “Aluminum-framed entrances and Storefronts”.
6. Division 8 Sections for glazing sealants.
7. Division 9 Section "Gypsum Board".
8. Division 9 Section “Ceramic Tile”.

1.3 PERFORMANCE REQUIREMENTS

A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.

1.4 SUBMITTALS

A. Product Data: For each joint-sealant product indicated in this Section and other Sections.

B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

C. Sealant Schedule: Schedule indicating each joint sealant and primer, if applicable, being submitted for approval, listing a separate “line-item” for each different location and combination of materials, with a description of each type of exterior and interior joint sealant being proposed for that location and those materials, and a column for indication of color selection, if applicable.

D. Preconstruction Field Test Reports: Indicate which sealants and joint preparation methods resulted in optimum adhesion to joint substrates based on preconstruction testing specified in "Quality Assurance" Article.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has specialized in installing joint sealants similar in material, design, and extent to those indicated for this Project and whose work has resulted in joint-sealant installations with a record of successful in-service performance.

B. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer. The same sealant product shall be used for all exterior vertical joints.

C. Preconstruction Field-Adhesion Testing: Before installing elastomeric sealants, field test their adhesion to Project joint substrates as follows:

1. Locate test joints where indicated on Project or, if not indicated, as directed by Architect.
2. Conduct field tests for each application indicated below:
    a. Each type of elastomeric sealant and joint substrate indicated.
    b. Each type of non-elastomeric sealant and joint substrate indicated.
3. Notify Architect seven days in advance of dates and times when test joints will be erected.
4. Arrange for tests to take place with joint-sealant manufacturer's technical representative present.
    a. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193.
        1) For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
5. Report whether sealant in joint connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each type of product and joint substrate. For sealants that fail adhesively, retest until satisfactory adhesion is obtained.
6. Evaluation of Preconstruction Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing, in absence of other indications of noncompliance with requirements, will be considered satisfactory. Do not use sealants that fail to adhere to joint substrates during testing.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration date, pot life, curing time, and mixing instructions for multi-component materials.

B. Store and handle materials in compliance with manufacturer's written instructions to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer or are below 40°F (4.4°C).
2. When joint substrates are wet.

B. Joint-Width Conditions: Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.

C. Joint-Substrate Conditions: Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates.

1.8 WARRANTY

A. Special Installer's Warranty: Installer's standard form in which Installer agrees to repair or replace elastomeric joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

B. Special Manufacturer's Warranty: Manufacturer's standard form in which elastomeric sealant manufacturer agrees to furnish elastomeric joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Manufacturer’s standard warranty based upon the project.

C.

C. Special warranties specified in this Article exclude deterioration or failure of elastomeric joint sealants from the following:

1. Movement of the structure resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression caused by structural settlement or errors attributable to design or construction.
2. Disintegration of joint substrates from natural causes exceeding design specifications.
3. Mechanical damage caused by individuals, tools, or other outside agents.
4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 MANUFACTURERS AND PRODUCTS

A. Available Products: Unless indicated otherwise, subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the products specified in the sealant schedules at the end of Part 3.

2.2 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.

B. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range, but not less of a selection then Pecora Standard Colors.

2.3 ELASTOMERIC JOINT SEALANTS

A. Elastomeric Sealant Standard: Comply with ASTM C 920 and other requirements indicated for each liquid-applied chemically curing sealant in the Elastomeric Joint-Sealant Schedule at the end of Part 3, including those referencing ASTM C 920 classifications for type, grade, class, and uses.

2.4 LATEX JOINT SEALANTS

A. Latex Sealant Standard: Comply with ASTM C 834 for each product of this description indicated in the Latex Joint-Sealant Schedule at the end of Part 3.

2.5 NON-CURING JOINT SEALANTS

A. Butyl Sealant for Concealed Joints: Comply with U.S. TT-S-001657, TYPE 1 and CGSB 19-GP-14M, QPL 81002.

2.6

2.6 CURING, DRYING JOINT SEALANTS

A. Butyl Sealant for Concealed Joints at Exterior Wall Substrates at Dampproofing and Exterior Openings: Comply with U.S. TT-S-001657, ASTM C1085.

2.7 ACOUSTICAL JOINT SEALANTS

A. Acoustical Sealant for Exposed and Concealed Joints: Manufacturer's standard non-sag, paintable, nonstaining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.

2.8 JOINT-SEALANT BACKING

A. General: Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Cylindrical Sealant Backings: ASTM C 1330, of type indicated below and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance:

1. Type C: Closed-cell material with a surface skin.
2. Type O: Open-cell material.
3. Type B: Bicellular material with a surface skin.
4. Type: Any material indicated above as recommended by the sealant manufacturer for a specific application.

C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

2.9 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants with joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 -

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint sealant manufacturer's written instructions and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and

approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.

2. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.
3. Remove laitance and form-release agents from concrete.
4. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.

B. Joint Priming: Prime joint substrates where recommended in writing by joint sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations of ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Acoustical Sealant Application Standard: Comply with recommendations of ASTM C 919 for use of joint sealants in acoustical applications as applicable to materials, applications, and conditions indicated.

D. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

E. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and back of joints.

F. Install sealants by proven techniques to comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses provided for each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

G. Tooling of Non-sag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealants from surfaces adjacent to joint.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.

3.4 CLEANING

A. Clean off excess sealants or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from the original work.

B.

3.6 ELASTOMERIC JOINT-SEALANT SCHEDULE

A. Low-Modulus Neutral-Curing Silicone Sealant: Where joint sealants of this type are indicated, provide products complying with the following:

1. Products: Provide one of the following:
   a. Dow Corning Corp.; 1 Riverfront Plaza, Corning, NY 14831-0001; (607)-974-9000 www.dowcoring.com, Dow 790.
   b. GE Silicone; General Electric 3135 Easton Turnpike, Fairfield, CT 14831-0001; (203) 373-2211; www.ge.com. Silpruf SC S2000,
   c. Pecora Corporation; 165 Wambold Rd.; Harleysville, PA 19438; (215) 721-6051 Pecora Corporation, Pecora 864 www.pecora.com
2. Tremco, Inc. 3735 Green Rd Beachwood OH 44122 (800)852-9068 www.temcoinc.com
3. Type and Grade: S (single component) and NS (non-sag).
4. Applications: Generally, but not necessarily limited to, all exterior joints, including panel sealants and glass to metal, metal to metal, unless otherwise indicated.

B. Silicone Sealant for Butt Joint Glazing: Where joint sealants are indicated on the Drawings or in the Specifications, between glass, provide products complying with the following:

1. Provide one of the following:
   a. Dow Corning, www.dowcoring.com 999A
   b. Pecora Corporation, www.pecora.com 895
   c. GE Silicones, www.ge.com. UltraGlaze SSG4000;
   d. Tremco, Ltd., Spectrem II www.temcoinc.com
2. Applications: Generally, but not necessarily limited to, all exterior and interior butt joints in glass.

C. Single-Component Non-sag Urethane Sealant:

1. Available Products:
   a. Sika Corporation, Inc.; Sikaflex - 1a. Spectrem II www.**sika**construction.com
   b. Sonneborn, Division of ChemRex Inc.; Ultra. www.chemrex.com.
   c. Sonneborn, Division of ChemRex Inc.; NP 1. www.chemrex.com.
   d. Tremco, Ltd. Vulkem 116. www.temcoinc.com
2. Type and Grade: S (single component) and NS (non-sag).
3. Applications: Generally, but not necessarily limited to, all exterior joints between materials in which one or both are to receive finished painting or paint coatings.

D. Self-Leveling, Moisture-Curing Elastomeric Polyurethane Traffic Grade Sealant: Where joint sealants of this type are indicated, provide products complying with the following:

1. Products: Available products, but not limited to, the following:
   a. Tremco, Ltd., "Vulkem 45"; www.temcoinc.com
   B. Pecora Corporation, Urexpan NR-201 www.pecora.com
   a. ChemRex, Inc.; 889 Valley Park Drive; Shakopee, MN 55379-1854; (612) 496-6000; www.chemrex.com. LSL1 Sonneborn;
2. Applications: Generally, but not limited to, exterior paving joints at the building line and at pavers.

E. Mildew-Resistant Silicone Sealant: Where joint sealants of this type are indicated, provide products formulated with fungicide that are intended for sealing interior joints that are subject to in-service exposures of high humidity and temperature extremes, and that comply with the following:

1. Products: Provide one of the following:
   a. Dow Corning, 786 Mildew Resistant www.dowcoring.com
   b. GE Silicones, Sanitary 1700 www.ge.com
   c. NUCO Industries, Inc., NuFlex 302 www.**nuco**ind.com
   d. Pecora Corporation, 898 Silicone Sanitary Sealant www.pecora.com
   e. Polymeric Systems, Inc., PSI-611 www.harkinsbuilders.com
   f. Tremco, Ltd., Tremsil 600 White. www.temcoinc.com
2. Type and Grade: S (single component) and NS (non-sag).
3. Class: 25.
4. Use Related to Exposure: NT (nontraffic).
5. Uses Related to Joint Substrates: G, A.
6. Applications: Generally, but not necessarily limited to, interior moist areas, plumbing fixtures and similar areas.

3.7 LATEX JOINT-SEALANT SCHEDULE

A. Latex Sealant: Where joint sealants of this type are indicated, provide products complying with the following:

1. Products: Provide one of the following:

   a. Bostik Inc., Chem-Calk 600 www.bostickplantation.com
   b. NUCO Industries, Inc., NuFlex 330 www.**nuco**ind.com
   c. Ohio Sealants, Inc. LC 160 All Purpose Acrylic Caulk www.osisealants.com
   d. Pecora Corporation, AC-20 www.pecora.com
   e. Polymeric Systems, Inc., PSI-701 www.harkinsbuilders.com
   f. Sonneborn Building Products Div., Sonolac www.**building**systems.basf.com

g. Tremco, Ltd., Tremflex 834 www.temcoinc.com

2. Applications: Interior general purpose sealant, to be used where no other interior sealant is indicated, generally to receive painting.

3.8 NON-CURING JOINT-SEALANT SCHEDULE

A. Butyl Sealant: Where joint sealants of this type are indicated, provide products complying with the following:

1. Provide one of the following:
   a. Bostik, Inc., ChemCalk 300 www.bostickplantation.com
   b. Pecora Corporation, BA-98 www.pecora.com
   c. Tremco Ltd., Curtainwall Sealant. www.temcoinc.com
   d. Tremco, Ltd., Tremco Butyl Sealant. www.temcoinc.com
2. Applications: Concealed joints generally, but not necessarily limited to, flashings and under exterior thresholds.

3.9 CURING, DRYING JOINT-SEALANT SCHEDULE

A. Butyl Sealant: Where joint sealants of this type are indicated, provide products complying with the following:

1. Pecora Corporation, Pecora BC-158, as the basis of design. www.pecora.com

2. Applications: Concealed joints at exterior substrate materials associated with dampproofing, flexible flashing and air barriers.

3.10 ACOUSTICAL JOINT SEALANTS

A. Acoustical Sealant for Exposed and Concealed Joints: Manufacturer's standard non-sag, paintable, nonstaining latex sealant complying with ASTM C 834 and the following:

1. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
2. Available Products:
   a. Pecora Corporation; AC-20 FTR Acoustical and Insulation Sealant. www.pecora.com
   b. United States Gypsum Co.; SHEETROCK Acoustical Sealant. www.**usg**.com
   c. Tremco, Ltd., Tremco Acoustical Sealant. www.temcoinc.com

B. Acoustical Sealant for Concealed Joints: Manufacturer's standard, nondrying, nonhardening, nonskinning, nonstaining, gunnable, synthetic-rubber sealant recommended for sealing interior concealed joints to reduce airborne sound transmission.

1. Available Products:
   a. Pecora Corporation; BA-98. www.pecora.com
   b. Tremco; Tremco Acoustical Sealant. www.temcoinc.com
   c. Dow Corning Trade Mate Sealant DC3P www.dowcoring.com
      1. Catalog Number DC3P-CRL White Dow Corning® Trade Mate® Paintable Silicone Sealants. CRL Trade Mate® Paintable Silicone Sealant is a high-performance, water clean-up sealant designed for the professional contractor.

END OF SECTION 079200

SECTION 08 10 00 - STILE AND RAIL WOOD DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
1. Pre-hung Composite Wood Doors
2. Factory Fitting and Machining
3. Factory Priming of Composite Wood Doors

B. Related Sections:

1. Division 6 Section "Interior Architectural Woodwork" for requirements for veneers from the same flitches for both architectural woodwork and stile and rail wood doors.
2. Division 9 Section Interior Painting for field finishing stile and rail doors.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

1. Include details of construction.
2. Include factory finishing specifications.

B. Shop Drawings: For stile and rail wood doors. Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data, including those for stiles, rails, panels, and moldings (sticking); and other pertinent data, including the following:

1. Dimensions of doors for factory fitting.
2. Locations and dimensions of mortises and holes for hardware.
3. Requirements for veneer matching.
4. Doors to be factory finished, and finish requirements.
5. Fire ratings for fire-rated doors.

C. Samples for Initial Selection: For factory-finished doors.

D. Samples for Verification: Corner sections of doors, approximately 8 by 10 inches (200 by 250 mm) with door faces and edgings representing typical range of color and grain for each species of veneer and solid lumber required.

E. Product Certificates: For each type of door, from manufacturer.

F. Warranty: Sample of special warranty.

1.4 REFERENCES

A. ASTM D-1037 –91 American Society for Testing and Materials: Standard Methods for Evaluating the Properties of Wood-Based Fiber and Particle Board Panel Materials.

B. ASTM E 152-81a – Standard Methods of Fire Tests of Door Assemblies.

C. NFPA 80 – Fire Doors and Windows

D. NFPA 252 – Standard Methods of Fire Tests for fire Door Assemblies

E. International Building Code
F. ADAAG

1.5 DELIVERY, STORAGE, AND HANDLING

A. Comply with manufacturer's written instructions and requirements of quality standard referenced in Part 2.

B. Package doors individually in opaque plastic bags or cardboard cartons.

C. Mark each door on top and bottom edge with opening number used on Shop Drawings.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace doors that fail in materials or workmanship, or have warped (bow, cup, or twist) more than 1/4 inch (6.4 mm) in a 42-by-84-inch (1067-by-2134-mm) section.

1. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.
2. Warranty shall be in effect during the following period of time from date of Substantial Completion:
   a. Interior Doors: 30 years.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Use only materials that comply with referenced standards and other requirements specified.

1. Assemble exterior doors and sidelites, including components, with wet-use adhesives complying with ASTM D 5572 for finger joints and with ASTM D 5751 for joints other than finger joints.
2. Assemble interior doors, frames, and sidelites, including components, with either dry-use or wet-use adhesives complying with ASTM D 5572 for finger joints and with ASTM D 5751 for joints other than finger joints.

B. Panel Products: Any of the following:

1. Particleboard made from wood particles, complying with ANSI A208.1, Grade M-2.
2. Particleboard made from straw, complying with ANSI A208.1, Grade M-2, except for density.
3. Medium-density fiberboard made from wood fiber[, with binder containing no urea-formaldehyde resin], complying with ANSI A208.2, Grade 130.
4. Hardboard, complying with AHA A135.4.
5. Veneer core plywood.

2.2 INTERIOR STILE AND RAIL WOOD DOORS

A. Interior Stile and Rail Wood Doors Type 1: Stock interior doors complying with WDMA I.S.6, "Industry Standard for Wood Stile and Rail Doors," and with other requirements specified.

1. Manufacturers:
   a. Jeld-Wen, Inc.
   b. Masonite Doors
   c. Steve's Door Company.

2. Finish and Grade: Opaque and Standard
3. Wood Species: Manufacturer's standard softwood species and cut
4. Stile and Rail Construction: veneered, structural composite lumber or veneered edge- and end-glued lumber
5. Raised-Panel Construction: Veneered panel product or shaped, medium-density fiberboard].
6. Flat-Panel Construction: Veneered panel product or hardboard or medium-density fiberboard
7. Raised-Panel Thickness: Manufacturer's standard, but not less than that required by WDMA I.S.6 for design group indicated
8. Flat-Panel Thickness: Manufacturer's standard, but not less than that required by WDMA I.S.6 for design group indicated
9. Molding Profile (Sticking): As selected by Architect from manufacturer's full range

10. Mark, label, or otherwise identify stile and rail wood doors as complying with WDMA I.S.6 and grade specified. Include panel design number if applicable.

2.3 STILE AND RAIL WOOD DOOR FABRICATION

A. Fabricate stile and rail wood doors in sizes indicated, all doors to be pre-hung units.

B. Factory fit doors to suit frame-opening sizes indicated, with the following uniform clearances and bevels unless otherwise indicated:

1. Clearances: Provide 1/8 inch (3 mm) at heads, jambs, and between pairs of doors. Provide 1/2 inch (13 mm) from bottom of door to top of decorative floor finish or covering.

Where threshold is shown or scheduled, provide not more than 3/8 inch (10 mm) from bottom of door to top of threshold.

a. Comply with NFPA 80 for fire-rated doors.

2. Bevel non-fire-rated doors 1/8 inch in 2 inches (3-1/2 degrees) at lock and hinge edges.

C. Factory machine doors for hardware that is not surface applied. Locate hardware to comply with DHI-WDHS-3. Comply with final hardware schedules, door frame Shop Drawings, DHI A115-W Series standards, and hardware templates.

1. Coordinate measurements of hardware mortises in metal frames to verify dimensions and alignment before factory machining.

D. Pre-hung Doors: Provide stile and rail doors as pre-hung units including doors, frames, and hardware.

1. Provide wood door frames that comply with Division 6 Section "Interior Architectural Woodwork."
2. Provide hardware that complies with Division 8 Section "Door Hardware."

2.4 SHOP PRIMING

A. Doors for Transparent Finish: Shop prime doors with stain (if required), other required pretreatments, and first coat of finish as specified in Division 9 Section "Wood Stains and Transparent Finishes." Seal all four edges, edges of cutouts, and mortises with first coat of finish.

2.5 FINISHING

A. Finish wood doors at factory

B. Finish wood doors at factory that are indicated to receive transparent finish. Wood doors that are indicated to receive opaque finish may be field finished.

C. Finish wood doors at factory where indicated in schedules or on Drawings. Wood doors that are not indicated to be factory finished may be field finished.

D. For doors indicated to be factory finished, comply with [AWI's "Architectural Woodwork Quality Standards,"] [WI's "Manual of Millwork,"] [WDMA I.S.6A, "Industry Standard for Architectural Stile and Rail Doors,"] and with other requirements specified.

1. Finish faces and all four edges of doors, including mortises and cutouts. Stains and fillers may be omitted on top and bottom edges, edges of cutouts, and mortises.

E. Opaque Finish:

1. Grade: Premium
2. Finish: AWI catalyzed polyurethane system.
3. Color: As selected by Architect from manufacturer's full range

4. Sheen: As selected by Architect from manufacturer's full range

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and substrates, with Installer present, for suitable conditions where wood stile and rail doors will be installed.

1. Verify that installed frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
2. Reject doors with defects.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install fire-rated wood door frames level, plumb, true, and aligned with adjacent materials. Use concealed shims where necessary for alignment.

1. Countersink fasteners, fill surface flush, and sand smooth.

B. Hardware: For installation, see Division 8 Section "Door Hardware."

C. Install wood doors to comply with manufacturer's written instructions, [WDMA I.S.6, "Industry Standard for Wood Stile and Rail Doors,"] [AWI's "Architectural Woodwork Quality Standards,"] [WI's "Manual of Millwork,"] [WDMA I.S.6A, "Industry Standard for Architectural Stile and Rail Doors,"] and other requirements specified.

1. Provide WI-Certified Compliance Certificate for Installation.
2. Install fire-rated doors in corresponding fire-rated frames according to NFPA 80.

D. Factory Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

3.3 ADJUSTING

A. Operation: Rehang or replace doors that do not swing or operate freely.

B. Finished Doors: Replace doors that are damaged or do not comply with requirements. Doors may be repaired or refinished if Work complies with requirements and shows no evidence of repair or refinishing.

END OF SECTION 081000

SECTION 08 11 13 - STANDARD STEEL DOORS AND WOOD FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Standard hollow-metal steel doors.

B. Related Sections include the following:
1. Division 8 Sections for door hardware for standard steel doors.
2. Division 9 painting Sections for field painting standard steel doors and frames.

1.3 DEFINITIONS

A. Minimum Thickness: Minimum thickness of base metal without coatings.

1.4 SUBMITTALS

A. Product Data: Include construction details, material descriptions, core descriptions, label compliance, fire-resistance rating, and finishes for each type of steel door and frame specified.

B. Shop Drawings: In addition to requirements below, provide a schedule of standard steel doors and frames using same reference numbers for details and openings as those on Drawings:

1. Elevations of each door design.
2. Details of doors, including vertical and horizontal edge details.
3. Frame details for each frame type, including dimensioned profiles.
4. Details and locations of reinforcement and preparations for hardware.
5. Details of each different wall opening condition.
6. Details of anchorages, accessories, joints, and connections.
7. Details of glazing frames and stops showing glazing.

C. Coordination Drawings: Drawings of each opening, including door and frame, drawn to scale and coordinating door hardware. Show elevations of each door design type, showing dimensions, locations of door hardware.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain standard steel doors and frames through one source from a single manufacturer.

B. Fire-Rated Door Frame Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver doors and frames palletized, wrapped, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.

B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. Store doors and frames under cover at Project site. Place units in a vertical position with heads up, spaced by blocking, on minimum 4-inch- high wood blocking. Avoid using nonvented plastic or canvas shelters that could create a humidity chamber.

1. If wrappers on doors become wet, remove cartons immediately. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

1.7 PROJECT CONDITIONS

A. Field Measurements: Verify openings by field measurements before fabrication and indicate measurements on Shop Drawings.

1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish opening dimensions and proceed with fabricating standard steel frames without field measurements. Coordinate wall construction to ensure that actual opening dimensions correspond to established dimensions.

1.8 COORDINATION

A. Coordinate installation of anchorages for standard steel frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in masonry. Deliver such items to Project site in time for installation.

1.9 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace doors that fail in materials or workmanship, or have warped (bow, cup, or twist) more than 1/4 inch (6.4 mm) in a 42-by-84-inch (1067-by-2134-mm) section.

1. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.
2. Warranty shall be in effect during the following period of time from date of Substantial Completion:
   a. Exterior Doors: 30 years.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, are limited to, the following:

1. Mesker.
2. Kewanee Corporation (The).
3. Steelcraft; an Ingersoll-Rand Company.
4. Masonite.

2.2 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

B. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.

C. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum A40 zinc-iron-alloy (galvannealed) coating designation.

D. Electrolytic Zinc-Coated Steel Sheet: ASTM A 591/A 591M, Commercial Steel (CS), Class B coating; mill phosphatized.

E. Supports and Anchors: After fabricating, galvanize units to be built into exterior walls according to ASTM A 153/A 153M, Class B.

F. Inserts, Bolts, and Fasteners: Provide items to be built into exterior walls, hot-dip galvanized according to ASTM A 153/A 153M.

G. Powder-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching standard steel door frames of type indicated.

H. Mineral-Fiber Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool with 6- to 12-lb/cu. ft. density; with maximum flame-spread and smoke-developed indexes of 25 and 50 respectively; passing ASTM E 136 for combustion characteristics.

I. Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

2.3 STANDARD STEEL DOORS

A. General: Provide doors of design indicated, not less than thickness indicated; fabricated with smooth surfaces, without visible joints or seams on exposed faces, unless otherwise indicated. Comply with ANSI A250.8.

1. Design: As indicated on Drawings.
2. Core Construction: Manufacturer's standard polyurethane (exterior insulated doors) and honeycomb core for non-exterior that produces doors complying with ANSI A250.8.

    a. Fire Door Core: As required to provide fire-protection ratings indicated.
    b. Thermal-Rated (Insulated) Doors: Where indicated, provide doors fabricated with thermal-resistance value (R-value) of not less than 4.0 deg F x h x sq. ft./Btu when tested according to ASTM C 1363.

        1) Locations: Exterior doors.

3. Vertical Edges for Single-Acting Doors: Square edge.
4. Vertical Edges for Double-Acting Doors: Round vertical edges with 2-1/8-inch radius.
5. Top and Bottom Edges: Closed with flush or inverted 0.042-inch- thick end closures or channels of same material as face sheets.
6. Tolerances: Comply with SDI 117, "Manufacturing Tolerances for Standard Steel Doors and Frames."

B. Exterior Doors: Face sheets fabricated from metallic-coated 24 GA. steel sheet. Provide doors complying with requirements indicated below by referencing ANSI A250.8 for level and model and ANSI A250.4 for physical-endurance level:

1. Level 1 and Physical Performance Level C, (Standard Duty), Model 2 (Seamless).

C. Interior Doors: Face sheets fabricated from cold-rolled steel sheet, unless otherwise indicated to comply with exterior door requirements. Provide doors complying with requirements indicated below by referencing ANSI A250.8 for level and model and ANSI A250.4 for physical-endurance level:

1. Level 1 and Physical Performance Level C, (Standard Duty), Model 1 (Full Flush).

D. Hardware Reinforcement: Fabricate reinforcement plates from same material as door face sheets to comply with the following minimum sizes:

1. Hinges: Minimum 0.123 inch thick by 1-1/2 inches wide by 6 inches longer than hinge, secured by not less than 6 spot welds.
2. Pivots: Minimum 0.167 inch thick by 1-1/2 inches wide by 6 inches longer than hinge, secured by not less than 6 spot welds.
3. Lock Face, Flush Bolts, Closers, and Concealed Holders: Minimum 0.067 inch thick.
4. All Other Surface-Mounted Hardware: Minimum 0.067 inch thick.

E. Fabricate concealed stiffeners and hardware reinforcement from either cold- or hot-rolled steel sheet.

2.4 STOPS AND MOLDINGS

A. Fixed Frame Moldings: Wood frames, minimum 5/8 inch high, unless otherwise indicated.

2.5 FABRICATION

A. General: Fabricate standard steel doors and frames to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness

of metal. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.

B. Standard Steel Doors:

1. Exterior Doors: Provide weep-hole openings in bottom of exterior doors to permit moisture to escape. Seal joints in top edges of doors against water penetration.

C. Standard Steel Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
1. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners, unless otherwise indicated.
2. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
3. Jamb Anchors: Provide number and spacing of anchors as follows:

a. Masonry Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:

1) Two anchors per jamb up to 60 inches in height.
2) Three anchors per jamb from 60 to 90 inches in height.

b. Stud-Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:

1) Three anchors per jamb up to 60 inches in height.
2) Four anchors per jamb from 60 to 90 inches in height.
3) Two anchors per head for frames more than 42 inches wide and mounted in metal-stud partitions.

4. Door Silencers: Except on weather-stripped doors, drill stops to receive door silencers as follows. Provide plastic plugs to keep holes clear during construction.

a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.

D. Hardware Preparation: Factory prepare standard steel doors and frames to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping, according to the Door Hardware Schedule and templates furnished as specified in Division 8 Section "Door Hardware."

1. Reinforce doors and frames to receive nontemplated mortised and surface-mounted door hardware.
2. Comply with applicable requirements in ANSI A250.6 and ANSI/DHI A115 Series specifications for door and frame preparation for hardware. Locate hardware as indicated on Shop Drawings or, if not indicated, according to ANSI A250.8.

E. Stops and Moldings: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with butted or mitered hairline joints.
1. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames.
2. Provide loose stops and moldings on inside of doors and frames.

3. Coordinate rabbet width between fixed and removable stops with type of glazing and type of installation indicated.

2.6 STEEL FINISHES

A. General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

1. Finish standard steel door and frames after assembly.

B. Metallic-Coated Steel Surface Preparation: Clean surfaces with nonpetroleum solvent so surfaces are free of oil and other contaminants. After cleaning, apply a conversion coating suited to the organic coating to be applied over it. Clean welds, mechanical connections, and abraded areas, and apply galvanizing repair paint specified below to comply with ASTM A 780.

1. Galvanizing Repair Paint: High-zinc-dust-content paint for regalvanizing welds in steel, complying with SSPC-Paint 20.

C. Steel Surface Preparation: Clean surfaces to comply with SSPC-SP 1, "Solvent Cleaning"; remove dirt, oil, grease, or other contaminants that could impair paint bond. Remove mill scale and rust, if present, from uncoated steel; comply with SSPC-SP 3, "Power Tool Cleaning," or SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."

D. Factory Priming for Field-Painted Finish: Apply shop primer specified below immediately after surface preparation and pretreatment. Apply a smooth coat of even consistency to provide a uniform dry film thickness of not less than 0.7 mils.

1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; compatible with substrate and field-applied finish paint system indicated; and providing a sound foundation for field-applied topcoats despite prolonged exposure.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of standard steel doors and frames.

1. Examine roughing-in for embedded and built-in anchors to verify actual locations of standard steel frame connections before frame installation.
2. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work.
3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove welded-in shipping spreaders installed at factory.

B. Prior to installation and with installation spreaders in place, adjust and securely brace standard steel door frames for squareness, alignment, twist, and plumb to the following tolerances:

1. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
2. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
3. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
4. Plumbness: Plus or minus 1/16 inch, measured at jambs on a perpendicular line from head to floor.

C. Drill and tap doors and frames to receive nontemplated mortised and surface-mounted door hardware.

3.3 INSTALLATION

A. General: Provide doors and frames of sizes, thicknesses, and designs indicated. Install standard steel doors and frames plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.

B. Standard Steel Frames: Install standard steel frames for doors, sidelights and other openings, of size and profile indicated. Comply with SDI 105.

1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.

    a. At fire-protection-rated openings, install frames according to NFPA 80.
    b. Where frames are fabricated in sections due to shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
    c. Install frames with removable glazing stops located on secure side of opening.
    d. Install door silencers in frames before grouting.
    e. Remove temporary braces necessary for installation only after frames have been properly set and secured.
    f. Check plumb, squareness, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
    g. Apply bituminous coating to backs of frames that are filled with mortar, grout, and plaster containing antifreezing agents.

2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor and secure with postinstalled expansion anchors.

    a. Floor anchors may be set with powder-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.

3. Metal-Stud Partitions: Solidly pack mineral-fiber insulation behind frames.
4. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with mortar as specified in Division 4 Section "Unit Masonry Assemblies."
5. Installation Tolerances: Adjust standard steel door frames for squareness, alignment, twist, and plumb to the following tolerances:

a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.

C. Standard Steel Doors: Fit hollow-metal doors accurately in frames, within clearances specified below. Shim as necessary.

1. Non-Fire-Rated Standard Steel Doors:

a. Jambs and Head: 1/8 inch plus or minus 1/16 inch.
b. Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch.
c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch.
d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch.

2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.

D. Glazing: Comply with installation requirements in Division 8 Section "Glazing" and with standard steel door and frame manufacturer's written instructions.

1. Secure stops with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches o.c., and not more than 2 inches o.c. from each corner.

3.4 ADJUSTING AND CLEANING

A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including standard steel doors or frames that are warped, bowed, or otherwise unacceptable.

B. Clean grout and other bonding material off standard steel doors and frames immediately after installation.

C. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying primer.

D. Galvannealed Surfaces: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.

END OF SECTION 081113

SECTION 08 41 13 - ALUMINUM ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Interior and exterior doors and frames.
   2. Exterior and interior storefront systems.
   3. Sub-sills, sill extensions, closures, trim, filler panels and other storefront accessories.

B. Related sections include the following:

   1. Division 7 Section "Joint Sealants" for joint sealants installed as part of aluminum entrance and storefront systems.
   2. Division 8 Section "Glazing."
   3. Division 8 Section “Interior Aluminum Frames.”

1.3 GENERAL

A. General: Provide aluminum entrance and storefront systems capable of withstanding loads and thermal and structural movement requirements indicated without failure, based on testing manufacturer's standard units in assemblies similar to those indicated for this Project. Failure includes the following:

   1. Air infiltration and water penetration exceeding specified limits.
   2. Framing members transferring stresses, including those caused by thermal and structural movement, to glazing units.

B. Glazing: Physically and thermally isolate glazing from framing members.

C. Wind Loads: Provide entrance and storefront systems, including anchorage, capable of withstanding wind-load design pressures calculated according to requirements of Standard Building Code, 1997 Edition, in 110 MPH wind speed zone.

D. Dead Loads: Provide entrance- and storefront-system members that do not deflect an amount which will reduce glazing bite below 75 percent of design dimension when carrying full dead load.

   1. Provide a minimum 1/16-inch clearance between members and operable windows and doors.

E. Live Loads: Provide entrance and storefront systems, including anchorage, that accommodate the supporting structures' deflection from uniformly distributed and concentrated live loads indicated without failure of materials or permanent deformation.

F. Air Infiltration: Provide entrance and storefront systems with permanent resistance to air leakage through fixed glazing and frame areas of not more than 0.06 cfm/sq. ft. of fixed wall area when tested according to ASTM E 283 at a static-air-pressure difference of 1.57 lbf/sq. ft.

G. Water Penetration: Provide entrance and storefront systems that do not evidence water leakage through fixed glazing and frame areas when tested according to ASTM E 331 at minimum differential pressure of 20 percent of inward-acting wind-load design pressure as defined by ASCE 7, "Minimum Design Loads for Buildings and Other Structures," but not less than 8 lbf/sq. ft.

H. Thermal Movements: Provide entrance and storefront systems, including anchorage, that accommodate thermal movements of systems and supporting elements resulting from the following maximum change (range) in ambient and surface temperatures without buckling, damaging stresses on glazing, failure of joint sealants, damaging loads on fasteners, failure of doors or other operating units to function properly, and other detrimental effects.

1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

I. Dimensional Tolerances: Provide entrance and storefront systems that accommodate dimensional tolerances of building frame and other adjacent construction.

1.4 SUBMITTALS

A. Product Data: For each product specified. Include details of construction relative to materials, dimensions of individual components, profiles, and finishes.

B. Shop Drawings: For entrance and storefront systems. Show details of fabrication and installation, including plans, elevations, sections, details of components, provisions for expansion and contraction, and attachments to other work.

1. For entrance systems, include hardware schedule and indicate operating hardware types, quantities, and locations.

C. Samples for Initial Selection: Manufacturer's color charts showing the full range of colors available for units with factory-applied color finishes.

D. Installer Certificates: Signed by manufacturer certifying that installers comply with specified requirements.

E. Sealant Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating that materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with sealants; include joint sealant manufacturers' written interpretation of test results relative to sealant performance and recommendations for primers and substrate preparation needed to obtain adhesion.

F. Product Test Reports: Based on evaluation of tests performed by manufacturer and witnessed by a qualified independent testing agency, indicate compliance of entrance and storefront systems with requirements based on comprehensive testing of current systems.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced installer to assume engineering responsibility and perform work of this Section who has specialized in installing entrance and storefront systems similar to those required for this Project and who is acceptable to manufacturer.

1. Engineering Responsibility: Prepare data for entrance and storefront systems, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.

B. Source Limitations: Obtain each type of entrance and storefront system through one source from a single manufacturer.

C. Product Options: Drawings indicate size, profiles, and dimensional requirements of entrance and storefront systems and are based on the specific systems indicated.

1. Do not modify intended aesthetic effect, as judged solely by Architect, except with Architect's approval and only to the extent needed to comply with performance requirements. Where modifications are proposed, submit comprehensive explanatory data to Architect for review.

D. Preconstruction Sealant Testing: Perform sealant manufacturers' standard tests for compatibility and adhesion of sealants with each material that will come in contact with sealants and each condition required by system.

1. Perform tests under environmental conditions that duplicate those under which systems will be installed.
2. For materials that fail tests, determine corrective measures required to prepare each material to ensure compatibility with and adhesion of sealants, including, but not limited to, specially formulated primers. After performing these corrective measures on the minimum number of samples required for each material, retest materials.

E. Welding Standards: Comply with applicable provisions of AWS D1.2, "Structural Welding Code--Aluminum."

1.6 PROJECT CONDITIONS

A. Field Measurements: Verify dimensions by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating systems without field measurements. Coordinate construction to ensure actual dimensions correspond to established dimensions.

1.7 WARRANTY

A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

B. Special Warranty: Submit a written warranty executed by the manufacturer agreeing to repair or replace components of entrance and storefront systems that fail in materials or workmanship within the specified warranty period. Failures include, but are not limited to, the following:

1. Structural failures including, but not limited to, excessive deflection.
2. Adhesive sealant failures.
3. Cohesive sealant failures.
4. Failure of system to meet performance requirements.
5. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
6. Failure of operating components to function normally.
7. Water leakage through fixed glazing and frame areas.

C. Warranty Period: 2 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 ALUMINUM ENTRANCE AND STOREFRONT SYSTEMS

A. Provide the following systems in the locations indicated:

1. Kawneer Trifab 451, center glazed, (2.5” x 4.5”).

2. Kawneer 350 Medium Stile Exterior Entrance Door Units (with 10” bottom stile).

3. Finish hardware, except for cylinders, shall be furnished and installed under this division.

B. Materials, components, and accessories: Provide complete systems in accordance with the manufacturer's written specifications for the aluminum entrance and storefront systems indicated.

C. Aluminum Break Metal Closure Panels at Soffit and Steel Tube shall be minimum 0.80 thickness and pre-finished to match storefront framing.

D. Finish: As selected by Architect from manufacturer's full range

E. Glazing as specified in Division 8 Section "Glazing."

F. Glazing Gaskets: Manufacturer's standard pressure-glazing system of black, resilient glazing gaskets, setting blocks, and shims or spacers, fabricated from an elastomer of type and in hardness recommended by system and gasket manufacturer to comply with system performance requirements. Provide gasket assemblies that have corners sealed with sealant recommended by gasket manufacturer.

G. Spacers, Setting Blocks, Gaskets, and Bond Breakers: Manufacturer's standard permanent, non-migrating types in hardness recommended by manufacturer, compatible with sealants, and suitable for system performance requirements.

H. Hardware: Provide heavy-duty hardware units indicated in sizes, number, and type recommended by manufacturer for entrances indicated. Finish exposed parts to match door finish, unless otherwise indicated. The following assist in providing appropriate hardware:
1. Hinges: 2.0 pair of offset pivots per door at entrance doors over 8’ in height. 1.5 pair of offset pivots per door at all other doors.

2. Door Closurers: LCN 4040.
3. Panic Hardware: Dor-O-Matic 1690.
4. Door Pulls: For Dor-O-Matic 1690 – CO-12. Finish as selected from manufacturer's standard selections.
5. Thresholds and Weatherstripping: As recommended by aluminum door manufacturer for conditions. Threshold shall meet all code requirements, including ADA acceptance. Threshold shall be coordinated with adjacent construction to ensure height of threshold at adjacent conditions meet ADA requirements.

2.2 FABRICATION

A. General: Fabricate components that, when assembled, will have accurately fitted joints with ends coped or mitered to produce hairline joints free of burrs and distortion. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

B. Prepare components to receive concealed fasteners and anchor and connection devices.

C. Storefront: Fabricate framing in profiles indicated for flush glazing (without projecting stops). Provide sub-frames and reinforcing of types indicated for a complete system. Factory-assemble components to greatest extent possible. Disassemble components only as necessary for shipment and installation.

D. Entrances: Fabricate door framing in profiles indicated. Reinforce to support imposed loads. Factory assemble door and frame units and factory install hardware to greatest extent possible. Reinforce door and frame units for installing hardware indicated. Cut, drill, and tap for factory-installed hardware before finishing components.

1. Exterior Doors: Provide compression weather stripping at fixed stops. At other locations, provide sliding weather stripping retained in adjustable strip mortised into door edge.
2. Interior Doors: Provide ANSI/BHMA A156.16 silencers at stops to prevent metal to metal contact. Provide 3 silencers on strike jamb of single-door frames and 2 silencers on head of double-door frames.

2.3 ALUMINUM FINISHES

A. General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations relative to applying and designating finishes.

B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of entrance and storefront systems. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Comply with manufacturer's written instructions for protecting, handling, and installing entrance and storefront systems. Do not install damaged components. Fit frame joints to produce hairline joints free of burrs and distortion. Rigidly secure non-movement joints. Seal joints watertight.

B. Metal Protection: Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

C. Install components to drain water passing joints and condensation and moisture occurring or migrating within the system to the exterior.

D. Set continuous sill members and flashing in a full sealant bed to provide weather-tight construction, unless otherwise indicated. Comply with requirements of Division 7 Section "Joint Sealants."

E. Install framing components plumb and true in alignment with established lines and grades without warp or rack of framing members.

F. Install entrances plumb and true in alignment with established lines and grades without warp or rack. Lubricate operating hardware and other moving parts according to hardware manufacturers' written instructions.

1. Install surface-mounted hardware according to manufacturer's written instructions using concealed fasteners to greatest extent possible.

G. Install glazing to comply with requirements of Division 8 Section "Glazing," unless otherwise indicated.

1. Prepare surfaces that will contact structural sealant according to sealant manufacturer's written instructions to ensure compatibility and adhesion. Preparation includes, but is not limited to, cleaning and priming surfaces.
2. Install structural silicone sealant according to sealant manufacturer's written instructions.
3. Mechanically fasten glazing in place until structural sealant is cured.
4. Remove excess sealant from component surfaces before sealant has cured.

H. Install secondary-sealant weather-seal according to sealant manufacturer's written instructions to provide weatherproof joints. Install joint fillers behind sealant as recommended by sealant manufacturer.

I. Install perimeter sealant to comply with requirements of Division 7 Section "Joint Sealants," unless otherwise indicated.

J. Erection Tolerances: Install entrance and storefront systems to comply with the following maximum tolerances:

1. Variation from Plane: Limit variation from plane or location shown to 1/8 inch in 12 feet; 1/4 inch over total length.
2. Alignment: Where surfaces abut in line, limit offset from true alignment to 1/16 inch. Where surfaces meet at corners, limit offset from true alignment to 1/32 inch.
3. Diagonal Measurements: Limit difference between diagonal measurements to 1/8.

3.3 FIELD QUALITY CONTROL

A. Structural-Silicone-Sealant Adhesion Test: Test installed structural silicone sealant according to field adhesion test method described in AAMA CW #13, "Structural Sealant Glazing Systems (A Design Guide)."

1. Test a minimum of 2 areas.

B. Water Spray Test: After completing the installation of test areas indicated, test storefront system for water penetration according to AAMA 501.2 requirements.

C. Repair or remove and replace Work that does not meet requirements or that is damaged by testing; replace to conform to specified requirements.

3.4 ADJUSTING AND CLEANING

A. Adjust doors and hardware to provide tight fit at contact points and weather stripping, smooth operation, and weather-tight closure.

B. Remove excess sealant and glazing compounds, and dirt from surfaces.

3.5 PROTECTION

A. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure entrance and storefront systems are without damage or deterioration at the time of Substantial Completion.

END OF SECTION 08410

SECTION 08 56 00 – Vinyl Windows and Sliding Doors

1.1 SECTION INCLUDES

A. Vinyl New Construction Windows.

B. Vinyl New Construction Sliding Doors.

1.2 RELATED SECTIONS

A. Section 04810: Unit Masonry Assemblies.

B. Section 06100: Rough Carpentry.

C. Section 06200: Finish Carpentry.

1.3 REFERENCES

A. ANSI/AAMA/NWWDA 101/I.S.2; 97 and current A-440-05 - Voluntary Specification for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors with revisions contained in "reprinting" of 12/99.

B. AAMA 701/702 - Combined Voluntary Specifications for Pile Weather strip and Replaceable Fenestration Weather seals.

C. AAMA 902 - Voluntary Specification for Sash Balances.

D. ASTM E 283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors Under Specified Pressure Differences Across the Specimen.

E. ASTM E 330 - Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.

F. ASTM E 547 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors and Curtain Walls by Cyclic Static Air Pressure Difference.

G. ASTM E 1886 - Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.

H. ASTM E 1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.

I. ASTM E 2190 - Standard Specification for the Classification of the Durability of Sealed Insulating Glass Units.

J. ASTM F 588 - Standard Test Methods for Measuring the Forced Entry Resistance of Window Assemblies, Excluding Glazing Impact.

K. NFRC 100/200 – Procedure for Determining Fenestration Product U-Factors and Solar Heat Gain.

1.4 SUBMITTALS

A. Submit the following documents for each type of window and door.

1. Manufacturer's technical data, product descriptions and installation guides.
2. Elevation for each style window specified indicating its size, glazing type, muntin type and design.
3. Manufacturer's head, jamb and sill details for each window type specified.

B. Selection Samples: For each finish product specified, a complete set of Color chips representing manufacturer's full range of available Colors.

C. Verification Samples: Provide operating units of each style window and door specified.
1. Verification samples may be operating scaled-down mock-ups of actual-size units.
2. Operating hardware such as balances, sash locks and weather-stripping.
3. Verification samples will be returned to manufacturer's representative at project closeout.

D. Test Reports: Submit certified independent testing agency reports indicating window units meet or exceed specified performance requirements.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Minimum ten (10) years producing vinyl (PVC) windows.

B. Installer Qualifications: Utilize an installer having demonstrated experience on projects of similar size.

C. Source Limitations: Obtain window units from one manufacturer through a single source.

D. Provide window units independently tested and found to be in compliance with ANSI/AAMA/NWWDA 101/I.S.2-97 and current A440-05 performance standards listed above.

E. Code Compliance: Provide windows that are labeled in compliance with the jurisdiction having authority over the project.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver windows and doors to project site in undamaged condition; handle windows and doors to prevent damage to components and to finishes.

B. Store products in manufacturer's unopened packaging, out of direct sunlight or high temperature locations, until ready for installation.

1.7 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.8 WARRANTY

A. Submit manufacturer's standard warranty against defects in workmanship and materials.
1. Limited Lifetime Limited Transferable warranty on extruded solid vinyl member and component parts. Insulated glass is warranted against material obstruction of transparency resulting from film formation or dust collection on

the interior glass surfaces for a period of Thirty (30) years. Consult warranty for complete details.

2. The warranty period for commercial project work such as apartments, housing authorities and other buildings not used by individual homeowners is 30 years, covering all vinyl, glass and component parts. Consult warranty for complete details.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Manufacturer:

1. Andersen 2900.

2.MCM 8005

3.Comfort View 9000

4.Silverline 5800

2.2 NEW CONSTRUCTION SINGLE HUNG WINDOW

A. Construction: Frame and top sash: Nominal 0.065 inch (1.8mm) frame thickness polyvinyl chloride (PVC) with miter cut and fusion welded corners. Top lite to be integral to frame.
   1. Siding Attachment: Integral 13/16 inch (21mm) "J" fin pocket.
   2. Siding Attachment: L-fin (Integral J w/ L-adapter).
   3. Color: White.
   4. Glazing: Insulated glass units secured to sash frame using a silicone sealant and glazing bead. Complies with ÅSTM E 2190.
   5. Sash Balances: Factory calibrated block and tackle, complying with AAMA-902. Balance cords shall be anchored to glass filled nylon terminal housings that lock in place once the sash is tilted in. The locking terminal and pivot bar system shall be designed to positively interlock, to provide accurate alignment of the sash and the frame during installation and operation.
   6. Top Glass - Fixed.
   7. Sash Locks: Low profile composite sweep lock which anchors into the integrated keeper groove of the meeting rail frame. Double locks where openings exceed 30 1/4 inches (768mm) wide.
   8. Weather Stripping: In compliance with AAMA 701.2.
   9. Screens: Roll form aluminum frame, half screen with 18 x 16 charcoal finished fiberglass mesh.
   10. Grids: Colonial contour grids between glass (GBG) dividers.
   11. Grids: Flat diamond grids between glass (GBG) dividers.

B. Performance:
   1. Air Infiltration: Maximum 0.05 cfm/sq. ft. at 1.57 psf (25 mph) in accordance with ASTM E 283.
   2. Water Resistance: No leakage when tested at 4.60 psf in accordance with ÅSTM E 547.
   3. Uniform structural test pressure at 45.14 psf positive and negative in accordance with ASTM E 330.
   4. Structural Rating: H-R30 (DP30)- Test Size: 42 inches x 77 inches (1166mm x 1955mm) in accordance with AAMA/WDMA/CSA 101/I.S.2 A440-05.
   5. Forced Entry: Type B, Grade 10 in accordance with ASTM F 588.

2.3 SLIDING PATIO DOORS

A. Construction:
1. Frame and sash: Nominal 0.1 inch (2.5mm) thickness polyvinyl chloride (PVC). Frame corners mechanically fastened, jamb depth is 4-9/16" and fin is integral to master frame. Sash corners are miter cut and fusion welded.
2. Color: White.
3. Color: Custom Exterior Finish.
4. Glazing: 7/8 inch (22mm) Nominal thickness insulated glass units secured to sash frame using a dual durometer glazing bead. Complies with ÅSTM E 2190.
5. Locks and Hardware:
   a. Dual point Lock.
   b. Multi-point locking system.
   c. Corrosion resistant stainless steel rollers.
6. Weather stripping: In compliance with AAMA 701.2.
7. Screens: Extruded aluminum frame with 18 x 16 charcoal finished fiberglass mesh.
8. Sizes: Standard and custom sizes.

B. Performance:
1. Air Infiltration: Maximum 0.06 cfm/sq. ft. at 1.57 psf (25 mph) in accordance with ÅSTM E 283.
2. Water Resistance: No leakage when tested at 5.43 psf in accordance with ÅSTM E 547.
3. Uniform structural test pressure at 52.66 psf positive and negative in accordance with ÅSTM E 330.
4. Structural Rating: SD-R35 (DP35)- Test Size: 96 inches x 80 inches (2438mm x 2032mm) in accordance with ANSI/AAMA/NWWDA 101/I.S.2.
5. Forced Entry: Type B, Grade 10 in accordance with ÅSTM F 588.
6. Sound Transmission Class (STC): 29.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify rough opening size is of sufficient size to receive window unit and complies with manufacturer's requirements for opening clearances.

B. Verify that sill plate is level.

C. Notify Architect of unacceptable conditions before proceeding with installation.

3.2 INSTALLATION

A. Install window unit in accordance with manufacturer's printed instructions.

B. Apply sealant around perimeter of window unit between nail fin and exterior sheathing of wall. Refer to Division 7 Section "Joint Sealants".

C. Install window unit level and plumb. Center window unit in opening and secure window unit by nailing through nail fin and screw through jambs as indicated in manufacturer's instructions.

D. Flash window in accordance with AAMA's "Standard Practice for Installation of Windows with a Mounting Flange in Stud Frame Construction".

E. Insulate between window frame and rough opening with insulation. Refer to Division 7 Section "Building Insulation".

3.3 ADJUSTING

A. Adjust units for smooth operation without binding or racking.

B. Adjust sash locks and screens for smooth operation.

3.4 CLEANING

A. Clean soiled surfaces and glass prior to substantial completion.

3.5 PROTECTION

A. Protect window unit from damage until substantial completion. Repair or replace damaged units.

END OF SECTION

SECTION 08 71 00 – DOOR HARDWARE

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

A. Any door shown on the drawings and not specifically referenced in the hardware sets shall be provided with identical hardware as specified on other similar openings and shall be included in the finish hardware suppliers bid.

B. All doors that are fire rated shall be provided with fire rated hardware to comply with the local code requirements whether specified that way or not as a part of the hardware supplier's base bid.

C. Hardware supplier shall notify the Architect in writing of any discrepancies no less than five (5) working days prior to the bid date that could result in hardware being supplied that is non-functional, that will not meet local codes, or any door that is not covered in this specification.

D. Aluminum storefront hardware shall be provided under this specification section and shall be included in the finish hardware supplier's base bid.

E. Power supplies for electrified hardware shall be provided under this specification section and shall be included in the finish hardware supplier's base bid.

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.3 SUMMARY

A. This Section includes the following:
   1. Commercial door hardware for the following:
      a. Swinging Doors
      b. Other doors to the extent indicated.
   2. Cylinders for doors specified in other Sections.

B. Related Sections include the following:
   1. Division 8 Section "Hollow Metal Doors and Frames" for astragals furnished as part of fire-rated labeled assemblies.
   2. Division 8 Section "Flush Wood Doors" for astragals as part of fire-rated labeled assemblies.

1.4 SUBMITTALS

A. Product Data: Include installation details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings: Details of electrified and access control hardware, indicating the following:

1. System Block Wiring Diagrams: Detail wiring for power, signal, and control systems and differentiate between manufacturer-installed and field-installed wiring. Include the following for each unique electrified opening:

    a. Point-to-point system wiring and riser diagrams.
    b. Elevation diagram of each door.
    c. Operational description.

C. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening.

    a. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.

3. Content: Include the following information:

    a. Type, style, function, size, label, hand, and finish of each door hardware item.
    b. Manufacturer of each item.
    c. Fastenings and other pertinent information.
    d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
    e. Explanation of abbreviations, symbols, and codes contained in schedule.
    f. Mounting locations for door hardware.
    g. Door and frame sizes and materials.
    h. Description of each electrified door hardware function, including location, sequence of operation, and interface with other building control systems.

        1) Sequence of Operation: Include description of component functions including, but not limited to, the following situations: normal secured/unsecured state of door; authorized access; authorized egress; unauthorized access; unauthorized egress; fire alarm and loss of power conditions.

4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.

D. Keying Schedule: Prepared under the supervision of the Owner, separate schedule detailing final keying instructions for locksets and cylinders in writing. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner to approve submitted keying schedule prior to the ordering of permanent cylinders.

E. Maintenance Data: For each type of door hardware to include in maintenance manuals specified in Division 1. Upon completion of construction and building turnover, furnish two (2) complete maintenance manuals to the owner. Manuals to include the following items:

1. Approved hardware schedule, catalog cuts and keying schedule.
2. Furnish keying bitting list in paper and electronic format by registered mail directly to facility manager owner.
3. Hardware installation and adjustment instructions.
4. Manufacturer's written warranty information.
5. Wiring diagrams, elevation drawings and operational descriptions for all electronic openings.

1.5 QUALITY ASSURANCE

A. Please be advised that Hardware Supplier and Hardware Installer must obtain a license with the Louisiana Office of State Fire Marshall in accordance to RS 40:1464 and RS 40:1664.

B. Installer Qualifications: An experienced Installer who has completed standard builder's hardware installations similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

C. Supplier Qualifications: Door hardware supplier with warehousing facilities in Project's vicinity and who is or employs a qualified Architectural Hardware Consultant or equivalent experience available during the course of the Work to consult with Contractor, Architect, and Owner about door hardware and keying. Supplier recognized by manufacturers to be a direct factory-authorized distributor of the specified hardware products.
1. Scheduling Responsibility: Preparation of door hardware and keying schedules.

D. Source Limitations: Obtain each type and variety of aluminum, steel and wood door hardware from the same single source manufacturer and supplier, unless otherwise indicated.

E. Regulatory Requirements: Comply with provisions of the following:
1. Where indicated to comply with accessibility requirements, comply with Americans with Disabilities Act (ADA), "Accessibility Guidelines for Buildings and Facilities (ADAAG)," ANSI A117.1 as follows:
   a. Handles, Pulls, Latches, Locks, and other Operating Devices: Shape that is easy to grasp with one hand and does not require tight grasping, tight pinching, or twisting of the wrist.
   b. Door Closers: Comply with the following maximum opening-force requirements indicated:
      1) Interior Hinged Doors: 5 lbf applied perpendicular to door.
      2) Fire Doors: To include a delayed action closer with 3 second minimum delay and minimum opening force allowable by authorities having jurisdiction.
   c. Thresholds: Not more than 1/2 inch high. Bevel raised thresholds with a slope of not more than 1:2.
2. NFPA 101: Comply with the following for means of egress doors:
   a. Latches, Locks, and Exit Devices: Not more than 15 lbf to release the latch. Locks shall not require the use of a key, tool, or special knowledge for operation.
   b. Thresholds: Not more than 1/2 inch high.
3. International Building Code (2006).

F. Fire-Rated Door Assemblies: Provide door hardware for assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having

jurisdiction, for fire ratings indicated, based on testing according to NFPA 252 (neutral pressure at 40" above sill) or UL-10C.

1. Test Pressure: Positive pressure labeling.

1.6 DELIVERY, STORAGE, AND HANDLING

A. One complete shipment of door hardware as detailed in approved Door Hardware Schedule Shop Drawings to be inventoried on site and upon receipt of material is secure in lock-up room furnished with shelving for door hardware. Do not store electronic access control hardware, software or accessories at Project site without prior authorization and climate controlled facility, failure to do so will void electronic warranties.

B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

C. Deliver permanent keys, cylinders, cores, access control credentials, electronic key software with loaded bitting and key records per cylinder, and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference". Hardware Supplier must be a regional supplier to address owner questions and concerns relating to keying issues that arise as project close-out.

1.7 COORDINATION

A. Templates: Door Hardware Supplier to furnish and distribute to the parties involved for templating for doors, frames, and other work specified to be factory prepared for installing standard, electrified and access control door hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.

B. Access Control and Electrical Connections: Door Hardware supplier with door and frame supplier to coordinate the layout and installation of scheduled electrified door hardware with required connections to source power junction boxes, power supplies and security products.

C. Keying Conference: Door Hardware Supplier to conduct keying conference to comply with requirements in Division 1 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document prior to any material being ordered:

1. Function of building, purpose of each area and degree of security required.
2. Plans for existing and future key system expansion.
3. Review all lock and exit device functions when reviewing keying requirements.
4. Requirements for key control system.
5. Installation of permanent keys and cylinder cores.
6. Address the requirements for delivery of keys.
7. Address keying and cylinder stamping (identification) as required by owner or owner representative.
8. Establish method of submitting electronic format of keying systems and diagram and to be produced and furnished by Hardware Supplier.

D. Pre-Installation Conference: Hardware Supplier to conduct conference at Project site attended by representatives of Door Hardware Manufacturers, Hardware Installers, Owner Representative and General Contractor to review proper hardware installation methods and the procedures for receiving and handling hardware. On site training should not be less then four

hours of on-site training by qualified Hardware Supplier and Manufactures. At completion of installation and final walk through, furnish written certification that hardware items were applied according to conference recommendations and to finish hardware specifications.

1.8 WARRANTY

A. General Warranty: Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Special Warranty: Written warranty, executed by manufacturer agreeing to repair or replace components of standard, electrified hardware and access control hardware that fails in materials or workmanship within specified warranty period. Failures include, but are not limited to, the following:

1. Structural failures including excessive deflection, cracking, or breakage.
2. Faulty operation of the hardware.
3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

C. Warranty Period: Fifteen years from date of Substantial Completion, unless otherwise indicated.

D. Special Warranty Periods:

1. Twenty years for mortise locksets.
2. Twenty years for exit devices.
3. Fifteen years for manual door closers.
4. Twenty years for electromechanical door hardware.
5. Thirty years for Thresholds, Door Sweeps, Gasketing, Perimeter Weatherstripping.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

A. General:

1. Door Hardware Sets: Provide Pamex Denver FLN Series Typical throughout all residences.
   a. FLN07C (F109) Entrance
   b. FLN03 (F75) Passage
   c. FLN08C (F76) Bedrooms and Bathrooms

2.2 EXIT DEVICES

A. Manufacturers: Subject to compliance with requirements, furnish products by one of the following:

1. Exit Devices:

a. Sargent Manufacturing (SA) - 80 Series No substitution

2. Electrified Options: As indicated in hardware sets, furnish electrified exit device options including: electric latch retraction, electric dogging, outside door trim control, exit alarm, delayed egress, latchbolt monitoring, lock/unlock status monitoring, touchbar monitoring and request-to-exit signaling. Unless otherwise indicated, furnish electrified exit devices standard as fail secure on lever or trim side, always free egress on push side or fail safe.

B. Standard: BHMA A156.3.

C. Exit Devices: BHMA Certified Grade 1.

D. Panic Exit Devices: Listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for panic protection, based on testing according to UL 305.

E. Fire Exit Devices: Complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire and panic protection, based on testing according to UL 305 and NFPA 252.

F. Outside Trim: Match design for locksets and latchsets, unless otherwise indicated.

G. Through Bolt Installation: For exit devices and trim as required for fire rated wood doors. Where through bolts are used, coordinate the color of bolt on opposite of device with BHMA finish color similar to the color of door finish surface.

2.3 CLOSERS

A. Manufacturers: Subject to compliance with requirements, furnish products by one the following:

1. Surface-Mounted Closers (Heavy Duty): BHMA Certified Grade 1 (to be used at exterior, cross corridor and high frequency use openings):
   a. Sargent Manufacturing (SA) – 351:
      1) Approved Arms: O, P10, PS, PSH, CPS, CPSH

B. Standards: Comply with the following:

1. Closers: BHMA A156.4.

C. Closer Options: As indicated in hardware sets, furnish door closer options including: delayed action, hold open arms, extra duty cast or forged parallel arms, positive stop/hold open arms, compression stop/hold open arms, special mounting brackets, spacers and drop plates. Through bolt type mounting is required as indicated in the door hardware sets. Where through bolts are used, coordinate the color of bolt on opposite of device with BHMA finish color similar to the color of door finish surface. Bent steel or threaded rod arms are not acceptable unless clearly specified in the Hardware Sets.

1. Furnish Delayed Action (DA) feature in closers at Laboratories, Shipping and Receiving doors and where cart traffic is active.
2. Furnish shock absorbing arm such as Spring or Rubber Cushion at exterior outswing openings.

2.4 STOPS AND HOLDERS

A. Manufacturers: Subject to compliance with requirements, furnish products by one of the following:

1. Stops and Holders:

a. McKinney Products (MC).
b. Hager(HA)
c. Ives (IV).
d. Rockwood Manufacturing (RO).
e. Trimco Manufacturing (TR).
f. Pamex (PA)

B. Standards: Comply with the following:

1. Stops and Bumpers: BHMA A156.16.
2. Combination Overhead Holders and Stops: BHMA A156.8.
3. Door Silencers: BHMA A156.16.

C. Stops and Bumpers: BHMA Certified Grade 1.

D. Provide Overhead Concealed stops at public spaces such as conference, corridors, and office spaces where wall or floor stops are not applicable condition.

E. Provide Overhead Surface stops at non-public spaces such as mechanical, electrical, storage spaces.

F. Floor Stops: For doors, unless wall or other type stops are scheduled or indicated. Do not mount floor stops where they will impede traffic.

1. Where floor or wall stops are not appropriate, furnish overhead stops.

G. Silencers for Metal Door Frames: BHMA Grade 1; neoprene or rubber, minimum diameter 1/2 inch fabricated for drilled-in application to frame. Furnish (3) per single door and (2) per paired door frame if applied gasketing is not specified in Hardware Sets.

2.5 DOOR THRESHOLDS, WEATHERSTRIPPING AND GASKETING

A. Manufacturers: Subject to compliance with requirements, furnish products by one of the following:

1. Door Thresholds, Weatherstripping and Gasket Seals:

a. McKinney Weatherstripping Products (MW).
b. Pamex (PX)
c. NGP Manufacturing (NG)
d. Pemko Manufacturing (PE).

B. Standard: Comply with BHMA A156.22.

C. General: Furnish continuous weatherstrip seal on exterior doors and smoke, light, or sound gasketing on interior doors where specified. Furnish non-corrosive fasteners for exterior applications.

1. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame. Install header seal before mounting door closer arms.
2. Meeting Stile Astragals: Fasten to meeting stiles, forming seal when doors are closed.
3. Door Sweep: Apply to bottom of door, forming seal with threshold when door is closed.

D. Furnish thresholds to meet ADA compliance height, coordinate threshold height with floor pivots, finish floor thickness and door undercut. Extended spindles on pivots may be required due to construction detail and final installation; coordination requirements by door and hardware supplier are required prior to ordering material.

E. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.

1. Furnish smoke labeled perimeter gasketing at all smoke labeled openings.

F. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.

1. Intumescent Seals and Gasketing: Furnish concealed, Category A type gasketing systems on assemblies where an intumescent seal is required to meet IBC and UL-10C positive pressure labeling.

2.6 FABRICATION

A. Fasteners: Furnish door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Furnish screws according to manufacturers recognized installation standards for application intended.

1. Furnish manufactures templated and approved stainless steel screws and fasteners for stainless steel hardware specified in the hardware sets.

B. Mounting Accessories: Furnish drop plates, filler brackets, extended length screws, through bolts, and accessories for complete mounting with door, frame, light kits, applied molding and special applications as part of the base bid with complete installation per manufactures recommendations.

2.7 FINISHES

A. Standard: Comply with BHMA A156.18.

B. Furnish quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware.

C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable and temporary protective covering before shipping to jobsite.

D. BHMA Designations: Comply with base material and finish requirements indicated by the following:
   1. BHMA 626: Satin chromium plated over nickel, over brass or bronze base metal.
   2. BHMA 628: Satin aluminum, clear anodized, over aluminum base metal.
   3. BHMA 630: Satin stainless steel, over stainless-steel base metal.
   4. BHMA 652: Satin chromium plated over nickel, over steel base metal.
   5. BHMA 689: Aluminum painted, over any base metal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.

B. Examine roughing-in for electrical source power to verify actual locations of wiring connections before electrified door hardware installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

D. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

A. Steel Doors and Frames: Comply with ANSI/DHI A115 series.

B. Wood Doors: Comply with ANSI/DHI A115-W series.

C. Electrified Openings: Furnish steel doors and frames and wood doors prepared to receive electrified hardware connections specified in Door Hardware Sets without additional modification.

3.3 INSTALLATION

A. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:

   1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
   2. Custom Steel Doors and Frames: DHI's "Recommended Locations for Builders' Hardware for Custom Steel Doors and Frames."
   3. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."

B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface

protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

C. Furnish and coordinate concealed wood blocking for wall mount stops as detailed in Door Hardware Schedule.

D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."

3.4 FIELD QUALITY CONTROL

A. The Contractor shall comply with AIA A201 1997 section 3.3.1 which reads as follows: “The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless the contract Documents give other specific instructions concerning these matters.”

B. Field Inspection: Supplier and Door Hardware Manufacturer will perform a final inspection of installed door hardware and state in report whether work complies with or deviates from requirements, including whether door hardware is properly installed, operating and adjusted.

1. Access Control System Consultant will inspect integrated electronic and access control hardware and state in report whether installed work complies with or deviates from requirements, including whether electronic and access control hardware is properly installed and performing according to system operational descriptions.

    a. Inspection: Verify that units and controls are properly installed, connected, and labeled and that interconnecting wires and terminals are identified.
    b. Pre-testing: Program and adjust the system and pretest all components, wiring, and functions to verify they conform to specified requirements. Replace malfunctioning or damaged items with new items.
    c. Acceptance Test Schedule: Schedule tests after pre-testing has been successfully completed and system has been in normal functional operation for at least 2 weeks.
    d. Retest: Correct deficiencies identified by tests and observations and retest until specified requirements are met.

3.5 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

1. Door Closers: Adjust sweep period so that, from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches from the latch, measured to the leading edge of the door.

B. Six-Month Adjustment: Approximately six months after date of Substantial Completion, Installer shall perform the following:

1. Examine and readjust each item of door hardware as necessary to ensure function of doors, door hardware, and electrified door hardware.

2. Consult with and instruct Owner's personnel on recommended maintenance procedures.
3. Replace door hardware items that have deteriorated or failed due to faulty design, materials, or installation of door hardware units.

3.6 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation.

B. Clean operating items as necessary to restore proper finish. Furnish final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.7 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain door hardware and door hardware finishes.

END OF SECTION 087100

SECTION 09 29 00 - GYPSUM BOARD

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Interior gypsum board.

B. Related Sections include the following:

1. Division 5 Section "Cold-Formed Metal Framing" for load-bearing steel framing that supports gypsum board.
2. Division 7 Section "Building Insulation" for insulation installed in assemblies that incorporate gypsum board.
3. Division 7 Section "Joint Sealants" for acoustical sealants installed in assemblies that incorporate gypsum board.
4. Division 9 Section "Non-Load-Bearing Steel Framing" for non-structural framing and suspension systems that support gypsum board.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples: For the following products:

1. Trim Accessories: Full-size Sample in 12-inch- (300-mm-) long length for each trim accessory indicated.

1.3 QUALITY ASSURANCE

A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.

B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

1.4 STORAGE AND HANDLING

A. Store materials inside under cover and keep them dry and protected against damage from weather, condensation, direct sunlight, construction traffic, and other causes. Stack panels flat to prevent sagging.

1.5 PROJECT CONDITIONS

A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.

B. Do not install interior products until installation areas are enclosed and conditioned.

C. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 PANELS, GENERAL

A. Size: Provide in maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.2 INTERIOR GYPSUM BOARD

A. General: Complying with ASTM C 36/C 36M or ASTM C 1396/C 1396M, as applicable to type of gypsum board indicated and whichever is more stringent.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. American Gypsum Co.
b. BPB America Inc.
c. G-P Gypsum.
d. Lafarge North America Inc.
e. National Gypsum Company.
f. PABCO Gypsum.
g. Temple.
h. USG Corporation.

B. Standard gypsum board to be used throughout except in fire rated locations.

C. Type X:

1. Thickness: 5/8 inch (15.9 mm).
2. Long Edges: Tapered.

a. Firecode; USG Corporation. (U.L. designation: SCX)
b. Fire-Shield; National Gypsum Company. (U.L. designation: FSW)

D. Special Type X: Having improved fire resistance over standard Type X, and complying with requirements of fire-resistance-rated assemblies indicated on Drawings.

1. Thickness: 1/2 inch or 5/8 inch and as required by fire-resistance-rated assembly indicated on Drawings.
2. Long Edges: Tapered.

a. Firecode C; USG Corporation. (U.L. Designation: Type C)
b. Fire-Shield G; National Gypsum Company. (U.L. designation: FSW-C)

2.3 TRIM ACCESSORIES

A. Interior Trim: ASTM C 1047.

1. Material: Galvanized or aluminum-coated steel sheet or rolled zinc.
2. Shapes:

a. Cornerbead.
b. L-Bead: L-shaped; exposed long flange receives joint compound.
c. Expansion (Control) Joint: One-piece, rolled zinc with V-shaped slot and removable strip covering slot opening.

2.4 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475/C 475M.

B. Joint Tape:

1. Interior Gypsum Wallboard: Paper.

C. Joint Compound for Interior Gypsum Wallboard: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.

1. Prefilling: At open joints and damaged surface areas, use setting-type taping compound.
2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use drying-type, all-purpose compound.
3. Fill Coat: For second coat, use drying-type, all-purpose compound.
4. Finish Coat: For third coat, use drying-type, all-purpose compound.

2.5 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.

B. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.

1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch (0.84 to 2.84 mm) thick.
2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.

C. Sound Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.

1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.

D. Acoustical Sealant: As specified in Division 7 Section "Joint Sealants."

E. Thermal Insulation: As specified in Division 7 Section "Building Insulation."

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames and framing, for compliance with requirements and other conditions affecting performance.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLYING AND FINISHING PANELS, GENERAL

A. Comply with ASTM C 840.

B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch (1.5 mm) of open space between panels. Do not force into place.

D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

E. Form control and expansion joints with space between edges of adjoining gypsum panels.

F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.

1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. (0.7 sq. m) in area.
2. Fit gypsum panels around ducts, pipes, and conduits.
3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch- (6.4- to 9.5-mm-) wide joints to install sealant.

G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- (6.4- to 12.7-mm-) wide spaces at these locations, and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

3.3 APPLYING INTERIOR GYPSUM BOARD

A. Single-Layer Application:

1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing, unless otherwise indicated.
2. On partitions/walls, apply gypsum panels vertically (parallel to framing), unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.

    a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
    b. At stairwells and other high walls, install panels horizontally, unless otherwise indicated or required by fire-resistance-rated assembly.

3. On Z-furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.
4. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

B. Multilayer Application:

1. On ceilings, apply gypsum board indicated for base layers before applying base layers on walls/partitions; apply face layers in same sequence. Apply base layers at right angles to framing members and offset face-layer joints 1 framing member, 16 inches (400 mm) minimum, from parallel base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly.
2. On partitions/walls, apply gypsum board indicated for base layers and face layers vertically (parallel to framing) with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.
3. On Z-furring members, apply base layer vertically (parallel to framing) and face layer either vertically (parallel to framing) or horizontally (perpendicular to framing) with vertical joints offset at least one furring member. Locate edge joints of base layer over furring members.
4. Fastening Methods: Fasten base layers and face layers separately to supports with screws.

3.4 INSTALLING TRIM ACCESSORIES

A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

B. Control Joints: Install control joints at locations indicated on Drawings or, if not indicated, according to ASTM C 840 and in specific locations approved by Architect for visual effect.

C. Interior Trim: Install in the following locations:

1. Cornerbead: Use at outside corners, unless otherwise indicated.
2. L-Bead: Use at exposed terminations of board.

3.5 FINISHING GYPSUM BOARD

A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

B. Prefill open joints and damaged surface areas.

C. Apply joint tape over gypsum board joints, except those with trim having flanges not intended for tape.

D. Gypsum Board Finish Levels: Finish panels to levels indicated below:

1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
2. Level 4: At panel surfaces that will be exposed to view, unless otherwise indicated.

    a. Primer and its application to surfaces are specified in other Division 9 Sections.

3.6 PROTECTION

A. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

B. Remove and replace panels that are wet, moisture damaged, and mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 092900

SECTION 09 65 55 – VINYL PLANK FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Vinyl Plank Flooring

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples for Initial Selection: For each type of product indicated.

C. Product Schedule: For resilient products.

1.4 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: As determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.

1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F (10 deg C) or more than 90 deg F (32 deg C).

1.6 PROJECT CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than [70 deg F (21 deg C)] <Insert temperature> or more than [95 deg F (35 deg C)] <Insert temperature>, in spaces to receive resilient products during the following time periods:

1. 48 hours before installation.
2. During installation.
3. 48 hours after installation.

B. Until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than [55 deg F (13 deg C)] <Insert temperature> or more than [95 deg F (35 deg C)] <Insert temperature>.

C. Install resilient products after other finishing operations, including painting, have been completed.

1.7 EXTRA MATERIALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Furnish not less than [10 linear feet (3 linear m)] <Insert length> for every [500 linear feet (150 linear m)] <Insert length> or fraction thereof, of each type, color, pattern, and size of resilient product installed.

PART 2 - PRODUCTS

2.1 VINYL PLANK FLOOR

A. Vinyl Plank Floor:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Congoleum – Endurance 6”.
b. Armstrong World Industries, Inc. – Luxe 5”
c. Johnsonite – I.D. Freedom-6”.
d. Mohawk Prequel- 6”.

B. Finish: As selected by Architect from manufacturer's full range.

C. Colors and Patterns: As selected by Architect from full range of industry colors.

2.2 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.

1. Use adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

a. Cove Base Adhesives: Not more than 50 g/L.
b. Rubber Floor Adhesives: Not more than 60 g/L.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.

B. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.

C. Do not install resilient products until they are same temperature as the space where they are to be installed.

1. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.

D. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation.

3.3 RESILIENT BASE INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient base.

B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

C. Install resilient base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.

D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

3.4 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protection of resilient products.

B. Perform the following operations immediately after completing product installation:

1. Remove adhesive and other blemishes from exposed surfaces.
2. Sweep and vacuum surfaces thoroughly.
3. Damp-mop surfaces to remove marks and soil.

C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

D. Floor Polish: Remove soil, visible adhesive, and surface blemishes from resilient stair treads before applying liquid floor polish.

1. Apply number of coats as per manufacturer’s recommendations.

E. Cover products until Substantial Completion.

END OF SECTION 096555

SECTION 09 68 00 - CARPET

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Tufted carpet.

B. Related Sections include the following:

1. Division 6 Section “Interior Architectural Woodwork” for wood base.
2. Division 9 Section "Resilient Floor Tile” and “Resilient Wall Base and Accessories" for resilient wall base and accessories installed with carpet.

1.3 SUBMITTALS

A. Product Data: For the following, including installation recommendations for each type of substrate:

1. Carpet: For each type indicated. Include manufacturer's written data on physical characteristics, durability, and fade resistance.

B. Samples: For each of the following products and for each color and texture required. Label each Sample with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in schedules.

1. Carpet: 12-inch- square Sample.
2. Exposed Edge, Transition, and other Accessory Stripping: 12-inch- long Samples.
3. Carpet Seam: 6-inch Sample.
4. Mitered Carpet Border Seam: 12-inch- square Sample. Show carpet pattern alignment.

C. Product Schedule: For carpet Use same designations indicated on Drawings.

D. Maintenance Data: For carpet to include in maintenance manuals. Include the following:

1. Methods for maintaining carpet, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.
2. Precautions for cleaning materials and methods that could be detrimental to carpet.

E. Warranties: Special warranties specified in this Section.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who is certified by the Floor Covering Installation Board or who can demonstrate compliance with its certification program requirements.

B. Carpet shall meet the standards of HUD Material Bulletin 44d.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Comply with CRI 104, Section 5, "Storage and Handling."

1.6 PROJECT CONDITIONS

A. Comply with CRI 104, Section 7.2, "Site Conditions; Temperature and Humidity" and Section 7.12, "Ventilation."

B. Environmental Limitations: Do not install carpet until wet work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

C. Do not install carpet over concrete slabs until slabs have cured, are sufficiently dry to bond with adhesive, and have pH range recommended by carpet manufacturer.

D. Where demountable partitions or other items are indicated for installation on top of carpet, install carpet before installing these items.

1.7 WARRANTY

A. Special Warranty for Carpet: Manufacturer's standard form in which manufacturer agrees to repair or replace components of carpet installation that fails in materials or workmanship within specified warranty period.

1. Warranty does not include deterioration or failure of carpet due to unusual traffic, failure of substrate, vandalism, or abuse.
2. Failures include, but are not limited to, more than 10 percent loss of face fiber, edge raveling, snags, runs, loss of tuft bind strength, and delamination.
3. Warranty Period: 2 years from date of Substantial Completion.

PART 2 - PRODUCTS

A. Subject to compliance with requirements, provide a comparable product by one of the following manufacturers:
1. Philadelphia
2. Mannington
3. Shaw
4. Mohawk

2.2 INSTALLATION ACCESSORIES

A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet manufacturer.

B. Adhesives: Water-resistant, mildew-resistant, non-staining type to suit products and subfloor conditions indicated, that complies with flammability requirements for installed carpet and is recommended or provided by carpet manufacturer.

1. VOC Limits: Provide adhesives that comply with the following limits for VOC content when tested according to ASTM D 5116:

a. Total VOCs: 10.00 mg/sq. m x h.
b. Formaldehyde: 0.05 mg/sq. m x h.
c. 2-Ethyl-1-Hexanol: 3.00 mg/sq. m x h.

C. Seam Adhesive: Hot-melt adhesive tape or similar product recommended by carpet manufacturer for sealing and taping seams and butting cut edges at backing to form secure seams and to prevent pile loss at seams.

D. Metal Edge Strips: Extruded aluminum with mill finish of width shown, of height required to protect exposed edge of carpet, and of maximum lengths to minimize running joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting carpet performance. Examine carpet for type, color, pattern, and potential defects.

B. Concrete Subfloors: Verify that concrete slabs comply with ASTM F 710 and the following:

1. Slab substrates are dry and free of curing compounds, sealers, hardeners, and other materials that may interfere with adhesive bond. Determine adhesion and dryness characteristics by performing bond and moisture tests recommended by carpet manufacturer.
2. Subfloor finishes comply with requirements specified in Division 3 Section "Cast-in-Place Concrete" for slabs receiving carpet.
3. Subfloors are free of cracks, ridges, depressions, scale, and foreign deposits.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. General: Comply with CRI 104, Section 7.3, "Site Conditions; Floor Preparation," and with carpet manufacturer's written installation instructions for preparing substrates.

B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8 inch wide or wider, and protrusions more than 1/32 inch, unless more stringent requirements are required by manufacturer's written instructions.

C. Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by carpet manufacturer.

D. Broom and vacuum clean substrates to be covered immediately before installing carpet.

3.3 INSTALLATION

A. Comply with CRI 104 and carpet manufacturer's written installation instructions for the following:

1. Direct-Glue-Down Installation: Comply with CRI 104, Section 9, "Direct Glue-Down Installation."

B. Comply with carpet manufacturer's written recommendations and Shop Drawings for seam locations and direction of carpet; maintain uniformity of carpet direction and lay of pile. At doorways, center seams under the door in closed position.

C. Do not bridge building expansion joints with carpet.

D. Cut and fit carpet to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet manufacturer.

E. Extend carpet into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.

F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on finish flooring as marked on subfloor. Use nonpermanent, nonstaining marking device.

G. Install pattern parallel to walls and borders to comply with CRI 104, Section 15, "Patterned Carpet Installations" and with carpet manufacturer's written recommendations.

H. Coordinate installation of rubber transition and terminating strips specified in Division 9 Section “Resilient Wall Base and Accessories”.

I. Coordinate installation of metal transition strips specified in Division 9 Section “Epoxy Terrazzo”.

3.4 CLEANING AND PROTECTING

A. Perform the following operations immediately after installing carpet:

1. Remove excess adhesive, seam sealer, and other surface blemishes using cleaner recommended by carpet manufacturer.
2. Remove yarns that protrude from carpet surface.
3. Vacuum carpet using commercial machine with face-beater element.

B. Protect installed carpet to comply with CRI 104, Section 16, "Protection of Indoor Installations."

C. Protect carpet against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet manufacturer and carpet adhesive manufacturer.

END OF SECTION 096800

SECTION 09 72 00 - HIGH-PERFORMANCE COATINGS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes surface preparation and field application of high-performance coating systems to exterior exposed structural and miscellaneous steel framing.

B. Related Sections include the following:

1. Division 5 Section "Structural Steel”.
2. Division 5 Section “Pipe and Tube Railings”.

1.2 DEFINITIONS

A. Standard coating terms defined in ASTM D 16 apply to this Section.

B. Environments: The following terms are used in Part 2 of this Section to distinguish between different corrosive exposures:

1. "Moderate environments" are corrosive industrial atmospheres with intermittent exposure to high humidity and condensation, occasional mold and mildew development, and regular cleaning with strong chemicals. Environments with exposure to heavy concentrations of chemical fumes and occasional splashing and spilling of chemical products are moderate environments.

1.3 SUBMITTALS

A. Product Data: For each coating system indicated. Include primers.

1. Material List: An inclusive list of required coating materials. Indicate each material and cross-reference the specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.
2. Manufacturer's Information: Manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each material specified.

B. Samples for Initial Selection: Manufacturer's color charts showing the full range of colors available for each type of finish-coat material indicated.

C. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

1.4 QUALITY ASSURANCE

A. Applicator Qualifications: Engage an experienced applicator who has completed high-performance coating system applications similar in material and extent to those indicated for Project and whose work has a record of successful in-service performance.

B. Source Limitations: Obtain primers and undercoat materials for each coating system from the same manufacturer as the finish coats.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label with the following information:

1. Name or title of material.
2. Product description (generic classification or binder type).
3. Manufacturer's stock number and date of manufacture.
4. Contents by volume, for pigment and vehicle constituents.
5. Thinning instructions.
6. Application instructions.
7. Color name and number.
8. Handling instructions and precautions.

B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F (7 deg C). Maintain containers used in storage in a clean condition, free of foreign materials and residue.

1. Protect materials from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and applying coatings.

1.6 PROJECT CONDITIONS

A. Apply coatings only when temperature of surfaces to be coated and surrounding air temperatures are between 45 and 95 deg F (7 and 35 deg C).

B. Do not apply coatings in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

1. Allow wet surfaces to dry thoroughly and attain temperature and conditions specified before proceeding with or continuing coating operation.
2. Work may continue during inclement weather only if areas and surfaces to be coated are enclosed and temperature within the area can be maintained within limits specified by manufacturer during application and drying periods.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products indicated in the coating system descriptions.

B. Manufacturers' Names: The following manufacturers are referred to in the coating system descriptions by shortened versions of their names shown in parenthesis:

1. ICI Dulux Paints; Devoe Coatings (ICI).
2. Moore: Benjamin Moore & Co. (Moore).
3. Rust-Oleum Corporation (R-O).
4. Sherwin Williams; Industrial and Marine Coatings (S-W).
5. Tnemec Company, Inc. (Tnemec).

2.2 COATINGS MATERIALS, GENERAL

A. Material Compatibility: Provide primers, undercoats, and finish-coat materials that are compatible with one another and substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

B. Material Quality: Provide manufacturer's highest grade of the various high-performance coatings specified. Materials not displaying manufacturer's product identification are not acceptable.

2.3 EXTERIOR HIGH-PERFORMANCE COATING SYSTEMS

A. Galvanized Metal: Provide the following finish systems over exterior galvanized metal surfaces:

1. Locations: Generally, but not necessarily limited to:

   a. All components of exterior galvanized steel framing system.
   b. All components of exterior galvanized railings.
   c. Miscellaneous exterior metals .

2. Coating System: Two coats with UV blocker in finish coat.

   a. First Coat: Acrylic Metal Primer applied at spreading rate indicated.
      1) 4. Sherwin Williams.: M04 Acrylic Metal Primer, 2.0 – 3.0 dry mils.

   b. Second Coat: Aliphatic acrylic polyurethane enamel, with UV Blocker added to second coat, applied at spreading rate indicated.

      1) Sherwin Williams.: M74/M75 Aliphatic Acrylic Urethane Gloss, 2.0 to 2.5 dry mils.

3. Coating System: Two coats with UV blocker in finish coat.

    a. First Coat: Water Based Epoxy Primer applied at spreading rate indicated.

        1) Sherwin Williams: Waterbased Tile-Clad Epoxy Primer B73A200 Series, 2.0 – 4.0 dry mils.

    b. Second Coat: Water Based Urethane Finish, with UV Blocker added to second coat, applied at spreading rate indicated.

        1) Sherwin Williams: Centurion WB Urethane B65-700 Series, 2.0 to 3.0 dry mils.

4. Coating System: Two coats with UV blocker in finish coat.

    a. First Coat: Polyamidoamine Epoxy primer applied at spreading rate indicated.

        1) Tnemec: Series 66 Hi-Build Epoxoline, 2.0 – 3.0 dry mils, as the basis of design.

    b. Second Coat: Aliphatic acrylic polyurethane enamel, with Series 44-600 UV Blocker added to second coat, applied at spreading rate indicated.

        1) Tnemec: Series 1074/1075, 2.5 to 3.0 dry mils, as the basis of design.

PART 3 - EXECUTION

3.1 EXAMINATION

A. With Applicator present, examine substrates and conditions under which high-performance coatings will be applied, for compliance with coating application requirements.

1. Apply coatings only after unsatisfactory conditions have been corrected and surfaces to receive coatings are thoroughly dry.
2. Start of application is construed as Applicator's acceptance of surfaces within that particular area.

B. Coordination of Work: Review other Sections in which primers or other coatings are provided to ensure compatibility of total systems for various substrates. On request, furnish information on characteristics of specified finish materials to ensure compatible primers.

1. If a potential incompatibility of primers applied by others exists, obtain the following from the primer Applicator before proceeding:

    a. Confirmation of primer's suitability for expected service conditions.
    b. Confirmation of primer's ability to be top coated with materials specified.

2. Notify Architect about anticipated problems before using the coatings specified over substrates primed by others.

3.2 PREPARATION

A. General: Remove plates, machined surfaces, and similar items already in place that are not to be coated. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and coating.

1. After completing coating operations, reinstall items that were removed; use workers skilled in the trades involved.

B. Cleaning: Before applying high-performance coatings, clean substrates of substances that could impair bond of coatings. Remove oil and grease before cleaning.

1. Schedule cleaning and coating application so dust and other contaminates from cleaning process will not fall on wet, newly coated surfaces.

C. Surface Preparation: Clean and prepare surfaces to be coated according to manufacturer's written instructions for each substrate condition and as specified.

1. Provide barrier coats over incompatible primers or remove primers and reprime substrate.

2. Galvanized-Metal Substrates: Clean galvanized metal surfaces that have not been shop coated; remove oil, grease, and all other soluble surface contaminants in accordance with SSPC-SP1. Hand Tool Clean/Power Tool to remove all insoluble surface contaminants. Treat all surfaces to be coated with Oakite 747 LTS in accordance with manufacturer’s written recommendations.

a. Touch up bare areas and shop-applied prime coats that have been damaged. Wire brush, solvent clean, and touch up with same primer as the shop coat.

D. Material Preparation: Carefully mix and prepare coating materials according to manufacturer's written instructions.

1. Maintain containers used in mixing and applying coatings in a clean condition, free of foreign materials and residue.
2. Stir materials before applying to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into the material. Remove film and, if necessary, strain coating material before using.
3. Use only the type of thinners approved by manufacturer and only within recommended limits.

E. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of the same material are to be applied. Tint undercoats to match color of finish coat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.

3.3 APPLICATION

A. General: Apply high-performance coatings according to manufacturer's written instructions.

1. Use applicators and techniques best suited for the material being applied.
2. Do not apply high-performance coatings over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to forming a durable coating film.
3. Coating colors, surface treatments, and finishes are indicated in the coating system descriptions.
4. Provide finish coats compatible with primers used.

B. Scheduling Coating: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for coating as soon as practicable after preparation and before subsequent surface deterioration.

1. The number of coats and film thickness required is the same regardless of application method.

    a. Omit primer on metal surfaces that have been shop primed and touchup painted.
    b. Do not apply succeeding coats until previous coat has cured as recommended by manufacturer.
    c. Where manufacturer's written instructions require sanding, sand between applications to produce a smooth, even surface.
    d. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until coating has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and application of another coat does not cause undercoat to lift or lose adhesion.

2. If undercoats or other conditions show through final coat, apply additional coats until cured film has a uniform coating finish, color, and appearance. Give special attention to edges, corners, crevices, welds, exposed fasteners, and similar surfaces to ensure that they receive a dry film thickness equivalent to that of flat surfaces.

C. Application Procedures: Apply coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.

1. Brush Application: Use brushes best suited for material applied and of appropriate size for the surface or item being coated.

    a. Apply primers and first coats by brush unless manufacturer's written instructions permit using roller or mechanical applicators.
    b. Brush out and work brush coats into surfaces in an even film.
    c. Eliminate cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections. Neatly draw glass lines and color breaks.

2. Rollers: Use rollers of carpet, velvet back, or high-pile sheep's wool as recommended by manufacturer for the material and texture required.
3. Spray Equipment: Use mechanical methods to apply coating if permitted by manufacturer's written instructions and governing regulations.

    a. Use spray equipment with orifice size recommended by manufacturer for material and texture required.
    b. Apply each coat to provide the equivalent hiding of brush-applied coats.
    c. Do not double back with spray equipment building-up film thickness of two coats in one pass, unless recommended by manufacturer.

D. Minimum Coating Thickness: Apply each material no thinner than manufacturer's recommended spreading rate. Provide total dry film thickness of the entire system as recommended by manufacturer.

E. Prime Coats: Before applying finish coats, apply a prime coat of material, as recommended by manufacturer, to material required to be coated or finished that has not been prime coated.

1. Recoat primed and sealed substrates if there is evidence of suction spots or unsealed areas in first coat, to ensure a finish coat with no burn-through or other defects caused by insufficient sealing.

F. Completed Work: Match approved Samples for color, texture, and coverage. Remove, refinish, or recoat work that does not comply with specified requirements.

3.4 CLEANING

A. Cleanup: At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

1. After completing coating application, clean spattered surfaces. Remove spattered coatings by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

3.5 PROTECTION

A. Protect work of other trades, whether being coated or not, against damage from coating operation. Correct damage by cleaning, repairing, replacing, and recoating, as approved by Architect, and leave in an undamaged condition.

1. Provide "Wet Paint" signs to protect newly coated finishes. After completing coating operations, remove temporary protective wrappings provided by others to protect their work.
2. At completion of construction activities of other trades, touch up and restore damaged or defaced coated surfaces. Comply with procedures specified in PDCA P1.

END OF SECTION 097200

SECTION 09 91 00 - PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. Drawing and general provisions of the Contract, including Addenda, Supplementary Instructions and Change Orders, apply to this section.

1.2 SUMMARY:

A. The work includes painting and finishing of interior and exterior exposed items not noted as pre-finished and surfaces throughout the project, except as otherwise indicated.

1. Surface preparation, priming and coats of paint specified are in additions to shop-priming and surface treatment specified under other sections of the work.
2. Interior and exterior, miscellaneous metals
3. Striping of parking lot.
4. Architectural Woodwork
5. Interior concrete masonry partitions.
6. Steel and wood doors and frames.
7. Metal railings.
8. Color-coding of painted piping.
9. Interior gypsum board walls and ceiling.
10. Exposed structural steel, steel joists, metal decking.
11. Exposed plumbing piping, HVAC ductwork, and electrical conduit is not required or intended to be painted.

B. Shop Priming:
1. Unless otherwise specified, shop priming of ferrous metal items is included under the various sections for structural steel, miscellaneous metal, hollow metal work, and similar items.

1.3 SUBMITTALS:

A. Samples, Painting:
1. Submit samples for Architect's review of color and texture only. Compliance with all other requirements is the exclusive responsibility of the Contractor. Provide a listing of the material and application for each coat of each finish samples.
2. On Painted Gypsum Board: Provide two 12" x 12" samples of each color and material, with texture to simulate actual conditions. Resubmit samples as requested by Architect until acceptable sheen, color and texture is achieved.
3. On Actual Wood Surfaces: Provide two 4" x 8" samples of natural painted and stained wood finish. Label and identify each as to location and application.
4. On Concrete Masonry: Provide two 4" square samples of masonry for each type of finish and color, defining filler, prime and finish coat.
5. Prior to final painting provide 2’ X 2’ brush-out on wall to receive finish to be reviewed in the final project lighting.

1.4 DELIVERY AND STORAGE:
A. Deliver all materials to the job site in original, new and unopened packages and containers bearing manufacturer's names and label.

1.5 JOB CONDITIONS:

A. Apply water-base paints only when the temperature of surfaces to be painted and the surrounding air temperatures are between 50`F and 90`F unless otherwise permitted by the paint manufacturer's printed instructions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

A. Devoe
B. PPG
C. Benjamin Moore
D. Sherwin Williams

2.2 PAINTING MATERIALS:

A. Primers, Sealers, Fillers, and special coatings shall be of the highest quality manufactured by approved coating manufacturers:

2.3 PAINTING SYSTEMS:

A. New Painted Gypsum Board:
1. One coat interior latex wallboard primer
2. One coat latex eggshell enamel

Color: To be chosen by architect from manufacturer’s full product range
Color (Accent): To be chosen by architect from manufacturer’s full product range

B. New Painted Interior Wood Trim:
1. One coat paint as wood primer
2. One coats semi-gloss
3. Back prime all wood

Color: To be chosen by architect from manufacturer’s full product range

C. New Interior Hollow Metal Doors, Frame & Miscellaneous Metals:
1. Spot paint with ferrous metal primer
2. Two coats semi-gloss enamel

D. Pavement Marking At Asphalt Paving:
1. One coat contractor grade acrylic striping paint (one gallon per 300 linear feet of 4” stripe)

E. Painted Masonry:
1. 1 Coat Benjamin Moore Latex Block Filler.
2. 2 Coats Benjamin Moore Moorcraft Super Spec Latex 170.

K. Exposed structural steel, steel joists, metal decking, primary and secondary framing:
1. 1 Coat (and touch-up as required) Sherman-Williams Company Industrial and Marine Coating Spraylastic Exterior Semi-Gloss Waterborne Dryfall acrylic, direct-to-metal coating for exterior use.

PART 3 - EXECUTION

3.1 INSPECTION:

A. Applicator must examine the areas and conditions under which painting work is to be applied and notify the Contractor in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Applicator.

B. Starting of painting work will be construed as the Applicator's acceptance of the surfaces and conditions within any particular area.

C. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions otherwise detrimental to the formation of a durable paint film.

D. General: Perform preparation and cleaning procedures in strict accordance with the paint manufacturer's instructions and as herein specified, for each particular substrate condition.

1) Remove all hardware, hardware accessories, machined surfaces, plates lighting fixtures, and similar items in place and not to be finish-painted, or provide surface-applied protection prior to surface preparation and painting operations. Remove, if necessary, for the complete painting of the items and adjacent surfaces. Following completion of painting of each space or area, reinstall the removed items by workmen skilled in the trades involved.

2) Clean surfaces to be painted before applying paint or surface treatments. Remove oil and grease prior to mechanical cleaning. Program the cleaning and painting so that contaminants from the cleaning process will not fall onto wet, newly-painted surfaces.

3.2 CEMENTITIOUS MATERIALS:

A. Prepare cementitious surfaces of concrete, concrete block, cement plaster and cement-asbestos board to be painted by removing all efflorescence, chalk, dust, dirt, grease, oils, and by roughening as required to remove glaze.

3.3 WOOD:

A. Clean wood surfaces to be painted of all dirt, oil, or other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sandpaper smooth those finished surfaces exposed to view, and dust off. Scrape and clean small, dry, seasoned knots and apply a thin coat of white shellac or other recommended knot sealer, before application of the priming coat. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood-filler. Sandpaper smooth when dried.

B. Prime, stain, or seal wood required to be job-painted immediately upon delivery to job. Prime edges, ends, faces, undersides, and backsides of such wood, including cabinets, counters, cases, paneling, etc.

C. When transparent finish is required, use spar varnish for backpriming.

D. Backprime paneling on interior partitions only where masonry, plaster, or other wet wall construction occurs on backside.

E. Seal tops, bottoms, and cut-outs of unprimed wood doors with a heavy coat of varnish or equivalent sealer immediately upon delivery to job.

3.4 FERROUS METALS:

A. Clean ferrous surfaces, which are not galvanized or shop-coated, of oil, grease, dirt, loose mill scale and other foreign substances by solvent or mechanical cleaning.

B. Touch-up shop-applied prime coats wherever damaged or bare, where required by other sections of these specifications. Clean and touch-up with the same type shop primer.

3.5 MATERIALS PREPARATION:

A. Mix and prepare painting materials in accordance with manufacturer's directions.

B. Store materials not in actual use in tightly covered containers. Maintain containers used in storage, mixing and application of paint in a clean condition, free of foreign materials and residue.

C. Stir materials before application to produce a mixture of uniform density, and stir as required during the application of the materials. Do not stir surface film into the material. Remove the film and if necessary, strain the material before using.

D. Apply paint in accordance with the manufacturer's directions. Use applicators and techniques best suited for the substrate and type of material being applied.

E. Apply additional coats when undercoats, stains or other conditions show through the final coat of paint, until the paint film is of uniform finish, color and appearance. Give special attention to insure that all surfaces, including edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.

F. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Paint surfaces behind permanently-fixed equipment or furniture with prime coat only before final installation of equipment.

G. Paint interior surfaces of ducts, where visible through registers or grilles, with a flat, non-specular black paint.

H. Finish doors on tops, bottoms and side edges the same as the exterior faces, unless otherwise indicated.

I. Sand lightly between each succeeding enamel or varnish coat.

J. Omit the first coat (primer) on metal surfaces, which have been shop-primed and touch-up painted, unless otherwise indicated.

K. Scheduling Painting:

1) Apply the first coat materials to surfaces that have been cleaned, pretreated or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.

2) Allow sufficient time between successive coatings to permit proper drying. Do not recoat until paint has dried to where it feels firm, does not defer or feel sticky under moderate thumb pressure, and the application of another coat of paint does not cause lighting or loss of adhesion of the undercoat.

L. Minimum Coating Thickness:

1) Apply each material at not less than the manufacturer's recommended spreading rate, to establish a total dry film thickness as indicated or, if not indicated, as recommended by coating manufacturer.

M. Prime Coats: Apply a prime coat of material which is required to be painted or finished, and which has not been prime coated by others.

1) Recoat primed and sealed surfaces where there is evidence of suction spots or unsealed areas in first coat, to assure a finish coat with no burn-through or other defects due to insufficient sealing.

N. Pigmented (Opaque) Finishes:

1) Completely cover to provide an opaque, smooth surface of uniform finish, color, appearance and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness or other surface imperfection will not be acceptable.

O. Completed Work:

1) Match approval samples for color, texture and coverage. Remove, refinish or repaint work not in compliance with specified requirements.

3.6 CLEAN-UP & PROTECTION:

A. Clean-Up:

1) During the progress of the work, remove from the site all discarded paint materials, rubbish, cans and rags at the end of each work day.

2) Upon completion of painting work, clean window glass and other paint spattered surfaces. Remove spattered paint by proper methods of washing and scraping, using care not to scratch or otherwise damage finished surfaces.

B. Protection:

1) Protect work of other trades, whether to be painted or not, against damage by painting and finishing work. Correct any damage by cleaning, repairing or replacing, and repainting, as acceptable to the Architect.

2) Provide "Wet Paint" signs as required to protect newly-painted finishes. Remove temporary protective wrappings provided by others for protection of their work, after completion of painting operations.

3) At the completion of work of other trades, touch-up and restore all damaged or defaced painted surfaces.

END OF SECTION 099100

SECTION 10 14 00 - SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Panel signs.
   2. Signage accessories.

B. Related Sections include the following:

   1. Division 1 Section "Temporary Facilities and Controls" for temporary Project identification signs and for temporary information and directional signs.
   2. Division 15 Section "Mechanical Identification" for labels, tags, and nameplates for mechanical equipment.
   3. Division 16 Section "Electrical Identification" for labels, tags, and nameplates for electrical equipment.
   4. Division 16 Section "Interior Lighting" for illuminated Exit signs.

1.3 DEFINITIONS

A. ADA-ABA Accessibility Guidelines: U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines."

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Show fabrication and installation details for signs.

   1. Show sign mounting heights, locations of supplementary supports to be provided by others, and accessories.
   2. Provide message list, typestyles, graphic elements, including tactile characters and Braille, and layout for each sign.

C. Samples for Initial Selection: Manufacturer's color charts consisting of actual units or sections of units showing the full range of colors available for the following:

D. Samples for Verification: For each of the following products and for the full range of color, texture, and sign material indicated, of sizes indicated:

1. Dimensional Characters: Full-size Samples of each type of dimensional character (letter, number, and graphic element).
2. Panel Signs: Not less than 12 inches (305 mm) square[including border].

E. Warranty: Special warranty specified in this Section.

1.5 QUALITY ASSURANCE

A. Source Limitations for Signs: Obtain each sign type indicated from one source from a single manufacturer.

B. Regulatory Requirements: Comply with applicable provisions in ADA-ABA Accessibility Guidelines and [ICC/ANSI A117.1].

1.6 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when[existing and forecasted] weather conditions permit installation of signs in exterior locations to be performed according to manufacturers' written instructions and warranty requirements.

B. Field Measurements: Verify recess openings by field measurements before fabrication and indicate measurements on Shop Drawings.

1.7 COORDINATION

A. Coordinate placement of anchorage devices with templates for installing signs.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Deterioration of metal and polymer finishes beyond normal weathering.
b. Deterioration of embedded graphic image colors and sign lamination.

2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Sign Face: Subsurface Painted acrylic, .125 inch thick, matte first surface.

B. Applied Lettering and/or Numerals: LPP Series Individual, Acrylic, Dimensional Characters. Individual cut acrylic letters (1/32" thick) with matte finish

C. Acrylic letters (1/32" thick) with matte finish.

D. Grade 2 Braille: Clear raster balls

E. Fastener: VHB Tape - Concealed mechanical fastener for locations on masonry walls, .030 inch thick double-face tape for all others.

F. Graphic Content and Style: Provide sign copy that complies with requirements indicated in on the drawings or in the Sign Schedule for size, style, spacing, content, mounting height and location, material, finishes, and colors of signage

G. Tactile and Braille Copy: Manufacturer's standard process for producing copy complying with ADA Accessibility Guidelines and ICC/ANSI A117.1. Text shall be accompanied by Grade 2 braille. Produce precisely formed characters with square cut edges free from burrs and cut marks.
   1. Panel Material: Opaque acrylic sheet.
   2. Raised-Copy Thickness: Not less than 1/32 inch (0.8 mm).

H. Colored Coatings for Acrylic Sheet: For copy, background, and frame colors, provide Pantone Matching System (PMS) colored coatings, including inks and paints, that are recommended by acrylic manufacturers for optimum adherence to acrylic surface and are non-fading for application intended

2.2 PANEL SIGNS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

C. Basis-of-Design Product: ASI-Modulex, Inc. – InTac. Subject to compliance with requirements, provide the product indicated or a comparable product by one of the following:
   1. Best Sign Systems Inc.
   2. Gemini Incorporated.
   3. Grimco, Inc.
   4. Innerface Sign Systems, Inc.
   5. InPro Corporation
   6. Mohawk Sign Systems.

D. Interior Panel Signs: Provide smooth sign panel surfaces constructed to remain flat under installed conditions within a tolerance of plus or minus 1/16 inch (1.5 mm) measured diagonally from corner to corner, complying with the following requirements:

1. ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1 require tactile and Braille characters to be raised a
2. Wall mounting location and method to be verified with Architect.

E. Panel Sign Legend (all signage text to be verified with Owner during shop drawings submittal):

1. Sign Type #1 (per code at each stair on all levels)

    a. Sign Size: 6" high by 8" wide
    b. Use: Low-level exit sign mounted above finish floor
    c. Graphics/Text: EXIT
    d. Code Compliance: ADAAG, typical; Louisiana Fire Marshal
    e. Message Panel Finish/Color: To be selected by the Architect from manufacturer's full range.
    f. Background Finish/Color: Multicolor.
    g. Character Size: ADAAG Compliant

2. Sign Type #2 (22 Apartment Units)

    a. Sign Size: 8" high by 8" wide
    b. Use: Apartment Unit Identification
    c. Graphics/Text: Apartment unit number to be determined by architect.
    d. Code Compliance: ADAAG, typical.
    e. Message Panel Finish/Color: To be selected by the Architect from manufacturer's full range.
    f. Background Finish/Color: Multicolor.
    g. Character Size: ADAAG Compliant.

3. Sign Type #3 (Room 102, 109)

    a. Sign Size: 8" high by 8" wide
    b. Use: Public Restrooms
    c. Graphics/Text: International ADA symbol for accessible toilet rooms and text.
    d. Code Compliance: ADAAG, typical.
    e. Message Panel Finish/Color: To be selected by the Architect from manufacturer's full range.
    f. Background Finish/Color: Multicolor.
    g. Character Size: ADAAG Compliant.

4. Sign Type #4 (Rooms 101, 101A, 103, 106, 107, 110, 110A, 111, 204, 205, 304, 305, 404, 405)

    a. Sign Size: 8" high by 8" wide
    b. Use: Common spaces
    c. Graphics/Text: Text to be verified with architect.
    d. Code Compliance: ADAAG, typical.
    e. Message Panel Finish/Color: To be selected by the Architect from manufacturer's full range.
    f. Background Finish/Color: Multicolor.
    g. Character Size: ADAAG Compliant.

2.3 ACCESSORIES

A. Anchors and Inserts: Provide nonferrous-metal or hot-dip galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion-bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete or masonry work.

2.4 FABRICATION

2.5 FINISHES, GENERAL

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Locate signs and accessories where indicated, using mounting methods of types described and complying with manufacturer's written instructions.

1. Install signs level, plumb, and at heights indicated, with sign surfaces free of distortion and other defects in appearance.
2. Interior Wall Signs: Install signs on walls adjacent to latch side of door where applicable. Where not indicated or possible, such as double doors, install signs on nearest adjacent walls. Locate to allow approach within 3 inches (75 mm) of sign without encountering protruding objects or standing within swing of door.

3.3 CLEANING AND PROTECTION

A. After installation, clean soiled sign surfaces according to manufacturer's written instructions. Protect signs from damage until acceptance by Owner.

END OF SECTION 101400

SECTION 10 28 00 - TOILET AND BATH ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Public-use washroom accessories.
2. Under-lavatory guards.
3. Private-use washroom accessories.

B. Related Sections include the following:

1. Division 6 Section “Rough Carpentry” for blocking for support of accessories.
2. Division 8 Section “Mirrors”.
3. Division 9 Section “Gypsum Board”.
4. Division 10 Section “Toilet Compartments”

1.3 SUBMITTALS

A. Product Data: For each type of product indicated. Include the following:

1. Construction details and dimensions.
2. Anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.
3. Material and finish descriptions.
4. Features that will be included for Project.
5. Manufacturer's warranty.

B. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.

1. Identify locations using room designations indicated on Drawings.
2. Identify products using designations indicated on Drawings.

C. Maintenance Data: For toilet and bath accessories to include in maintenance manuals.

1.4 QUALITY ASSURANCE

A. Source Limitations: For products listed together in the same articles in Part 2, provide products of same manufacturer unless otherwise approved by Architect.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

1.5 COORDINATION

A. Coordinate accessory locations with other work to prevent interference with clearances required for access by disabled persons, proper installation, adjustment, operation, cleaning, and servicing of accessories.

B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

C. Verify the installation of 16 gage sheet metal backer-plates, additional studs, wood blocking or other devices at stud partition construction to secure accessories.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Stainless Steel: ASTM A 666, Type 304, 0.0312-inch minimum nominal thickness, unless otherwise indicated.

B. Steel Sheet: ASTM A 1008/A 1008M, Designation CS (cold rolled, commercial steel), 0.0359-inch minimum nominal thickness.

C. Galvanized Steel Sheet: ASTM A 653/A 653M, with G60 hot-dip zinc coating.

D. Galvanized Steel Mounting Devices: ASTM A 153/A 153M, hot-dip galvanized after fabrication.

E. Fasteners: Screws, bolts, and other devices of same material as accessory unit and tamper-and-theft resistant where exposed, and of galvanized steel where concealed.

F. Chrome Plating: ASTM B 456, Service Condition Number SC 2 (moderate service).

G. Mirrors: ASTM C 1503, Mirror Glazing Quality, clear-glass mirrors, nominal 6.0 mm thick.

H. ABS Plastic: Acrylonitrile-butadiene-styrene resin formulation.

2.2 PUBLIC-USE WASHROOM ACCESSORIES

A. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. American Bathroom Accessories, Inc.
2. Basco, Inc.
3. Pamex
4. Franklin Brass Manufacturing Co.
5. General Accessory Manufacturing Co. (GAMCO).
6. Ginger; GUSA, Inc.

7. Seachrome Corporation.

B. Toilet Tissue Dispenser:
   1. Description: Pamex BC2-41 , (One per toilet).
   2. Mounting: Surface mounted.
   3. Capacity: 5 1/4-inch diameter rolls.
   4. Material and Finish: Stainless steel, No. 4 finish (satin).
   5. Lockset: Tumbler type.
   6. Refill Indicator: Pierced slots at front.

C. Towel Bar:
   1. Description: Pamex BC2-13800.
   2. Mounting: Flanges with concealed fasteners.
   3. Material: Stainless steel, 0.05 inch thick.
      a. Finish: Smooth, No. 4, satin finish on ends and slip-resistant texture in grip area.
   4. Outside Diameter: 1-1/2 inches.
   5. Configuration and Length: As indicated on Drawings.

D. Mirror Unit:

   1. Refer to Division 8 Section “Mirrors” for continuous un-framed mirrors.
   2. Size: As indicated on Drawings.

2.3 PRIVATE-USE BATHROOM ACCESSORIES

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   1. American Bathroom Accessories, Inc.
   2. Basco, Inc.
   3. Pamex
   4. Franklin Brass Manufacturing Co.
   5. General Accessory Manufacturing Co. (GAMCO).
   6. Ginger; GUSA, Inc.
   7. Seachrome Corporation.

C. Toilet Tissue Dispenser :
   1. Description: BC2-41 Single-roll dispenser
   2. Mounting: Surface mounted
   3. Capacity: Designed for 5-inch- (114- or 127-mm-) diameter tissue rolls.
   4. Material and Finish: Polished chrome-plated brass

D. Towel Bar:
   1. Description: Pamex BC2-13800 3/4-inch- (19-mm-) square tube with square end brackets.
   2. Mounting: Flanges with concealed fasteners.
   3. Length: 30 inches (762 mm)
   4. Material and Finish: Polished aluminum

E. Towel Ring:
   1. Description: Pamex - BC2-30 3/4-inch- (19-mm-) round tube.
   2. Mounting: Flanges with concealed fasteners.
   3. Diameter: 8 inches (762 mm)
   4. Material and Finish: Polished aluminum

2.4 FABRICATION

A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.

B. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to Owner's representative.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.

B. Grab Bars: Install to withstand a downward load of at least 250 lbf, when tested according to method in ASTM F 446.

C. Accessories Installed for Use by Disabled Persons: Install accessories as per ADA (Americans with Disabilities Act) and ANSI A117.1-1992 regulations and guidelines.

D. Mounting Heights: As indicated on the Drawings, or as directed by the Architect.

3.2 ADJUSTING AND CLEANING

A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.

B. Remove temporary labels and protective coatings.

C. Clean and polish exposed surfaces according to manufacturer's written recommendations.

END OF SECTION 102800

SECTION 10 44 00 - FIRE-PROTECTION SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Portable fire extinguishers.
2. Fire-protection cabinets for the following:

    a. Portable fire extinguishers.

3. Mounting brackets for fire extinguishers.

1.3 SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for fire-protection cabinets.

1. Fire Extinguishers: Include rating and classification.
2. Fire-Protection Cabinets: Include roughing-in dimensions, details showing mounting methods, relationships of box and trim to surrounding construction, door hardware, cabinet type, trim style, and panel style.

B. Samples for Initial Selection: For fire-protection cabinets with stainless steel finish.

C. Samples for Verification: For each type of exposed factory-applied color finish required for fire-protection cabinets, prepared on Samples of size indicated below.

1. Size: 6 by 6 inches square.

D. Maintenance Data: For fire extinguishers and fire-protection cabinets to include in maintenance manuals.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain fire extinguishers and fire-protection cabinets through one source from a single manufacturer.

B. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable

Fire Extinguishers."

C. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.

1. Provide fire extinguishers approved, listed, and labeled by FMG.

1.5 COORDINATION

A. Coordinate size of fire-protection cabinets to ensure that type and capacity of fire extinguishers indicated are accommodated.

1.6 WARRANTY

A. Warranty: Manufacturer's standard.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Basis-of-Design Product: The design for each product is based on the product named. Subject to compliance with requirements, provide either the named product or a comparable product by one of the other manufacturers specified.

2.2 MATERIALS

A. Stainless-Steel Sheet: ASTM A 666, Type 304.

B. Tempered Float Glass: ASTM C 1048, Kind FT, Condition A, Type I, Quality q3, 3 mm thick, Class 1 (clear).

2.3 PORTABLE FIRE EXTINGUISHERS

A. General: Provide fire extinguishers of type, size, and capacity for each fire-protection cabinet and mounting bracket indicated.

1. Valves: Manufacturer's standard.
2. Handles and Levers: Manufacturer's standard.
3. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B.

B. Multipurpose Dry-Chemical Type in Steel Container: UL-rated 2-A:10-B:C, 5-lb nominal capacity, with monoammonium phosphate-based dry chemical in enameled-steel container.

C. Manufacturer:

1. Larsen's Manufacturing Company.

2.4 FIRE-PROTECTION CABINET

A. Manufacturer:

1. Larsen's Manufacturing Company.

B. Cabinet Type: Suitable for fire extinguisher.

C. Cabinet Construction: Nonrated, rated cabinets in rated walls.

D. Cabinet Material: Stainless-steel sheet.

E. Semirecessed Cabinet: Cabinet box partially recessed in walls of shallow depth to suit style of trim indicated; with one-piece combination trim and perimeter door frame overlapping surrounding wall surface with exposed trim face and wall return at outer edge (backbend).

1. Rolled-Edge Trim: 2-1/2-inch backbend depth.

F. Cabinet Trim Material: [Same material and finish as door].

G. Door Material: [Stainless-steel sheet].

H. Door Style: [Fully glazed panel with frame].

I. Door Glazing: Tempered float glass (clear).

J. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.

1. Provide manufacturer's standard.
2. Provide manufacturer's standard hinge permitting door to open 180 degrees.

K. Accessories:

1. Mounting Bracket: Manufacturer's standard steel, designed to secure fire extinguisher to fire-protection cabinet, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.
2. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated by Architect.

a. Identify fire extinguisher in fire-protection cabinet with the words "FIRE EXTINGUISHER."

1) Location: Applied to cabinet glazing.
2) Application Process: Pressure-sensitive vinyl letters.
3) Lettering Color: Red.
4) Orientation: Vertical.

L. Finishes:

1. Stainless Steel: No. 6 finish.

2.5 MOUNTING BRACKETS

A. Mounting Brackets: Manufacturer's standard galvanized steel, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.

1. Color: Red.

B. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated by Architect.

1. Identify bracket-mounted fire extinguishers with the words "FIRE EXTINGUISHER" in red letter decals applied to mounting surface.

a. Orientation: Vertical.

2.6 FABRICATION

A. Fire-Protection Cabinets: Provide manufacturer's standard box (tub), with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated.

1. Weld joints and grind smooth.

B. Cabinet Doors: Fabricate doors according to manufacturer's standards, from materials indicated and coordinated with cabinet types and trim styles selected.

1. Fabricate door frames with tubular stiles and rails and hollow-metal design, minimum 1/2 inch thick.
2. Miter and weld perimeter door frames.

C. Cabinet Trim: Fabricate cabinet trim in one piece with corners mitered, welded, and ground smooth.

2.7 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Finish fire-protection cabinets after assembly.

D. Appearance of Finished Work: Noticeable variations in the same piece are not acceptable.

2.8 STEEL FINISHES

A. Surface Preparation: Clean surfaces of dirt, oil, grease, mill scale, rust, and other contaminants that could impair paint bond using manufacturer's standard methods.

B. Baked-Enamel Finish: Immediately after cleaning and pretreating, apply manufacturer's standard two-coat, baked-enamel finish consisting of prime coat and thermosetting topcoat. Comply with paint manufacturer's written instructions for applying and baking to achieve a minimum dry film thickness of 2 mils.

2.9 STAINLESS-STEEL FINISHES

A. General: Remove tool and die marks and stretch lines or blend into finish.

1. Grind and polish surfaces to produce uniform, directionally textured, polished finish indicated, free of cross scratches. Run grain with long dimension of each piece.

B. Satin, Directional Polish: No. 6 finish.

C. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine walls and partitions for suitable framing depth and blocking where semirecessed cabinets will be installed.

B. Examine fire extinguishers for proper charging and tagging.

1. Remove and replace damaged, defective, or undercharged units.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare recesses for semirecessed fire-protection cabinets as required by type and size of cabinet and trim style.

3.3 INSTALLATION

A. General: Install fire-protection specialties in locations and at mounting heights indicated or, if not indicated, at heights indicated below:

1. Fire-Protection Cabinets: 54 inches above finished floor to top of cabinet.
2. Mounting Brackets: 54 inches above finished floor to top of fire extinguisher.

B. Fire-Protection Cabinets: Fasten fire-protection cabinets to structure, square and plumb.

1. Unless otherwise indicated, provide recessed fire-protection cabinets. If wall thickness is not adequate for recessed cabinets, provide semirecessed fire-protection cabinets.
2. Fasten mounting brackets to inside surface of fire-protection cabinets, square and plumb.

C. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.

D. Identification: Apply vinyl lettering at locations indicated.

3.4 ADJUSTING AND CLEANING

A. Remove temporary protective coverings and strippable films, if any, as fire-protection specialties are installed, unless otherwise indicated in manufacturer's written installation instructions.

B. Adjust fire-protection cabinet doors to operate easily without binding. Verify that integral locking devices operate properly.

C. On completion of fire-protection cabinet installation, clean interior and exterior surfaces as recommended by manufacturer.

D. Touch up marred finishes, or replace fire-protection cabinets that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by fire-protection cabinet manufacturer.

E. Replace fire-protection cabinets that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 104400

SECTION 11 31 00 - RESIDENTIAL APPLIANCES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Cooking equipment including ranges.
2. Ventilation range hoods
3. Refrigerator/freezers.
4. Dishwashers.
5. Combination washer and dryer.
6. Kitchen Sink Disposal

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples: For each exposed finish.

C. Appliance Schedule: Use same designations indicated on Drawings.

D. Maintenance data.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and approved by manufacturer for installation and maintenance of units required for this Project.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

C. Gas-Burning Appliances: Comply with ANSI Z21 Series standards.

D. Residential Appliances: Comply with NAECA standards.

E. Energy Ratings: Provide appliances that qualify for the EPA/DOE ENERGY STAR product labeling program.

1.4 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer of each appliance specified agrees to repair or replace residential appliances or components that fail in materials or workmanship within specified warranty period.

1. Electric Range: Five-year limited warranty for surface-burner elements.
2. Microwave Oven: Five-year limited warranty for defects in the magnetron tube.

3. Refrigerator/Freezer: Five-year limited warranty for in-home service on the sealed refrigeration system.
4. Dishwasher: 10-year warranty for in-home service against deterioration of tub and door liner.
5. Clothes Washer: 10-year limited warranty for the inner wash basket and outer tub, and five-year limited warranty for the balance suspension system and drive transmission.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.
2. Products: Subject to compliance with requirements, provide one of the products specified.
3. Basis-of-Design Product: The design for each residential appliance is based on the product named. Subject to compliance with requirements, provide either the named product or a comparable product by one of the other manufacturers specified.

2.2 COOKING APPLIANCES

A. Range RG: Electric, Free Standing

1. Basis-of-Design Product: Provide General Electric – Model Number – JBS15MWW (White) or a comparable product by one of the following:
   a. Frigidaire
   b. Jenn-Air
   c. Kenmore
   d. KitchenAid
   e. LG
   f. Maytag
   g. Whirlpool Corporation

B. Exhaust Hood:

1. Basis-of-Design Product: Provide General Electric – Model Number – JN327HWW (White) or a comparable product by one of the following:
   a. Frigidaire
   b. Jenn-Air
   c. LG
   d. Kenmore
   e. KitchenAid
   f. Whirlpool Corporation

2.3 REFRIGERATION APPLIANCES

A. Refrigerator/Freezer:

1. Basis-of-Design Product: Hotpoint refrigerator/freezer Model Number HTH18GBTWW or a comparable product by one of the following:
   a. GE
   b. Frigidaire
   c. Jenn-Air
   d. LG
   e. Kenmore
   f. KitchenAid
   g. Whirlpool Corporation

2.4 CLEANING APPLIANCES

A. Dishwasher:

1. Basis-of-Design Product: GE dishwasher – Model Number – GLDA690PWW or a comparable product by one of the following:
   a. Frigidaire
   b. Jenn-Air
   c. LG
   d. Kenmore
   e. KitchenAid
   f. Whirlpool

B. Combination Clothes Washer and Dryer:

1. Basis-of-Design Product: GE Unitzied Spacemaker Washer and Electric Dryer – Model Number – GTUP270EMWW or a comparable product by one of the following:
   a. Jenn-Air
   b. LG
   c. Kenmore
   d. KitchenAid
   e. Whirlpool Corporation

C. KITCHEN SINK DISPOSAL:

1. Basis-of-Design Product: GE Garbage Disposal – Model Number – GFC530F or a comparable product by one of the following:
   a. Kenmore
   b. KitchenAid
   c. Whirlpool Corporation

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Built-in Equipment: Securely anchor units to supporting cabinets or countertops with concealed fasteners. Verify that clearances are adequate for proper functioning and rough openings are completely concealed.

B. Freestanding Equipment: Place units in final locations after finishes have been completed in each area. Verify that clearances are adequate to properly operate equipment.

C. Utilities: Refer to Divisions 15 and 16 for plumbing and electrical requirements.

END OF SECTION 113100

SECTION 12 35 30 - RESIDENTIAL CASEWORK

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Kitchen cabinets.
2. Vanity cabinets.
3. Plastic-laminate countertops and backsplashes

1.2 SUBMITTALS

A. Product Data: For cabinets**,** countertop material**,** and cabinet hardware.

B. Shop Drawings: For cabinets and countertops. Include plans, elevations, details, and attachments to other work. Show materials, finishes, filler panels, hardware, edge and backsplash profiles, methods of joining countertops, and cutouts for plumbing fixtures.

C. Samples: For each type of material exposed to view.

1.3 QUALITY ASSURANCE

A. Quality Standards: Unless otherwise indicated, comply with the following standards:

1. Cabinets: KCMA A161.1.

a. KCMA Certification: Provide cabinets with KCMA's "Certified Cabinet" seal affixed in a semiexposed location.

2. Plastic-Laminate Countertops: KCMA A161.2.

PART 2 - PRODUCTS

2.1 CABINET MATERIALS

A. General:
1. Adhesives: Do not use adhesives that contain urea formaldehyde.
2. Hardwood Lumber: Kiln dried to 7 percent moisture content.
3. Softwood Lumber: Kiln dried to 10 percent moisture content.
4. Hardwood Plywood: HPVA HP-1
5. Particleboard: ANSI A208.1, Grade M-2
6. Medium-Density Fiberboard: ANSI A208.2, Grade MD
7. Hardboard: AHA A135.4, Class 1 Tempered.

B. Exposed Materials:

1. Exposed Wood Species: Poplar.

    a. Do not use two adjacent exposed surfaces that are noticeably dissimilar in color, grain, figure, or natural character markings.
    b. Staining and Finish: Chocolate/Cherry

2. Solid Wood: Clear hardwood lumber of species indicated, free of defects.
3. Plywood: Hardwood plywood with face veneer of species indicated, with Grade A faces and Grade C backs of same species as faces.
4. Plastic Laminate: Particleboard faced with high-pressure decorative laminate complying with NEMA LD 3, Grade VGS.

    a. Colors, Textures, and Patterns: As selected by Architect from cabinet manufacturer's standard colors.

C. Semiexposed Materials: Unless otherwise indicated, provide the following:

1. Solid Wood: Sound hardwood lumber, selected to eliminate appearance defects. Same species as exposed surfaces
2. Plywood: Hardwood plywood with Grade C faces and not less than Grade 3 backs of same species as faces. Face veneers of same species as exposed surfaces
3. Retain both subparagraphs above or one of three subparagraphs and associated subparagraphs below.
4. Plastic Laminate: Particleboard faced with high-pressure decorative laminate complying with NEMA LD 3, Grade VGS.

    a. Colors, Textures, and Patterns: As selected by Architect from cabinet manufacturer's full range

D. Concealed Materials: Solid wood or plywood, of any hardwood or softwood species, with no defects affecting strength or utility; particleboard; medium-density fiberboard; or hardboard.

2.2 CABINET HARDWARE

A. General: Manufacturer's standard units complying with BHMA A156.9, of type, size, style, material, and finish as selected by Architect from manufacturer's full range.

B. Pulls: Back-mounted decorative pulls

C. Hinges: Semiconcealed (wraparound) butt hinges for overlay doors

D. Drawer Guides: Epoxy-coated-metal, self-closing drawer guides; designed to prevent rebound when drawers are closed; with nylon-tired, ball-bearing rollers; and complying with BHMA A156.9, Type B05011 or B05091.

2.3 COUNTERTOP MATERIALS

A. Plastic Laminate: High-pressure decorative laminate complying with NEMA LD 3.
1. Colors, Textures, and Patterns: As selected by Architect from plastic-laminate manufacturer's full range

B. Particleboard: ANSI A208.1, Grade M-2.

C. Plywood: Exterior softwood plywood complying with DOC PS 1, Grade C-C Plugged, touch sanded.

D. Solid Wood Edges and Trim: Clear Poplar lumber, free of defects, selected for compatible grain and color, and kiln dried to 7 percent moisture content.

2.4 CABINETS

A. Products:

1. Evans Cabinet Corporation: Melrose

B. Finish: Cherry

C. Face Style: Flush overlay

D. Cabinet Style: Frameless

E. Door and Drawer Fronts: Solid-wood stiles and rails, 5/8 inch (16 mm) thick, with 3/4-inch- (19-mm-) thick, solid-wood center panels.

F. Door and Drawer Fronts: 1/2-inch- (12.7-mm-) thick, veneer-faced plywood.

G. Face Frames: 3/4-by-1-5/8-inch (19-by-41-mm) solid wood.

H. Exposed Cabinet End Finish: Wood veneer

2.5 PLASTIC-LAMINATE COUNTERTOPS

A. Products:
1. Cullman Cabinet and Supply preformed countertop with Wilsonart laminate as selected from standard colors.

B. Configuration: Provide countertops with the following front, cove (intersection of top with backsplash), backsplash, and endsplash style:

1. Front: Rolled
2. Cove: Cove molding (one-piece postformed laminate supported at junction of top and backsplash by wood cove molding)
3. Backsplash: Square edge
4. Endsplash: Square edge

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install cabinets with no variations in flushness of adjoining surfaces; use concealed shims. Where cabinets abut other finished work, scribe and cut for accurate fit. Provide filler strips, scribe strips, and moldings in finish to match cabinet face.

B. Install cabinets without distortion so doors and drawers fit openings and are aligned. Complete installation of hardware and accessories as indicated.

C. Install casework level and plumb to a tolerance of 1/8 inch in 8 feet (3 mm in 2.4 m).

D. Fasten cabinets to adjacent units and to backing.

1. Fasten wall cabinets through back, near top and bottom, at ends and not less than 24 inches (600 mm) o.c. with No. 10 wafer-head screws sized for 1-inch (25-mm) penetration into wood framing, blocking, or hanging strips.
2. Fasten wall cabinets through back, near top and bottom, at ends and not less than 24 inches (600 mm) o.c., with toggle bolts through metal backing behind gypsum board.

E. Fasten plastic-laminate countertops by screwing through corner blocks of base units into underside of countertop. Form seams using splines to align adjacent surfaces, and secure with glue and concealed clamping devices designed for this purpose.

F. Adjust cabinets and hardware so doors and drawers are centered in openings and operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

END OF SECTION 123530

SECTION 224100 - RESIDENTIAL PLUMBING FIXTURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Bathtubs.
2. Faucets.
3. Lavatories.
4. Kitchen sinks.
5. Disposers.
6. Water closets.
7. Toilet seats.
8. Supply fittings.
9. Waste fittings.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.3 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Counter cutout templates for mounting of counter-mounted plumbing fixtures.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance data.

PART 2 - PRODUCTS

2.1 BATHTUBS

A. Bathtubs: Enameled steel, with shower.

1. Enameled-Steel Bathtubs:

a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1) American Standard America.
2) Bootz Industries.
3) Briggs Plumbing Products, Inc.
4) Crane Plumbing, L.L.C.

5) Eljer, Inc.

2. Fixture:

a. Standard: ASME A112.19.1/CSA B45.2 for enameled-steel bathtubs.
b. Bathing Surface: Slip resistant according to ASTM F 462.
c. Size: 60 by 30 inches with front apron.
d. Color: White.
e. Drain Location: coordinate with site conditions.
f. Drain: NPS 1-1/2; chrome-plated-brass, pop-up waste and overflow.

3. Supply Fittings: Included in faucet.
4. Tub Filler: Chrome-plated-brass diverter spout.
5. Waste Fittings:

a. Standard: ASME A112.18.2/CSA B45.125.2.
b. Drain: Stainless steel or chrome-plated brass, removable strainer.
c. Overflow: Chrome-plated-brass escutcheon with toggle drain-plug device.
d. Drain Piping: NPS 1-1/2 cast-brass overflow, P-trap, and waste.
e. Drain Piping: Schedule 40 PVC, NPS 1-1/2 P-trap and waste.

2.2 BATHTUB FAUCETS

A. NSF Standard: Comply with NSF/ANSI 61, "Drinking Water System Components - Health Effects," for faucet materials that will be in contact with potable water.

B. Bathtub Faucets: Single handle, pressure balance.

1. Pressure-Balance Faucets:

a. Manufacturers:

1) CFG Cornerstone 40311CGR

2) American Standard America.
3) Briggs Plumbing Products, Inc.
4) Central Brass Company.
5) Danze, Inc.
6) Ferguson Enterprises, Inc.
7) Gerber Plumbing Fixtures LLC.
8) Kohler Co.
9) Lawler Manufacturing Company, Inc.
10) Leonard Valve Company.
11) Matco-Norca.
12) Moen Incorporated.
13) Powers.
14) Speakman Company.
15) St. Thomas Creations.
16) Sterling.
17) Symmons Industries, Inc.
18) T & S Brass and Bronze Works, Inc.
19) Wolverine Brass, Inc.
20) Zurn Industries, LLC; AquaSpec Commercial Faucet Products.

2. Standards: ASME A112.18.1/CSA B125.1 and ASSE 1016.
3. Faucet:

    a. Body Material: Solid brass.
    b. Finish: Polished chrome plate.
    c. Maximum Flow Rate: 2.5 gpm.
    d. Mounting: Exposed.
    e. Operation: Single handle, twist or rotate control, with hot- and cold-water indicators.
    f. Antiscald Device: Integral with mixing valve.
    g. Check Stops: Check-valve type, integral with or attached to body; on hot- and cold-water supply connections.
    h. Diverter: In-tub filler spout.
    i. Supply Connections: NPS 1/2.

4. Shower Head: CFG Cornerstone 45312

    a. Standard: ASME A112.18.1/CSA B125.1.
    b. Type: Ball joint with arm and flange.
    c. Backflow-Prevention Device: ASSE 1014.
    d. Shower Head Material: Metallic with chrome-plated finish.
    e. Spray Pattern: Fixed.
    f. Integral Volume Control: Required.
    g. Shower-Arm, Flow-Control Fitting: 2.5 gpm .
    h. Temperature Indicator: Integral with faucet.

5. Bathtub Filler Spout: Chrome-plated brass.
6. Includes pop-up drain.

2.3 LAVATORIES

A. Lavatories: Round, vitreous china, counter mounted.

1. Vitreous-China Lavatories:

    a. Manufacturers:

        1) American Standard America.
        2) Barclay Products Limited.
        3) Briggs Plumbing Products, Inc.
        4) Crane Plumbing, L.L.C.
        5) Duravit USA, Inc.
        6) Eljer, Inc.
        7) Gerber Plumbing Fixtures LLC.
        8) Kohler Co.
        9) Mansfield Plumbing Products LLC.
        10) Peerless Pottery Sales, Inc.
        11) St. Thomas Creations.
        12) Sterling.
        13) TOTO USA, INC.

2. Fixture:

a. Standard: ASME A112.19.2/CSA B45.1 for vitreous-china lavatories.
b. Type: Self-rimming.
c. Round Nominal Size: 19 inches in diameter.
d. Faucet-Hole Punching Three holes, 4-inch centers.
e. Faucet-Hole Location: Rim.
f. Color: White.

3. Supply Fittings: Comply with requirements in "Supply Fittings" Article.
4. Waste Fittings: Comply with requirements in "Waste Fittings" Article.

2.4 LAVATORY FAUCETS

A. NSF Standard: Comply with NSF/ANSI 61, "Drinking Water System Components - Health Effects," for faucet materials that will be in contact with potable water.

B. Lavatory Faucets: One-handle mixing valve.

1. General-Duty, Solid-Brass Faucets:

a. Manufacturers:

1) CFG – Flagstone One handle Lav faucet

2) American Standard America.
3) Bradley Corporation.
4) BrassTech Inc.
5) Central Brass Company.
6) Chicago Faucets.
7) Danze, Inc.
8) Delta Faucet Company.
9) Eljer, Inc.
10) Elkay Manufacturing Co.
11) Franke Consumer Products, Inc.
12) Gerber Plumbing Fixtures LLC.
13) Griffin Products, Inc.
14) GROHE America, Inc.
15) Hansgrohe Inc.
16) Houzer, Inc.
17) Hydrotek International, Inc.
18) Intersan Manufacturing Company.
19) Just Manufacturing.
20) Kohler Co.
21) Matco-Norca.
22) Moen Incorporated.
23) Price Pfister, Inc.
24) Rohl LLC.
25) Speakman Company.
26) T & S Brass and Bronze Works, Inc.
27) Watermark Designs, Ltd.
28) Wolverine Brass, Inc.
29) Zurn Plumbing Products Group.

2. Standard: ASME A112.18.1/CSA B125.1.
3. General: Include hot- and cold-water indicators; coordinate faucet inlets with supplies and fixture holes; coordinate outlet with spout and fixture receptor.

4. Body Material: General-duty, solid brass.
5. Finish: Polished chrome plate.
6. Maximum Flow Rate: 1.5 gpm.
7. Centers: 4 inches.
8. Mounting: Deck, exposed.
9. Valve Handles: Wrist blade, 4 inches.
10. Inlets: NPS 1/2 male shank.
11. Spout: Rigid.
12. Spout Outlet: Aerator.
13. Drain: Pop up.

2.5 KITCHEN SINKS

A. Kitchen Sinks: Two bowl, counter mounted, stainless steel.

1. Stainless-Steel Kitchen Sinks:

a. Manufacturers:

1) Moen 22 Guage 2200 series

2) Elkay Manufacturing Co.
3) Franke Consumer Products, Inc.
4) Griffin Products, Inc.
5) Houzer, Inc.
6) Just Manufacturing.
7) Kohler Co.
8) Revere Sink.
9) Sterling.
10) WhiteRock Corp.

2. Fixture:
a. Standard: ASME A112.19.3/CSA B45.4 for stainless-steel kitchen sinks.
b. Overall Dimensions: 33”x22”.
c. Metal Thickness: 20 gauge.
d. Bowl:

1) Dimensions: 8” deep.
2) Drain: 3-1/2-inch outlet for disposer.

a) Location: Centered in bowl

e. Disposer: Required.

2.6 SINK FAUCETS

A. NSF Standard: Comply with NSF/ANSI 61, "Drinking Water System Components - Health Effects," for faucet materials that will be in contact with potable water.

B. Sink Faucets Solid brass, kitchen sink.

1. General-Duty, Solid-Brass Faucets:

a. Manufacturers:

1) CFG One Handle w/ spray CA47513B

2) American Standard America.
3) Bradley Corporation.
4) BrassTech Inc.
5) Briggs Plumbing Products, Inc.
6) Central Brass Company.
7) Chicago Faucets.
8) Danze, Inc.
9) Delta Faucet Company.
10) Eljer, Inc.
11) Elkay Manufacturing Co.
12) Fisher Manufacturing Co.
13) Franke Consumer Products, Inc.
14) Gerber Plumbing Fixtures LLC.
15) GROHE America, Inc.
16) Hansgrohe Inc.
17) Hydrotek International, Inc.
18) Intersan Manufacturing Company.
19) Just Manufacturing.
20) Kohler Co.
21) Moen Incorporated.
22) Price Pfister, Inc.
23) Rohl LLC.
24) Speakman Company.
25) T & S Brass and Bronze Works, Inc.
26) Watermark Designs, Ltd.
27) Wolverine Brass, Inc.
28) Zurn Plumbing Products Group.

2. Standard: ASME A112.18.1/CSA B125.1.
3. General: Include hot- and cold-water indicators; coordinate faucet inlets with supplies and fixture holes; coordinate outlet with spout and fixture receptor.
4. Kitchen Sink Option: Separate hand spray complying with ASSE 1025.
5. Finish: Polished chrome plate.
6. Maximum Flow Rate: 2.5 gpm.
7. Mixing Valve: Two-lever handle.
8. Backflow-Prevention Device for Hand Spray: Required.
9. Centers: 8 inches.
10. Mounting: Deck.
11. Handles: Wrist blade, 4 inches.
12. Spout Type: Swing, solid brass.
13. Spout Outlet: Aerator.
14. Drain: Lift and turn.

2.7 WATER CLOSETS

A. Water Closets: Floor mounted, floor outlet, close coupled (gravity tank), vitreous china.

1. Manufacturers:

a. Proflo PF9400

b. American Standard America.
c. Barclay Products Limited.
d. Briggs Plumbing Products, Inc.
e. Capizzi.
f. Crane Plumbing, L.L.C.
g. Duravit USA, Inc.
h. Eljer, Inc.
i. Ferguson Enterprises, Inc.; ProFlo Brand.
j. Gerber Plumbing Fixtures LLC.
k. Kohler Co.
l. Lamosa Corp.; Sanitaryware.
m. Mansfield Plumbing Products LLC.
n. Peerless Pottery Sales, Inc.
o. St. Thomas Creations.
p. TOTO USA, INC.
q. Zurn Industries, LLC; Commercial Brass and Fixtures.

2. Bowl:

a. Standards: ASME A112.19.2/CSA B45.1, ASME A112.19.5, and ASSE 1037.
b. Bowl Type : Siphon je >.
c. Height: see schedule.
d. Rim Contour: see schedule.
e. Water Consumption: 1.6 gpm.
f. Color: White.

3. Toilet Seat: see schedule.
4. Supply Fittings:

a. Standard: ASME A112.18.1/CSA B125.1.
b. Supply Piping: Chrome-plated-brass pipe or chrome-plated-copper tube matching water-supply piping size. Include chrome-plated wall flange.
c. Stop: Chrome-plated-brass, one-quarter-turn, ball-type or compression stop with inlet connection matching water-supply piping type and size.

1) Operation: Wheel handle.

d. Riser:

1) Size: NPS 1/2.
2) Material: Chrome-plated, soft-copper flexible tube ASME A112.18.6, braided- or corrugated-stainless-steel flexible hose riser.

2.8 TOILET SEATS

A. Toilet Seats:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. American Standard America.
b. Bemis Manufacturing Company.
c. Centoco Manufacturing Corporation.

d. Church Seats.
e. Eljer, Inc.
f. Ferguson Enterprises, Inc.; ProFlo Brand.
g. Jones Stephens Corp.; Comfort Seat Brand.
h. Kohler Co.
i. Olsonite Seat Co.
j. Pressalit Inc.
k. Sanderson Plumbing Products, Inc.; Beneke Div.
l. Sperzel of Lexington.

2. Standard: IAPMO/ANSI Z124.5.
3. Material: Plastic.
4. Type: Residential.
5. Shape: see schedule.
6. Hinge Material: Noncorroding metal or Plastic.
7. Seat Cover: Required.
8. Color: White.

2.9 SUPPLY FITTINGS

A. NSF Standard: Comply with NSF/ANSI 61, "Drinking Water System Components - Health Effects," for faucet materials that will be in contact with potable water.

B. Standard: ASME A112.18.1/CSA B125.1.

C. Lavatory and Kitchen Sink Supply Fittings:

1. Supply Piping: Chrome-plated-brass pipe or chrome-plated-copper tube matching water-supply piping size. Include chrome-plated wall flange.
2. Stops: Chrome-plated-brass, one-quarter-turn, ball-type or compression stop with inlet connection matching water-supply piping type and size.

a. Operation: Wheel handle.

3. Risers:

a. Size: NPS 3/8 lavatories.
b. Size: NPS 1/2 kitchen sinks.
c. Material: Chrome-plated, soft-copper flexible tube ASME A112.18.6, braided- or corrugated-stainless-steel flexible hose riser.

2.10 WASTE FITTINGS

A. Standard: ASME A112.18.2/CSA B125.2.

B. Drain: Pop-up type with NPS 1-1/4 straight tailpiece as part of faucet for standard lavatories.

C. Drain: Grid type with NPS 1-1/2 offset tailpiece for accessible kitchen sinks.

D. Trap:

1. Size: NPS 1-1/4 lavatories.
2. Size: NPS 1-1/2 kitchen sinks.
3. Material: PVC two-piece trap and waste to wall and wall flange.

2.11 GROUT

A. Standard: ASTM C 1107/C 1107M, Grade B, post-hardening and volume-adjusting, dry, hydraulic-cement grout.

B. Characteristics: Nonshrink; recommended for interior and exterior applications.

C. Design Mix: 5000-psi, 28-day compressive strength.

D. Packaging: Premixed and factory packaged.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install plumbing fixtures level and plumb according to roughing-in drawings.

B. Install floor-mounted water closets on closet flange attachments to drainage piping.

C. Install counter-mounting fixtures in and attached to casework.

D. Install water-supply piping with stop on each supply to each fixture to be connected to water distribution piping. Attach supplies to supports or substrate within pipe spaces behind fixtures. Install stops in locations where they can be easily reached for operation.

E. Install tanks for accessible, tank-type water closets with lever handle mounted on wide side of compartment.

F. Install toilet seats on water closets.

G. Install traps on fixture outlets.

1. Exception: Omit trap on fixtures with integral traps.
2. Exception: Omit trap on indirect wastes unless otherwise indicated.

H. Install disposer in outlet of each sink indicated to have disposer. Install switch where indicated or in wall adjacent to sink if location is not indicated.

I. Set bathtubs in leveling bed of cement grout.

J. Install protective shielding pipe covers and enclosures on exposed supplies and waste piping of accessible lavatories and sinks.

K. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations. Use deep-pattern escutcheons if required to conceal protruding fittings.

L. Seal joints between plumbing fixtures, counters, floors, and walls using sanitary-type, one-part, mildew-resistant silicone sealant. Match sealant color to fixture color.

3.2 CONNECTIONS

A. Connect fixtures with water supplies, stops, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.

B. Install protective shielding pipe covers and enclosures on exposed supplies and waste piping of accessible lavatories and sinks.

3.3 ADJUSTING

A. Operate and adjust plumbing fixtures and controls. Replace damaged and malfunctioning fixtures, fittings, and controls.

3.4 CLEANING AND PROTECTION

A. After completing installation of plumbing fixtures, inspect and repair damaged finishes.

B. Clean plumbing fixtures, faucets, and other fittings with manufacturers' recommended cleaning methods and materials.

C. Provide protective covering for installed plumbing fixtures and fittings.

D. Do not allow use of plumbing fixtures for temporary facilities unless approved in writing by Owner.

END OF SECTION 224100

SECTION 23 00 00 - GENERAL MECHANICAL

PART 1 - GENERAL CONDITIONS

1.1 WORK INCLUDED

A. The general conditions of the general specifications are made a part of these specifications and apply the same as if attached hereto. The contractor should, before bidding, read and thoroughly understand all general conditions, priority and scheduling.

1.2 SCOPE OF WORK

A. This section calls for the furnishing of labor, materials, equipment, and all the services, and of performing all operations required for the complete mechanical systems as hereinafter specified and/or shown on the accompanying drawings.

1.3 GENERAL REQUIREMENTS

A. Contractor shall install his work to meet the existing conditions as found at buildings and property, and to accommodate work of other trades. This contractor shall be responsible for timely placing of sleeves in forms before concrete is poured. Cooperate with the general contractor and place pipes and ducts in floors, walls, furred spaces, etc., so there will be no delay. Sheet metal or iron pipe sleeves shall be provided for pipes passing through floors, wall or partitions.

B. Contractor shall furnish and properly install materials, devices, equipment, insulation, controls, appurtenances, etc., mentioned in these specifications and/or shown on plans or required to make a complete and satisfactory installation in working order whether fully shown or not.

C. Contractor should visit the site and acquaint himself thoroughly with conditions governing installation of his work.

D. All other plans shall be checked in relation to these plans so that all conditions will be furnished and installed in this contract to provide complete and satisfactory systems.

1.4 LAWS, RULES, REGULATIONS, FEES, ETC.

A. The entire mechanical work shall comply with rules and regulations of the local and state authorities having jurisdiction including the State Fire Marshal, State Board of Health, and Department of Health and Hospitals. All modifications required by the said authorities at any time shall be made by the mechanical contractor without additional charge. In cases where alterations to or deviations from this specification and accompanying plans are required by the authorities, contractor shall report same to the Architect and obtain his approval before work is started.

1.5 DRAWINGS

A. Plans and detail sketches are submitted to limit, explain, and define structural conditions, specified requirements, pipe sizes, and manner of erecting work. Structural or other conditions may require certain deviations from manner of installation shown, and such

deviations shall be made as required, but specified sizes and requirements necessary for satisfactory operation shall remain unchanged.

B. It may be necessary to shift or to change routing of ducts and or piping and this shall be done, but such changes must be referred to Architect for approval before proceeding. Extra charges will not be allowed for these changes.

C. Typical details are shown on plans, and in any cases where Contractor is not certain about the method of installation of this work, he shall ask for details, lack of details will not be an excuse for improper installation.

D. Contractor bidding on this portion of the work must be fully experienced in installations of equal size, complexity and quality. In bidding, he acknowledges that he fully understands the scope of the work and design and has the ability, for the contract price to assemble and install the equipment, piping, and ductwork shown or specified, so as to mold same into a satisfactory workable system and arrangement, without responsibility for capacities and sizes set by these documents.

E. Contractor shall recognize that the amount of information and detail that could be provided in Contract Documents is limitless and could extend into every minute detail, step, sequence, and operation to a point where only workmen would be required, without drawing on ability experience, and ingenuity of the Contractor.

1.6 MATERIALS

A. Where directed by the Architect, Contractor shall submit sample for approval before proceeding.

1.7 STANDARDS

A. In general, standards for products and workmanship shall be as described in each individual section.

B. The standards referred to, except as modified in these specifications shall have full force and effect as though printed in these specifications. These standards are not furnished to bidders for the reason that the manufacturers and trades involved are assumed to be familiar with their requirements. The Architect will furnish, upon request, information as to how copies of the standards referred to may be obtained.

1.9 SHOP DRAWINGS

A. Before proceeding with the work, contractor shall make complete shop and working drawings of such apparatus or connections as directed by the Architect and/or hereinafter specified. These drawings shall show construction details and dimensions of each piece of equipment so drawn.

B. Architects approval of shop drawings shall not relieve the Contractor from responsibility of incorrectly figured dimensions or any other errors in these drawings or specified even though approved by the Architect, shall not relieve this Contractor from furnishing and erecting same.

C. Ten (10) sets of prints of shop drawings shall be submitted to Architect. These prints shall be supplied as part of this contract. Submit all shop drawings at the same time or as soon as practical after award of the contract. No separate items will be accepted.

D. Where laws or local regulations provide that certain accessories such as gauges, thermometers, relief valves and parts be installed on equipment, it shall be understood that such accessories shall be furnished if no specific reference to them is made in the specifications.

1.10 CUTTING AND PATCHING

A. All cutting necessary for this work will be done by this Contractor at his own expense, but all patching shall be done by the General Contractor. No beams or joists shall be cut without prior approval of Architect. After initial resurfacing has been done any further cutting, patching or painting shall be done at the expense of this Contractor.

1.11 INTERFERENCES

A. The drawings are generally diagrammatic and this Contractor shall harmonize his work with that of the different trades so that interferences of the different equipment, piping, etc., shall be installed so as to function properly. In the case where interference develops, the Architect is to state which equipment, piping, etc., is to be relocated regardless of which item was first installed.

1.12 EXCAVATION AND BACKFILL

A. This Contractor shall do all excavating required to lay the specified services and after same have been laid, he shall do all backfilling to the satisfaction of all parties concerned and shall cart away from the premises all unnecessary dirt, rubbish, etc., as directed. Backfill shall be well tamped. All backfill shall be done according to the “Compaction And Backfill” section of these specifications.

1.13 SPACE REQUIREMENTS

A. Contractor shall check all plans pertaining to this job so as to be fully aware of the space limitations for all various items of equipment. Equipment is not to be bid on, submitted for preliminary approval nor placed on the job if it is so bulky and large that adequate access for proper maintenance and servicing cannot be achieved in the space provided.

1.14 FOUNDATIONS AND SUPPORTS

A. This contractor shall furnish and install foundations and supports of concrete or steel shapes for equipment requiring same, unless specifically indicated otherwise or specified.

B. All floor mounted mechanical equipment shall be mounted on 4" high concrete housekeeping pad unless specifically shown otherwise on plans. Refer to plans for special requirements for foundations and supports.

1.15 CEILING AND WALL ACCESS PANEL

A. Factory made access doors and frames, prime coat finish, screw driver latch(s) of suitable size as required.

B. Access panels in rated ceiling to have same rating as ceiling.

C. Where valves, dampers, controls, fire dampers, smoke dampers, and detectors, reheat coils, etc. are concealed in walls or non-accessible ceilings, install factory made access doors and frames.

1.16 DUCTWORK ACCESS PANELS

A. Access panels in ductwork to be double wall type with insulation sandwiched in between, same insulation value as adjacent ductwork.

1.17 SIPHON PREVENTERS

A. Furnish and install approved type siphon preventors on all equipment and fixtures in such a manner as to prevent water being siphoned back into the water supply in the event the water supply is shut off.

1.18 FLAME SPREAD PROPERTIES OF MATERIALS

A. All materials and adhesives used for acoustical linings, jackets and insulation shall comply with requirements of NFPA 90A and 90B and UL guide # 40V.8.15. Products exceeding a flame spread rating of 25, or a smoke developed rating of 50, as determined by ASTM Test Method E-84 are prohibited. Adhesives and sealers shall be fire retardant and fire resistant when dry. Flame proofing treatments which are subject to decomposition, deterioration, or the effects of moisture are prohibited.

1.19 DOMESTIC AND FIRE WATER TIE-IN

A. Contractor shall provide any necessary meters and tap fees for domestic or fire water tie- ins to utility companies. All domestic and fire water taps shall have aboveground reduced

pressure back flow preventors near the tie-in point. Coordinate with Engineer exact location.

B. All backflow preventors shall be heat traced and insulated with 1-1/2" fiberglass insulation with water tight aluminum jacket.

1.21 PROTECTION OF EQUIPMENT

A. See individual sections for protection of equipment.

B. This Contractor shall at all times take such precautions as may be necessary to properly protect his equipment from damage. Failure on the part of the Contractor to comply with the above to the entire satisfaction of the Architect will be sufficient cause for the rejection of the particular piece of equipment in question.

1.22 TESTING

A. All pressure lines, unless elsewhere specified, shall be tested under 150# hydrostatic pressure unless rated pressure is less for a minimum of 5 hours. Contractor shall provide valve at farthest point in line to bleed off air and for inspection.

B. Notice shall be given the Architect before tests are made, the test is not to be drawn off pipes and pipes are not to be covered or insulated until filled pipes have been examined and testing approved by the Architect.

C. In case of defects, they shall be made good to the satisfaction of the Architect and work retested. All such work shall be done by the Contractor with no additional expense to the Owner.

D. Contractor shall make any other such tests as may be called for by the Architect, and all other tests so called for elsewhere in these specifications.

1.23 CLEANING AND ADJUSTING

A. Before receiving final approval from the Architect, the Contractor shall clean out all lines; adjust all valves, control equipment and other equipment. Clean all pipe and equipment and leave the entire installation in good working order. All heaters, fans, grilles, controls, etc., shall be adjusted to perform in correct and satisfactory manner, with sequences, etc., as called for in the specifications hereinafter specified and on plans.

1.24 PAINTING

A. Refer to Section 09900 – Painting and Coating.

1.25 MOTORS, MOTOR STARTERS AND ELECTRICAL WORK

A. Motors shall be suitable for voltage indicated on the plans, plus or

minus 10% and be designed for constant operation at 40 degrees C ambient,

65 degrees C rise for class A, 90

degrees C rise for Class B, etc. Electrical equipment furnished under this contract shall meet standards as set forth by NEMA and NEC requirements. All electrical equipment shall be UL labeled.

1.26 PARTS LIST AND INSTRUCTION MANUAL

A. See individual sections for specific instructions.

B. This Contractor shall deliver to the Architect three (3) copies of printed instructions relating to operating, proper maintenance and repair parts list indicating the various parts by name, number and diagram for each piece of equipment installed. Test and balance report shall also be included in parts list and instruction manual.

C. The shop drawings, parts list, and maintenance and repair instructions shall be neatly bound in a canvas-covered notebook and turned over to the Architect before acceptance of the work.

1.27 GUARANTEE

A. Contractor shall guarantee materials, equipment and workmanship installed and performed under this contract for a period of one (1) year from date of the final completion and official acceptance of the contract unless otherwise stated.

B. He shall furnish free of charge to the Owner all materials and labor necessary to comply with the above guarantee, which shall be based on defective materials and/or workmanship, and on such basis shall be responsible if a deficiency is found, for any adjustment, replacement, or correction which may be necessary to replace the project to first class condition. This guarantee shall include refrigerant charges, but shall not include the changing of filters.

1.28 RECORD DRAWINGS

A. The Contractor shall maintain a set of record drawings on-site throughout the construction.
The record drawings shall reflect accurate dimensional record of all underground, buried, above ceiling, or otherwise concealed work.

B. The Contractor shall maintain these record documents and keep them up-to-date daily.

END OF SECTION 23 00 00

SECTION 23 05 00 - BASIC MECHANICAL MATERIALS AND METHODS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Piping materials and installation instructions common to most piping systems.
2. Dielectric fittings.
3. Mechanical sleeve seals.
4. Sleeves.
5. Escutcheons.
6. Grout.
7. Mechanical demolition.
8. Equipment installation requirements common to equipment sections.
9. Concrete bases.
10. Supports and anchorages.

1.2 DEFINITIONS

A. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe and duct shafts, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawlspaces, and tunnels.

B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.

C. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.

D. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and in duct shafts.

E. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.

1.3 SUBMITTALS

A. Welding certificates.

1.4 QUALITY ASSURANCE

A. Steel Support Welding: Qualify processes and operators according to AWS D1.1, "Structural Welding Code--Steel."

B. Steel Pipe Welding: Qualify processes and operators according to ASME Boiler and Pressure Vessel Code: Section IX, "Welding and Brazing Qualifications."

1. Comply with provisions in ASME B31 Series, "Code for Pressure Piping."

2. Certify that each welder has passed AWS qualification tests for welding processes involved and that certification is current.

C. Electrical Characteristics for Mechanical Equipment: Equipment of higher electrical characteristics may be furnished provided such proposed equipment is approved in writing and connecting electrical services, circuit breakers, and conduit sizes are appropriately modified. If minimum energy ratings or efficiencies are specified, equipment shall comply with requirements.

PART 2 - PRODUCTS

2.1 PIPE, TUBE, AND FITTINGS

A. Refer to individual Division 15 piping Sections for pipe, tube, and fitting materials and joining methods.

B. Pipe Threads: ASME B1.20.1 for factory-threaded pipe and pipe fittings.

2.2 JOINING MATERIALS

A. Refer to individual Division 15 piping Sections for special joining materials not listed below.

B. Pipe-Flange Gasket Materials: ASME B16.21, nonmetallic, flat, asbestos-free, 1/8-inch (3.2-mm) maximum thickness unless thickness or specific material is indicated.

C. Plastic, Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.

D. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.

E. Brazing Filler Metals: AWS A5.8, BCuP Series or BAg1, unless otherwise indicated.

F. Welding Filler Metals: Comply with AWS D10.12.

G. Solvent Cements for Joining Plastic Piping:

1. CPVC Piping: ASTM F 493.
2. PVC Piping: ASTM D 2564. Include primer according to ASTM F 656.

2.3 DIELECTRIC FITTINGS

A. Description: Combination fitting of copper alloy and ferrous materials with threaded, solder-joint, plain, or weld-neck end connections that match piping system materials.

B. Insulating Material: Suitable for system fluid, pressure, and temperature.

C. Dielectric Unions: Factory-fabricated, union assembly, for 250-psig (1725-kPa) minimum working pressure at 180 deg F (82 deg C).

D. Dielectric Flanges: Factory-fabricated, companion-flange assembly, for 150- or 300- psig (1035- or 2070-kPa) minimum working pressure as required to suit system pressures.

E. Dielectric Couplings: Galvanized-steel coupling with inert and noncorrosive, thermoplastic lining; threaded ends; and 300-psig (2070-kPa) minimum working pressure at 225 deg F (107 deg C).

F. Dielectric Nipples: Electroplated steel nipple with inert and noncorrosive, thermoplastic lining; plain, threaded, or grooved ends; and 300-psig (2070-kPa) minimum working pressure at 225 deg F (107 deg C).

2.4 MECHANICAL SLEEVE SEALS

A. Description: Modular sealing element unit, designed for field assembly, to fill annular space between pipe and sleeve.

B. Sealing Elements: NBR interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.

C. Pressure Plates: Carbon steel. Include two for each sealing element.

D. Connecting Bolts and Nuts: Stainless steel of length required to secure pressure plates to sealing elements. Include one for each sealing element.

2.5 SLEEVES

A. Galvanized-Steel Sheet: 0.0239-inch (0.6-mm) minimum thickness; round tube closed with welded longitudinal joint.

B. Steel Pipe: ASTM A 53, Type E, Grade B, Schedule 40, galvanized, plain ends.

C. Cast Iron: Cast or fabricated "wall pipe" equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.

D. Stack Sleeve Fittings: Manufactured, cast-iron sleeve with integral clamping flange. Include clamping ring and bolts and nuts for membrane flashing.

1. Underdeck Clamp: Clamping ring with set screws.

E. Molded PVC: Permanent, with nailing flange for attaching to wooden forms.

F. PVC Pipe: ASTM D 1785, Schedule 40.

G. Molded PE: Reusable, PE, tapered-cup shaped, and smooth-outer surface with nailing flange for attaching to wooden forms.

2.6 ESCUTCHEONS

A. Description: Manufactured wall and ceiling escutcheons and floor plates, with an ID to closely fit around pipe, tube, and insulation of insulated piping and an OD that completely covers opening.

B. One-Piece, Deep-Pattern Type: Deep-drawn, box-shaped brass with polished chrome- plated finish.

C. One-Piece, Cast-Brass Type: With set screw.

1. Finish: Polished chrome-plated and rough brass.

2.7 GROUT

A. Description: ASTM C 1107, Grade B, nonshrink and nonmetallic, dry hydraulic-cement grout.

1. Characteristics: Post-hardening, volume-adjusting, nonstaining, noncorrosive, nongaseous, and recommended for interior and exterior applications.
2. Design Mix: 5000-psi (34.5-MPa), 28-day compressive strength.
3. Packaging: Premixed and factory packaged.

PART 3 - EXECUTION

3.1 MECHANICAL DEMOLITION

A. Refer to Division 1 Sections "Cutting and Patching" and "Selective Demolition" for general demolition requirements and procedures.

B. Disconnect, demolish, and remove mechanical systems, equipment, and components indicated to be removed.

1. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
2. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material.
3. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
4. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material.
5. Equipment to Be Removed: Disconnect and cap services and remove equipment.
6. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
7. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.

C. If pipe, insulation, or equipment to remain is damaged in appearance or is unserviceable, remove damaged or unserviceable portions and replace with new products of equal capacity and quality.

3.2 PIPING SYSTEMS - COMMON REQUIREMENTS

A. Install piping according to the following requirements and Division 15 Sections specifying piping systems.

B. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on Coordination Drawings.

C. Install piping in concealed locations, unless otherwise indicated and except in equipment rooms and service areas.

D. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

E. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.

F. Install piping to permit valve servicing.

G. Install piping at indicated slopes.

H. Install piping free of sags and bends.

I. Install fittings for changes in direction and branch connections.

J. Install piping to allow application of insulation.

K. Select system components with pressure rating equal to or greater than system operating pressure.

L. Install escutcheons for penetrations of walls, ceilings, and floors.

M. Install sleeves for pipes passing through concrete and masonry walls, gypsum-board partitions, and concrete floor and roof slabs.

N. Aboveground, Exterior-Wall Pipe Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch (25-mm) annular clear space between pipe and sleeve for installing mechanical sleeve seals.

1. Install steel pipe for sleeves smaller than 6 inches (150 mm) in diameter.
2. Install cast-iron "wall pipes" for sleeves 6 inches (150 mm) and larger in diameter.
3. Mechanical Sleeve Seal Installation: Select type and number of sealing elements required for pipe material and size. Position pipe in center of sleeve. Assemble mechanical sleeve seals and install in annular space between pipe and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

O. Underground, Exterior-Wall Pipe Penetrations: Install cast-iron "wall pipes" for sleeves. Seal pipe penetrations using mechanical sleeve seals. Select sleeve size to allow for 1-inch (25-mm) annular clear space between pipe and sleeve for installing mechanical sleeve seals.

1. Mechanical Sleeve Seal Installation: Select type and number of sealing elements required for pipe material and size. Position pipe in center of sleeve. Assemble mechanical sleeve seals and install in annular space between pipe and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

P. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestop materials. Refer to Division 7 Section "Through-Penetration Firestop Systems" for materials.

Q. Verify final equipment locations for roughing-in.

R. Refer to equipment specifications in other Sections of these Specifications for roughing-in requirements.

3.3 PIPING JOINT CONSTRUCTION

A. Join pipe and fittings according to the following requirements and Division 15 Sections specifying piping systems.

B. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

C. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.

D. Soldered Joints: Apply ASTM B 813, water-flushable flux, unless otherwise indicated, to tube end. Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook," using lead-free solder alloy complying with ASTM B 32.

E. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," "Pipe and Tube" Chapter, using copper-phosphorus brazing filler metal complying with AWS A5.8.

F. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:

1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.

G. Welded Joints: Construct joints according to AWS D10.12, using qualified processes and welding operators according to Part 1 "Quality Assurance" Article.

H. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.

I. Plastic Piping Solvent-Cement Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:

1. Comply with ASTM F 402, for safe-handling practice of cleaners, primers, and solvent cements.
2. CPVC Piping: Join according to ASTM D 2846/D 2846M Appendix.
3. PVC Pressure Piping: Join schedule number ASTM D 1785, PVC pipe and PVC socket fittings according to ASTM D 2672. Join other-than-schedule-number PVC pipe and socket fittings according to ASTM D 2855.

4. PVC Nonpressure Piping: Join according to ASTM D 2855.

J. Plastic Pressure Piping Gasketed Joints: Join according to ASTM D 3139.

K. Plastic Nonpressure Piping Gasketed Joints: Join according to ASTM D 3212.

L. PE Piping Heat-Fusion Joints: Clean and dry joining surfaces by wiping with clean cloth or paper towels. Join according to ASTM D 2657.

1. Plain-End Pipe and Fittings: Use butt fusion.
2. Plain-End Pipe and Socket Fittings: Use socket fusion.

M. Fiberglass Bonded Joints: Prepare pipe ends and fittings, apply adhesive, and join according to pipe manufacturer's written instructions.

3.4 PIPING CONNECTIONS

A. Make connections according to the following, unless otherwise indicated:

1. Install unions, in piping NPS 2 (DN 50) and smaller, adjacent to each valve and at final connection to each piece of equipment.
2. Install flanges, in piping NPS 2-1/2 (DN 65) and larger, adjacent to flanged valves and at final connection to each piece of equipment.
3. Dry Piping Systems: Install dielectric unions and flanges to connect piping materials of dissimilar metals.
4. Wet Piping Systems: Install dielectric coupling and nipple fittings to connect piping materials of dissimilar metals.

3.5 EQUIPMENT INSTALLATION - COMMON REQUIREMENTS

A. Install equipment to allow maximum possible headroom unless specific mounting heights are not indicated.

B. Install equipment level and plumb, parallel and perpendicular to other building systems and components in exposed interior spaces, unless otherwise indicated.

C. Install mechanical equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference to other installations. Extend grease fittings to accessible locations.

D. Install equipment to allow right of way for piping installed at required slope.

3.6 CONCRETE BASES

A. Concrete Bases: Anchor equipment to concrete base according to equipment manufacturer's written instructions and according to seismic codes at Project.

1. Construct concrete bases of dimensions indicated, but not less than 4 inches larger in both directions than supported unit.
2. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of the base.

3. Install epoxy-coated anchor bolts for supported equipment that extend through concrete base, and anchor into structural concrete floor.
4. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
5. Install anchor bolts to elevations required for proper attachment to supported equipment.
6. Install anchor bolts according to anchor-bolt manufacturer's written instructions.
7. Use 3000-psi (20.7-MPa), 28-day compressive-strength concrete and reinforcement.

3.7 ERECTION OF METAL SUPPORTS AND ANCHORAGES

A. Refer to Division 5 Section "Metal Fabrications" for structural steel.

B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor mechanical materials and equipment.

C. Field Welding: Comply with AWS D1.1.

3.8 ERECTION OF WOOD SUPPORTS AND ANCHORAGES

A. Cut, fit, and place wood grounds, nailers, blocking, and anchorages to support, and anchor mechanical materials and equipment.

B. Select fastener sizes that will not penetrate members if opposite side will be exposed to view or will receive finish materials. Tighten connections between members. Install fasteners without splitting wood members.

C. Attach to substrates as required to support applied loads.

3.9 GROUTING

A. Mix and install grout for mechanical equipment base bearing surfaces, pump and other equipment base plates, and anchors.

B. Clean surfaces that will come into contact with grout.

C. Provide forms as required for placement of grout.

D. Avoid air entrapment during placement of grout.

E. Place grout, completely filling equipment bases.

F. Place grout on concrete bases and provide smooth bearing surface for equipment.

G. Place grout around anchors.

H. Cure placed grout.

END OF SECTION 23 05 00

SECTION 23 05 13 - MOTORS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Single phase electric motors.

B. Three phase electric motors.

1.2 RELATED WORK

A. Air Handling Units

1.3 REFERENCES

A. AFBMA 9 - Load Ratings and Fatigue Life for Ball Bearings.

B. AFBMA 11 - Load Ratings and Fatigue Life for Roller Bearings.

C. ANSI/IEEE 112 - Test Procedure for Polyphase Induction Motors and Generators.

D. ANSI/NEMA MG 1 - Motors and Generators

E. ANSI/NEMA 70 - National Electrical Code

1.4 SUBMITTALS

A. Submit product data under provisions of Sections 01 30 00 - Administrative Requirements & 23 00 00 – General Mechanical.

B. Submit test results verifying nominal efficiency and power factor for three phase motors larger than 5 horsepower.

1.5 OPERATION AND MAINTENANCE DATA

A. Submit operation and maintenance data under provisions of Section 01 70 00 - Execution Requirements.

B. Include assembly drawings, bearing data including replacement sizes, and lubrication instructions.

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacture of electric motors for commercial use, and their accessories, with documented product development, testing, and manufacturing experience.

1.7 REGULATORY REQUIREMENTS

A. Conform to ANSI/NFPA 70.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site under provisions of Section 01 60 00 – Product Requirements.

B. Store and protect products under provisions of Section 01 60 00– Product Requirements.

C. Protect motors stored on site from weather and moisture by maintaining factory covers and suitable weather-proof covering. (For extended outdoor storage, remove motors from equipment and store separately).

1.9 WARRANTY - See General Section 23 00 00– General Mechanical.

PART 2 - PRODUCTS

2.1 MOTORS

A. Motors controlled by VFD's shall comply with NEMA MG1, Part 31, Definite Purpose Inverter Fed Motors (withstand repeated voltage peaks of 1600V with rise times of 0.1 microseconds and greater).

B. Starters for single phase motors which are not automatically started shall be manual type with melting alloy thermal overload protection and pilot light. Starters for automatically controlled single phase motors shall be magnetic type with NEMA rated AC magnetic contactor, melting alloy thermal overloads and pilot light.

C. Starters for three phase motors 25 horsepower and below shall be combination type starter/disconnect, full voltage non reversing (FVNR), with magnetic NEMA rated contactors rated for horsepower of motor served, adjustable trip magnetic circuit breaker disconnect (circuit breaker, not a fused switch) capable of being padlocked in the open position, 10K a/c minimum fault rating with higher rating when necessary due to available fault levels. Starters shall have a fused 100VA minimum control transformer (120V unless required otherwise), HOA switch, push to test operating pilot light, solid state overload relays set for actual motor nameplate full load amps, phase failure and phase reversal protection relay, minimum two NO. and two N.C auxiliary contracts and terminal blocks factory prewired for field wiring. Starters shall be housed in a NEMA 1 enclosure for indoor locations and NEMA 3R enclosure for outdoor or wet locations.

D. Starter for motors 30 horsepower and above shall be soft start type or variable frequency drives

E. Coordinate with electrical and specify fault rating on all motor controllers.

2.2 MANUFACTURERS

A. Electrical Service - Refer to Division 26 for required electrical characteristics.

B. Motors: Design for continuous operation in 40 degrees C environment, and for temperature rise in accordance with ANSI/NEMA MG 1 limits for insulation class, Service Factor, and motor enclosure type.

C. Visible Nameplate: Indicating motor information for NEC 430-7(a).

D. Electrical Connection: Conduit connection boxes, threaded for conduit. For fractional horsepower motors where connection is made directly, provide screwed conduit connection in end frame.

E. Starters:

1. _____

2.3 SINGLE PHASE POWER - PERMANENT-SPLIT CAPACITOR MOTORS

A. Starting Torque: Exceeding one fourth of full load torque.

B. Starting Current: Up to six times full load current.

C. Multiple Speed: Through tapped windings.

D. Open Drip-proof or Enclosed Air Over Enclosure: Class A 65 degree C temperature rise insulation, Minimum 1.15 service factor, pre-lubricated sleeve or ball bearings, automatic reset overload protector.

2.4 SINGLE PHASE POWER - CAPACITOR START MOTORS

A. Starting Torque: Three times full load torque.

B. Starting Current: Less than five times full load current.

C. Pull-up Torque: Up to 350 percent of full load torque.

D. Breakdown Torque: Approximately 250 percent of full load torque.

E. Motors: Capacitor in series with starting winding; capacitor-start/capacitor-run motors shall have two capacitors in parallel with run capacitor remaining in circuit at operating speeds.

F. Drip-proof Enclosure: Class A 65 degree C temperature rise insulation, NEMA service factor, prelubricated sleeve ball bearings.

G. Enclosed Motors: Class A 65 degree C temperature rise insulation, NEMA service factor, prelubricated sleeve ball bearings.

2.5 THREE PHASE POWER - SQUIRREL CAGE MOTORS

A. Starting Torque: Between one and one-half times full load torque.

B. Starting Current: Six times full load current.

C. Power Output, Locked Rotor Torque, Breakdown or Pullout Torque: NEMA Design B characteristics.

D. Design, Construction, Testing, and Performance: Conform to ANSI/NEMA MG for design B motors.

E. Insulation System: NEMA Class B or better.

F. Testing Procedure: In accordance with ANSI/IEEE 12, Test Method B. Load test motors to determine freedom from electrical or mechanical defects and compliance with performance data.

G. Motor Frames: NEMA standard T-frames of steel, aluminum, or cast iron with end brackets of cast iron or aluminum with steel inserts.

H. Thermister System (Motor Frame Sizes 254T and larger): Three PTC thermister imbedded in motor windings and epoxy encapsulated solid state control relay for wiring into motor starter.

I. Bearings: Grease lubricated anti-friction ball bearings with housings equipped with plugged provision for re-lubrication, rated for minimum AFBMA 9, L-10 life of 20,000 hours. Calculate bearing load with NEMA minimum V-belt pulley with belt center line at end of NEMA standard shaft extension. Stamp bearing sizes on nameplate.

J. Sound Power Levels: To ANSI/NEMA MG1.

K. Nominal Efficiency: Meet or exceed values in schedules at full load and rated voltage when tested in accordance with ANSI/IEEE 112, and ASHRAE 90.1.

L. Motors, Motor Starters and Electrical Work: Mechanical Contractor shall furnish all motors, motor starters, start-stop push buttons, pilot lights, firestats, interlocking diagrams, etc. for each piece of motor driven equipment under this Contract. Mechanical Contractor shall install all motors. All motor starters, start-stop push buttons, pilot lights, etc. shall be turned over to the Electrical Contractor for installation. Electrical contractor shall be responsible for power wiring. This contractor will be responsible for control wiring.

M. Motor Starters and Push Buttons: All automatic starters shall be nominal 600 volt rating. All starters shall have two (2) auxiliary contacts.

1. Starters for single speed motors, 3/4 through 25 HP inclusive, shall be magnetically operated, "Across-the-line" 3 phase, with three overload relays, "HAND-OFF-AUTO" selector switch and pilot in cover. Starters shall be combination type with fused or circuit breaker type disconnect mechanism.
2. Starters for 30 HP and larger are to be reduced voltage, auto-transformer, combination type with fused or circuit breaker type disconnect mechanism. Starters shall be complete with three overload relays, "HAND-OFF-AUTO" selector switch and pilot lights.
3. Enclosures for starters mounted indoors shall be NEMA 1. Enclosures for starters mounted outdoors or in wet areas shall be NEMA 3 R.
4. Remote push button stations shall be as follows: Start-stop stations shall be recess mounted with neon pilot lamp of proper voltage.
5. Push buttons for controls which are interlocked with automatic controls shall be maintained contact type. All others may be of momentary contact type.
6. Control voltage for all motor starters shall 120 volts provided by integral control voltage transformers.
7. If the Mechanical Contractor purchases equipment of larger horsepower than specified or shown on the plans, he shall pay all costs to increase the wiring and

conduit.

PART 3 - EXECUTION

3.1 APPLICATION

A. Motors drawing less than 250 watts and intended for intermittent service may be germaine to equipment manufacturer and need not conform to these specifications.

B. Motors shall be open drip-proof type, except where specifically noted otherwise.

C. Single phase motors for shaft mounted fans or blowers shall be permanent split capacitor type.

D. Mount motor starter in their own individual enclosures or in a factory-built starter panel.

3.2 NEMA OPEN MOTOR SERVICE FACTORS

HORSEPOWER	3600 RPM	1800 RPM	1200 RPM	900 RPM
1/6-1/3	1.35	1.35	1.35	1.35
1/2	1.25	1.25	1.25	1.15
3/4	1.25	1.25	1.15	1.15
1	1.25	1.15	1.15	1.15

3.3 MOTOR EFFICIENCY

A. Each motor furnished on the job must meet ASHRAE 90.1 and shall have a minimum guaranteed efficiency as listed in table below. Minimum guaranteed efficiencies for all motors shall be clearly stamped on motor nameplate. The lack of such stamp shall be cause for rejection of motor.

HORSEPOWER	EFFICIENCY
1, 1-1/2, 2	84.00
3	88.50
5, 7-1/2, 10	90.20
15, 20	91.70
25, 30, 40	93.00
50, 60, 75	94.10
100, 125, 150, 200	95.00

END OF SECTION 23 05 13

SECTION 23 05 29 - SUPPORTS AND ANCHORS

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Pipe and equipment hangers, supports, and associated anchors.

B. Equipment bases and supports.

C. Sleeves and seals.

D. Flashing and sealing equipment and pipe stacks.

1.2 RELATED WORK

A. Section 15260 - Piping and Equipment Insulation.

1.3 SUBMITTALS

A. Submit shop drawings and product data under provisions of Section 01300– Administrative Requirements.

B. Indicate hanger and support framing and attachment methods.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURER'S

A. Fee and Mason

B. Grinnel

2.2 PIPE HANGERS AND SUPPORTS

A. Hangers for pipe sizes 1/2 to 1-1/2 inch: Malleable iron, adjustable swivel, split ring.

B. Hangers for pipe sizes 2 to 4 inches and cold pipe sizes 6 inches and over: Carbon steel, adjustable, clevis.

C. Multiple or trapeze hangers: Steel channels with welded spacers and hanger rods; cast iron roll and stand for hot pipe sizes 6 inches and over.

D. Vertical Support: Steel riser clamp.

E. Floor support for pipe sizes 4 inches and over: Welded steel bracket and wrought steel clamp; adjustable steel yoke and cast iron roller for hot pipe 6 inches and over.

F. Shields for insulated piping 2 inches and smaller: 18 gauge galvanized steel shield over insulation in 180

degree segments, minimum 12 inches long at pipe support.

G. All hangers to be sized to include insulation.

2.3 HANGER RODS

A. Steel Hanger Rods: Threaded both ends, threaded one end, or continuous threaded.

2.4 INSERTS

A. Inserts: Malleable iron case or galvanized steel shell and expander plug for threaded connection with lateral adjustment, top slot for reinforcing rods, lugs for attaching to forms, size inserts to suit threaded hanger rods.

2.5 FLASHING

A. Metal Flashing: 26 gauge galvanized steel.

B. Lead Flashing: 5 lb./sq. ft. sheet lead for waterproofing.

C. Caps: Steel, 22 gauge minimum, 16 gauge at fire resistant elements.

2.6 SLEEVES

A. Sleeves for pipes through non-fire rated floors: Form with 18 gauge galvanized steel.

B. Sleeves for pipes through non-fire rated beams, walls, footings, and potentially wet floors: Form with steel pipe or 18 gauge galvanized steel.

2.7 FABRICATION

A. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.

B. Design hangers without disengagement of supported pipe.

2.8 FINISH

A. Prime coat exposed steel hangers and supports.

B. Protect against galvanic action with dielectric unions for dissimilar metals.

PART 3 - EXECUTION

3.1 INSERTS

A. Provide inserts to General Contractor for placement in concrete formwork.

B. Provide inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.

C. Provide hooked rod to concrete reinforcement section for inserts carrying pipe over 4 inches.

D. Where concrete slabs form finished ceiling, provide inserts to be flush with slab surface.

E. Where inserts are omitted, drill through concrete slab from below and provide thru-bolt with recessed square steel plate and nut recessed into and grouted flush with slab.

3.2 PIPE HANGERS AND SUPPORTS

A. Support horizontal piping as follows:

PIPE SIZE DIAMETER	MAX HANGER SPACING	MIN. HANGER
1-1/2 TO 2 INCH	10' - 0"	3/8"
2-1/2 TO 3 INCH	10' - 0"	1/2"
4 to 6 inch	10' - 0"	5/8"
8 to 12 inch	10' - 0"	7/8"
14 to 20 inch	15' - 0"	1"

B. Install hangers to provide minimum 1/2 inch space between finished covering and adjacent work.

C. Place a hanger within 12 inches of each horizontal elbow.

D. Use hangers with 1-1/2 inch minimum vertical adjustment.

E. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.

F. Support riser piping independently of connected horizontal piping.

3.3 EQUIPMENT BASES AND SUPPORTS

A. Provide equipment bases of reinforced concrete as detailed on plans.

B. Provide templates, anchor bolts, and accessories for mounting and anchoring equipment.

C. Provide rigid anchors for pipes after vibration isolation components are installed.

3.4 FLASHING

A. Provide flexible flashing and metal counterflashing where piping and ductwork penetrate weather or waterproofed walls, floors, and roofs.

END OF SECTION 23 05 29

SECTION 23 05 93 - TESTING, ADJUSTING, AND BALANCING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. All division 15 specification sections, drawings, and general provisions of the contract apply to work of this section, as do other documents referred to in this section.

1.2 SCOPE OF WORK

A. The Contractor shall obtain the services of an independent Test and Balance (TAB) Company which specializes in the testing and balancing of heating, ventilating and air conditioning (HVAC) systems to test, adjust and balance all HVAC systems in the building(s).

B. The work included in this section consists of furnishing labor, instruments, and tools required in testing, adjusting and balancing the HVAC systems as described in these specifications or shown on accompanying drawings. Services shall include checking equipment performance, taking the specified measurements, and recording and reporting the results. The testing, adjusting and balancing agency shall act as a reporting agency; that is, list and report each piece of equipment as to identification number, manufacturer, model number, serial number, proper location, specified performance, and report actual performance of all equipment as found during testing. The report is intended to be used during the life of the building as a ready reference indicating original conditions, equipment components, etc.

C. Representatives of the Test and Balance Company shall visit the job site during installation of the HVAC equipment, piping and ductwork as required.

D. Upon completion of the HVAC system installation, the Test and Balance Company shall perform all required testing and balancing with the full cooperation of the Contractor and his Sub-contractors. The Contractor shall make changes and/or adjustments to the HVAC system components that are required by the Test and Balance Company to accomplish proper balancing. The TAB agency shall not supply or install any materials or balancing devices such as pulleys, drives, belts, etc. All of this work is by the Contractor and shall be performed at no additional cost to the Owner.

E. The test and balance report complete with a summary page listing all deficiencies shall be submitted to the Architect for review by his Mechanical Engineer. If the Mechanical Engineer agrees with the report, he shall sign it and return it to the Architect. The test and balance report must be complete and must be accepted by the Mechanical Engineer prior to acceptance of the project. Any outstanding test and balance items shall be placed on the punch list and a monetary value shall be assigned to them.

F. After all deficiencies have been corrected the Mechanical Engineer shall sign the testing and balancing report, and the Test and Balance Company shall supply four (4) copies of the final and complete report to the Architect for inclusion in the Operation and Maintenance Manuals.

G. The items requiring testing, adjusting, and balancing include (but are not restricted to) the

following: AIR
SYSTEMS
Supply Fans
Zone, Branch, & Main Ducts
Diffusers, registers, & grilles
Coils

1.3 DEFINITIONS, REFERENCES, STANDARDS

A. All work shall be in accordance with the latest edition of the Associated Air Balance Council (AABC) National Standards or the latest standards of the National Environmental Balancing Bureau (NEBB). If these contract documents set forth more stringent requirements than the AABC National Standards or the NEBB Standards, these contract documents shall prevail.

1.4 QUALIFICATIONS

A. Agency Qualifications: The TAB Agency shall be a current member of the AABC or the NEBB and must be in good standing with FP&C. A list of these firms shall be obtained from FP&C. Falsification of a TAB report shall be grounds for removal from the FP&C list and the firm's actions shall be reported to the appropriate certification agency. The contractor may use any FP&C approved TAB firm on a state project.

1.5 SUBMITTALS

A. Procedures and Agenda: The TAB agency shall submit the TAB procedures and agenda proposed to be used.

B. Sample Forms: The TAB agency shall submit sample forms, which shall include the minimum data required by the AABC National Standards or the NEBB Standards.

1.6 TAB PREPARATION AND COORDINATION

A. Shop drawings, submittal data, up-to-date revisions, change orders, fan curves, pump curves and other data required for planning, preparation, and execution of the TAB work shall be provided when available and no later than 30 days after the Designer has returned the final approved submittal data to the Contractor.

B. System installation and equipment startup shall be complete prior to the TAB agency's being notified to begin.

C. The building control system (BCS) contractor shall provide and install the control system, including all temperature, pressure and humidity sensors. These shall be calibrated for accurate control. If applicable, the BCS contractor shall install all necessary computers and computer programs, and make these operational. Assistance shall be provided as required for reprogramming, coordination, and problem resolution.

D. All test points, balancing devices, identification tags, etc., shall be accessible and clear of insulation and other obstructions that would impede TAB procedures.

E. Qualified installation or startup personnel shall be readily available for the operation and

adjustment of the systems. Assistance shall be provided as required for coordination and problem resolution.

1.7 REPORTS

A. Final TAB Report - The TAB agency shall submit the final TAB report for review by the Architect. On plans provided, all outlets, devices, HVAC equipment, etc., shall be identified (including manufacturer, model number, serial number, motor manufacturer, HP, drive type, fan and motor sheaves and belt number), along with a numbering system corresponding to report unit identification. The TAB agency shall submit an AABC "National Project Performance Guaranty" (or similar NEBB Guaranty) assuring that the project systems were tested, adjusted and balanced in accordance with the project specifications and AABC National Standards (or similar NEBB Standards). The Designer shall certify his approval on the Performance Guaranty.

B. Submit 4 copies of the Final TAB Report to the Architect for inclusion in the Operation and Maintenance Manuals.

PART 2 - INSTRUMENTATION

A. All instruments used for measurements shall be accurate and calibrated. Calibration and maintenance of all instruments shall be in accordance with the requirements of AABC National Standards (or similar NEBB Standards).

PART 3 - EXECUTION

3.1 GENERAL

A. The specified systems shall be reviewed and inspected for conformance to design documents. Testing, adjusting and balancing on each identified system shall be performed. The accuracy of measurements shall be in accordance with AABC National Standards (or similar NEBB Standards). Adjustment tolerances shall be + or - 10% unless otherwise stated.

B. Equipment settings, including manual damper quadrant positions, valve indicators, fan speed control levers, and similar controls and devices shall be marked to show final settings.

C. All information necessary to complete a proper TAB project and report shall be per AABC or NEBB standards unless otherwise noted. The descriptions of work required, as listed in this section, are a guide to the minimum information needed.

D. TAB contractor shall cut insulation, ductwork and piping for installation of test probes to the minimum extent necessary to allow adequate performance of procedures. Upon completion, patch insulation, ductwork and housings using materials identical to those removed. Seal insulation to reestablish integrity of the vapor barrier.

E. TAB work shall include additional inspection and adjustment of components during the season following the initial balance to include re-balance of any items influenced by seasonal changes or as directed by the Owner.

3.2 AIR SYSTEMS

A. The TAB agency shall verify that all ductwork, splitters, extractors, dampers, grilles, registers, and diffusers have been installed per design, are functional and set full open. Any leakage in the ductwork shall be repaired prior to the test. The TAB agency shall perform the following TAB procedures in accordance with the AABC National Standards or NEBB Standards:

For supply fans:

1. Fan speeds - Test and adjust fan RPM to achieve design CFM requirements.
2. Current and Voltage - Test and record motor voltage and amperage, and compare data with the nameplate limits to ensure fan motor is not in or above the service factor.
3. Pitot-Tube Traverse - Perform a Pitot-tube traverse of main supply and return ducts, as applicable to obtain total CFM. If a Pitot-tube traverse is not practical, an explanation of why a traverse was not made must appear on the appropriate data sheet.
4. Outside Air - Test and adjust the outside air on applicable equipment using a Pitot- tube traverse. If a traverse is not practical, an explanation of why a traverse was not made must appear on the appropriate data sheet. If a traverse is not practical use the mixed-air temperature method if the inside and outside temperature difference is at least 20 degrees Fahrenheit or use the difference between Pitot-tube traverses of the supply and return air ducts.
5. Static Pressure - Test and record system static pressure, including the static pressure profile of each supply fan.

For exhaust fans:

1. Fan speeds - test and adjust fan RPM to achieve design CFM requirements.
2. Current and Voltage - Test and record motor voltage and amperage, and compare data with the nameplate limits to ensure motor is not in or above the service factor.
3. Pitot-Tube Traverse - Perform a Pitot-tube traverse of main exhaust ducts to obtain total CFM. If a Pitot-tube traverse is not practical, an explanation of why a traverse was not made must appear on the appropriate data sheet.
4. Static Pressure - Test and record system static pressure, including the static pressure profile of each exhaust fan.

For zone, branch and main ducts:

1. Adjust ducts to within design CFM requirements. As applicable, at least one zone balancing damper shall be completely open. Multi-diffuser branch ducts shall have at least one outlet or inlet volume damper completely open.

For diffusers, registers and grilles:

1. Tolerances - Test, adjust, and balance each diffuser, grille, and register to within 10% of design requirements. Minimize drafts. Include required CFM, initial test CFM and final CFM.
2. Identification - Identify the type, location, and size of each grille, diffuser, and register. This information shall be recorded on air outlet data sheets.

For coils:

1. Air Temperature - Once air flows are set to acceptable limits, take wet bulb and dry bulb air temperatures on the entering and leaving side of each cooling coil. Dry-bulb

temperature shall be taken on the entering and leaving side of each heating coil.

3.3 ADDITIONAL TAB SERVICES

A. Job Site Inspections: During construction, the TAB agency shall inspect the installation of pipe systems, sheet metal work, temperature controls, and other component parts of the HVAC systems as required.

B. Verification of HVAC Controls: The TAB agency shall be assisted by the building control systems Contractor in verifying the operation and calibration of all HVAC and temperature control systems. The following tests shall be conducted:

1. Verify that all control components are installed in accordance with project requirements and are functional, including all electrical interlocks, damper sequences, air and water resets, fire and freeze stats, and other safety devices.
2. Verify that all controlling instruments are calibrated and set for design operating conditions.

C. Temperature Testing: To verify system control and operation, a series of three temperature tests shall be taken at approximately two hour intervals in each separately controlled zone. The resulting temperatures shall not vary more than two degrees Fahrenheit from the thermostat or control set point during the tests. Outside temperature and humidity shall also be recorded during the testing periods.

D. TAB Report Verification: At the time of final inspection, the TAB agency may be required to recheck, in the presence of the owner's representative, specific and random selections of data, air quantities, and air motion recorded in the certified report. Points and areas for recheck shall be selected by the owner's representative. Measurements and test procedures shall be the same as approved for the initial work for the certified report. Selections for recheck, specific plus random, will not exceed 10% of the total number tabulated in the report.

END OF SECTION 23 05 93

SECTION 23 31 00 - DUCTWORK

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Low pressure duct.

B. Fire and Smoke Dampers

1.2 RELATED WORK

A. Section 15140 - Supports and Anchors

B. Section 15260 - Piping and Equipment Insulation

C. Section 15936 - Air Inlets and Outlets

D. Section 15954 - Testing and Balance

1.3 REFERENCES

A. ASHRAE, 2009 Fundamentals, Chapter 21.

B. ASHRAE, 2008 Equipment, Chapter 18.

C. NFPA 90A, 90B.

D. H.V.A.C. Duct Construction Standards - SMACNA 1995.

1.4 DEFINITIONS

A. Duct sizes: All duct sizes are indicated on the plans as metal to metal.

B. Low Pressure: Three pressure classifications: 1/2" WG positive or negative static pressure and velocities less than 2,000 fpm, 1" WG positive or negative static pressure and velocities less than 2,500 fpm and 2" WG positive or

C. Medium Pressure: Three pressure classifications: 3 inch WG positive or negative static pressure and velocities less than 4,000 fpm, 4" WG positive static pressure and velocities greater than 2,000 fpm. 6" WG positive static pressure and velocities greater than 2,000 fpm.

1.5 REGULATORY REQUIREMENTS

A. Construct ductwork to NFPA 90A and NFPA 90B Standards.

B. Store and protect products under provisions of Section 01600.

C. Construct ductwork to International Mechanical Code Standards

PART 2 - PRODUCTS

2.2 LOW PRESSURE DUCTWORK

A. Furnish and install all ducts for the air conditioning, heating and ventilating systems. Ductwork shall be complete with grilles, vanes splitters, flashings, hangers, flexible connections, manual dampers, fresh air inlet louvers, reinforcing angles, transitions to equipment, etc.

B. All low pressure ductwork (mean velocity less than 2,000 FPM and static pressure in duct 2" of water or less) shall be constructed as per SMACNA Standards, 1995 Edition, Chapter 1, and shall be of the gauge metal and reinforced as per SMACNA Standards, 1995 Editio
n.

C. Flashing shall be of the same material as specified under the roofing and flashing section of these specifications, or of 16-ounce sheet copper and shall be furnished and installed around all outside openings used for ducts or fans where required. Roof flashing shall extend at least 8" above roof. Cooperate with roofing contractor when installing flashing.

D. All duct connections to equipment shall be made with fire and mildew resistant flexible connections of canvas or other acceptable materials. Connections shall have suitable metal collar frames at each end and shall not be less than 4" long with at least 1" of slack in the connection. Flexible connections shall be heat resistant to 500 degrees F continuously.

E. Duct dimensions shown are metal sizes. All edges shall be straight and true.

F. All flexible connections, duct liner and adhesives shall be U.L. listed as having a maximum flame spread of 50, fuel contribution of 25 and smoke contribution of 25.

G. This Contractor shall furnish and install in ductwork all dampers, vanes splitters, etc.. as shown on the drawings or necessary to make the system complete. Where dampers or splitters can not be accessed through lay in ceiling, Contractor shall provide lockable 24" x
24" access door. Contractor shall coordinate location with Architect.

H. Shafts shall be marked to show position of dampers, vanes, splitters, etc.

I. Ductwork shall be supported in accordance with SMACNA Plate No. 17 and No. 18, up to and including band iron hangers attached to duct by means of screws or rivets per hanger.

J. Access doors shall be provided in ductwork for all automatic dampers and each manual damper 3 square feet in area or larger, and shall be so located that damper can be completely serviced through the access door. Access door shall be provided with felt gaskets and suitable hinges and locks. Where access doors occur in insulated duct, double skin insulated doors shall be used.

K. Where square ducts are shown, provide single vane elbows as per Plate 22, Figure A, SMACNA Standards, 1995 Edition. For all ductwork over 18" provide double vane square elbow as shown in Figure C of the Plate.

L. All low pressure ductwork joints shall be sealed with hard cast "iron grip".

M. Flexible air duct for connections between low pressure rectangular duct and ceiling diffusers shall be pre- insulated and listed by Underwriters Laboratories under U.L Standard 181 as a Class 1 flexible air duct and complying with NFPA Standards 90A and 90B.

N. All flex duct 45 degree and 90 degree turns shall be metal hard duct.

2.3 INSULATED ACOUSTICAL LOW PRESSURE FLEXIBLE DUCT

A. The duct shall be constructed of a CPE fabric supported by helical wound galvanized steel.

B. Provide where indicated on drawings Flexmaster Type 8M UL181 Class I Air Duct.

C. Fabric shall be mechanically locked to the steel helix without the use of adhesives or chemicals.

D. The internal working pressure rating shall be at least 6" w.g. positive and 4" w.g. negative with a bursting pressure of at least 2½ time the working pressure.

E. The duct shall be rated for a velocity of at least 4000 feet per minute.

F. The duct must be suitable for continuous operation at a temperature range of -20° F to +250°

G. Acoustical performance, when tested by an independent laboratory in accordance with the Air Diffusion Council's Flexible Air Duct Test Code FD 72-R1, Section 3.0, Sound Properties, shall be as follows:

The insertion loss (dB) of a 10 foot length of straight duct when tested in accordance with ASTM 477, at a velocity of 2500 feet per minute, shall be at least:

Octave Band	2	3	4	5	6	7
Hz.	125	250	500	1000	2000	4000
6" diameter	7	31	40	38	40	27
8" diameter	13	29	36	35	38	22
12" diameter	21	28	29	33	26	12

The radiated noise reduction (dB) of a 10 foot length of straight duct when tested in accordance with ASTM E477, at a velocity of 2500 feet per minute, shall be at least:

Octave Band	2	3	4	5	6	7

Hz.	125	250	500	1000	2000	4000
6" diameter	5	8	7	8	11	15
8" diameter	10	7	7	8	10	13
12" diameter	9	6	6	5	9	13

The self generated sound power levels (LW) dB re 10^{-12} Watt of a 10 foot length of straight duct for an empty sheet metal duct when tested in accordance with ASTM E477, at a velocity of 1000 feet per minute, shall not exceed:

Octave Band	2	3	4	5	6	7
Hz.	125	250	500	1000	2000	4000
6" diameter	42	31	23	18	17	21
8" diameter	41	34	27	19	18	21
12" diameter	54	45	38	31	27	23

Factory insulate the flexible duct with fiberglass insulation. The R value shall be at least 5.0 at a mean temperature of 75° F. (R-4.2 is not acceptable)

H. Cover the insulation with a fire retardant metalized vapor barrier jacket reinforced with crosshatched scrim having a permeance of not greater than 0.05 perms when tested in accordance with ASTM E96, Procedure A.

I. Cover the insulation with a fire retardant metalized vapor barrier jacket reinforced with crosshatched scrim having a permeance of not greater than 0.05 perms when tested in accordance with ASTM E96, Procedure A.

J. Maximum length to be 6'-0

ALL FLEX CONNECTIONS TO CEILING DIFFUSERS MUST BE FACTORY DESIGNED TO HAVE NO DIMENSIONAL CONTORTION WHEN CONNECTED TO THE DIFFUSER. A HARD METAL 90-DEGREE ELBOW OR A PLASTIC "CRUTCH" ELBOW IS REQUIRED FOR OTHER FLEX DUCTS THAT MAY BE SUPPLIED

2.4 FIRE AND SMOKE DAMPERS

A. Round and oval fire dampers shall be designed for high pressure duct systems.

B. Rectangular fire dampers shall be designed for low pressure duct systems.

C. All fire dampers must be NFPA 90A and UL approved.

D. Furnish and install access doors in ductwork, walls, and ceilings where required to service all fire dampers, smoke dampers and detectors. All fire and smoke dampers shall be

installed by the sheet metal contractor. All smoke detectors shall be furnished by the electrical Sub-contractor. Control of smoke dampers shall be coordinated with fire alarm system and building automation system.

E. Rectangular Smoke Dampers - Louvers Dampers Inc. Model SD-400-UD or Ruskin FSD-35 tight seal parallel blade smoke dampers with low leakage and felted blades.

F. Round and Oval Smoke Dampers - Shall be same as above but complete with welded round or oval collars. Units shall be capable of handling pressures up to 6" W.G.

G. Smoke dampers shall be Class I rated as per UL 555.

H. Sheet metal contractor shall provide and install all smoke dampers and actuators. Dampers shall be provided with end switches

I. Approved Manufacturers: Pottorff, Ruskin, Price, Nailor Industries, or Greenheck.

2.5 SPIN TAPS

A. All round low pressure connections to rectangular ducts shall be made with a factory fabricated spin collar fitting with damper and constructed of minimum 26 ga galvanized steel. The damper shall have a 2" raised handle with a high quality locking quadrant. A 3/8" continuous rod with "U" bolts connects the damper to the rod. Nylon end bearings are required where the rod penetrates the spin collar barrel.

B. Provide Flexmaster #FLD-B03, Dace #26 ga MSDS – CO3.

2.6 LOW LOSS TAP

A. All round low pressure connections to rectangular ducts shall be made with a factory fabricated 45 degree low loss entry "shoe" tap with damper constructed of minimum 26 gage galvanized steel. The damper shall have a 2" raised handle with a high quality locking quadrant. A 3/8" continuous rod with "U" bolts connects the damper to the rod. Nylon end bearings are required where the rod penetrates the spin collar barrel.

B. Provide Flexmaster #STOD-BO3, Dace # 26 ga STOD-C03.

C. For medium pressure systems where used upstream of VAV terminals, the damper can be eliminated (use Flexmaster #STO or Dace 24 ga STO). Gauge shall be 24 gauge on medium pressure systems.

PART 3 - EXECUTION

3.1 INSTALLATION

A. See details of ductwork symbols and connections on drawing.

END OF SECTION 23 31 00

SECTION 23 37 00 - AIR OUTLETS AND INLETS

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Diffuser boots.

B. Registers/grilles.

C. Louvers.

1.2 RELATED WORK

A. See Mechanical Plans for wall louvers.

1.3 REFERENCES

A. ADC 1062 - Certification, Rating and Test Manual.

B. AMCA 500 - Test Method for Louvers, Dampers, and Shutters.

C. ANSI/NFPA 90A - Installation of Air Conditioning and Ventilating Systems.

D. ARI 650 - Air Outlets and Inlets.

E. ASHRAE 70 - Method of Testing for Rating the Air Flow Performance of Outlets and Inlets.

F. SMACNA - Low Pressure Duct Construction Standard.

1.4 QUALITY ASSURANCE

A. Test and rate performance of air outlets and inlets in accordance with ADC Equipment Test Code 1062 and ASHRAE 70.

B. Test and rate performance of louvers in accordance with AMCA 500.

1.5 REGULATORY REQUIREMENTS

A. Conform to ANSI/NFPA 90A.

1.6 SUBMITTALS

A. Submit shop drawings and product data under provisions of Section 01300.

B. Provide product data for items required for this project.

C. Submit schedule of outlets and inlets indicating type, size, application, and noise level.

D. Review requirements of outlets and inlets as to size, finish, and type of mounting prior to submitting

product data and schedules of outlets and inlets.

E. Submit diffuser, grille and register color data to Architect for approval.

PART 2 - PRODUCTS

2.1 GENERAL

A. See mechanical schedules and drawings for diffuser types, sizes and configuration. See architectural plans - room finish schedules for type of ceiling and wall construction.

B. Substitutions: Under provisions of Instructions To Bidders, Page IB-3, Paragraph 4.3.

2.2 ACCEPTABLE MANUFACTURERS - Ceiling Diffusers

A. Titus TMSA Series, Krueger Series 1400 Adjustable

B. All diffusers shall have opposed blade volume dampers and adjustable horizontal to vertical four way throw operable from face of grille. All diffusers must be aluminum.

2.3 ACCEPTABLE MANUFACTURERS - Ceiling Exhaust Grilles

A. Titus - Model 50F Code C 1/2" x 1/2" x 1" Cube Core, Krueger EGC-10, Nailor Industries Model 51EC

B. All exhaust registers shall have opposed blade dampers.

C. Grilles shall have baked enamel white finish.

D. All dampers shall be operable from grille face.

2.4 ACCEPTABLE MANUFACTURERS - Ceiling Return Air Grilles

A. Titus - 50F Code C, Krueger EGC-10, Nailor Industries

B. All return air shall have opposed blade dampers. See plans for filter backed grille requirements.

2.5 ACCEPTABLE MANUFACTURERS - Wall Supply Registers.

A. Titus 1700 Series, Krueger ULTRA-FLO

B. All registers shall have adjustable blade dampers on all registers.

C. Furnish and install opposed blade damper on all registers.

D. Finish to be approved by Architect.

2.6 ACCEPTABLE MANUFACTURERS - DOOR RETURN GRILLES

A. Titus Model CT-700, Krueger Series 5600, Nailor Industries

B. Substitutions: Under provisions of Instructions To Bidders.

C. All aluminum construction & design.

D. Finish to be approved by Architect.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install items in accordance with manufacturer's instructions.

B. Check location of outlets and inlets and make necessary adjustments in position to conform with architectural features, symmetry, and lighting arrangement. Refer to Section 09900
.

C. Install diffusers to ductwork with air tight connection.

D. Provide balancing dampers on duct take-off to diffusers, and grilles and register, regardless of whether dampers are specified as part of the diffuser, or grille and register assembly.

E. Furnish and install necessary frames, bucks, sponge rubber gasketed, etc. to make a neat setting job.

F. Diffusers shall be placed to insure that air does not blast against columns and lights.

G. All diffusers, registers, etc. shall have external volume controls and deflecting grids.

H. Ceilings in areas where plaster or gypsum board ceiling are used, shall be surface mounted.

END OF SECTION 23 37 00

SECTION 23 63 13 - AIR COOLED CONDENSING UNIT

PART 1 – GENERAL

1.1 WORK INCLUDED

A. Condensing Unit Package

B. Internal Piping and Accessories

C. Controls

1.2 RELATED WORK

A. Section 15000: General Mechanical

B. Section 15140: Supports and Anchors

C. Section 15170: Motors

D. Section 15190: Mechanical Identification

E. Section 15623: Forced Air Furnace - Electric - DX

1.3 QUALITY ASSURANCE

A. Conform to requirements of UL and applicable codes.

B. Test and rate cooling system to ARI Standard 210.

1.4 SUBMITTALS

A. Submit shop drawings and product data.

B. Submit with shop drawings, schematic layouts showing condensing units, cooling coils, refrigerant piping, size, and accessories required for complete system.

C. Submit manufacturer's installation instructions. PART

2 – PRODUCTS

2.1 TYPE AND PERFORMANCE

A. Provide self-contained, package, factory assembled and pre-wired units suitable for outdoor use consisting of cabinet, compressor(s), condensing coil(s) and fan(s), integral sub-cooling coil, controls, liquid receiver, and screen(s).

B. Refer to Schedule on Drawings for air cooled condensing unit(s) requirements.

C. Acceptable Manufacturer: TRANE COMPANY; YORK INTERNATIONAL; LENNOX INDUSTRIES;

GOODMAN

2.2 MATERIALS

A. Use corrosion resistant materials for parts in contact with refrigerant. Provide timer circuits to prevent rapid loading and unloading of compressor.

2.3 CABINET

A. Galvanized steel with baked enamel finish, and removable access doors or panels with quick fasteners.

2.4 COMPRESSOR(S)

A. Provide hermetically sealed, 1750 rpm resiliently mounted compressor with positive lubrication, crankcase heater, cylinder unloaders for capacity modulation (as scheduled), motor overload protection, service valves, filter driers (suction and liquid), and site glass.

2.5 CONDENSER

A. Coil: Seamless copper tube with mechanically bonded aluminum fins.

B. Fans: Vertical discharge, direct or belt drive axial fan(s), resiliently mounted with guard and motor.

C. Motors: Permanently lubricated ball bearing motors with built-in current and overload protection.

2.6 CONTROLS

A. Provide high and low pressure cutouts for compressor, oil pressure control, and reset relay.

B. Provide controls to permit operation down to 50-degrees F. ambient temperature at minimum compressor load.

C. Provide programmable Digital Thermostats.

2.7 REFRIGERANT PIPING

A. Refrigerant piping shall be run in Type "L" hard drawn copper tubing attached with wrought copper fittings, utilizing 1000-degree silver solder and a non-corrosive flux. Refrigerant piping shall be sized and installed in strict accordance with the air conditioning unit manufacturer's recommendations and directions and shall be submitted to the Engineer for prior approval before installation. Pressure drops shall not exceed the equivalent of 2-psi. Refrigerant piping system shall be evacuated, charged with refrigerant holding charge. The refrigerant lines to be tested with nitrogen to a test pressure of not less than 450 psi and proved before final charge of refrigerant. Compressor shall not be subject to the 450 psi pressure test.

B. All refrigerant piping shall comply with the applicable requirements of the safety Code of Mechanical Refrigeration (ASA-89.1-1956) and the Code of Refrigerant Piping (ASA-831.5-1962), and all state ordinances, codes, and regulations.

C. Refrigerant suction line shall be insulated with cellular foam type insulation; "K" value of 0.28 at 75-degrees F. Manufacturers: Armstrong "Armaflex" or Rubatex R-180-FS.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Complete structural, mechanical and electrical connections in accordance with manufacturer's installation instructions.

B. Mount unit on 4" concrete pad with minimum 6" clearance all around or as indicated on the drawings.

C. Furnish charge of refrigerant and oil.

3.2 START-UP AND TESTING

A. Dehydrate, charge system with refrigerant and test entire system for leaks after completion of installation. Repair leaks, put system into operation, and test equipment performance.

3.3 GUARANTEE

A. Reciprocating refrigerant compressor shall have full five (5) year warranty.

END OF SECTION 23 63 13

SECTION 260500 - COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes: General administrative and procedural requirements for electrical installations. The following administrative and procedural requirements are included in this section to expand requirements specified in Division 1.

1. Submittals
2. Record documents
3. Operation and Maintenance manuals
4. Rough-ins
5. Electrical equipment coordination and installations including access and working Clearances
6. Cutting and Patching
7. Warranties

1.3 DEFINITIONS

A. EPDM: Ethylene-propylene-diene terpolymer rubber.

B. NBR: Acrylonitrile-butadiene rubber.

1.4 SUBMITTALS

A. General: Follow the procedures specified in Division 1. Division 26 sections define required submittals.

B. Within 30 days after Award of Contract, the Contractor shall submit five (5) complete brochures of shop drawings for approval of all proposed electrical equipment and materials.

C. A partial list shall include switchboards, panelboards, starters, disconnects, wiring devices, transfer switches, wire and cable, surge suppression, lightning protection, light fixtures, lamps, ballasts, etc.

1.5 RECORD DOCUMENTS:

A. Prepare record documents in accordance with the requirements in Division 1. In addition to the requirements specified in Division 1, indicate installed conditions for:

1. Major raceway systems, size and location, for both exterior and interior; locations of control devices; distribution and branch electrical circuitry where differing from drawings or incorporating supplemental drawing information; and fuse and circuit breaker size and arrangements.
2. Equipment locations (exposed and concealed), dimensioned from prominent building lines.
3. Approved substitutions, Contract Modifications, and actual equipment and material s installed.

1.6 MAINTENANCE MANUALS:

A. Prepare maintenance manuals in accordance with Section 013300 "Submittals." In addition to the requirements specified in Division 1, include the following information for equipment items:

1. Complete nomenclature and commercial numbers of replacement parts, i.e. lamp schedules, fuse sizes, breaker types, dimming systems.
2. The Contractor shall be responsible for the preparation, coordination, and execution of all operation and maintenance instructions furnished by his subcontractors and/or suppliers. The instructions shall be in sufficient detail to facilitate normal maintenance and troubleshooting by persons without previous experience with the installed equipment.
3. Bound instruction manuals specified in this division of the Project Manual shall be submitted to the Architect before final payment. Instruction manuals shall be included with catalog data for Owner.
4. Servicing instructions and lubrication charts and schedules.

1.7 ELECTRICAL LICENSE REQUIREMENT

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A. No person shall perform electrical work on the contract without possessing a Mississippi State Master or Journeyman License from the State Electrical Examiners Board. All electrical work and apprentice electricians shall be supervised by a Master or Journeyman Electrician on a one- to-one ratio.

B. All electricians shall have a copy of their license with them and shall be required to show it to an appropriate inspector upon request.

1.8 QUALITY ASSURANCE:

A. Source limitation, to the fullest extent possible, provide products of the same kind, from a single source.

1.9 DELIVERY, STORAGE, AND HANDLING:

A. Deliver products to the project properly identified with names, model numbers, types, grades, compliance labels, and other information needed for identification.

B. Store products in protected spaces to prohibit physical damage.

C. Follow manufacturer's instructions for handling including the lift limitations and dimensions necessary for egress.

1.10 SCOPE OF WORK:

A. This section of the work shall comprise the furnishing of materials, equipment, tools, labor and transportation necessary for the complete installation of the electrical systems shown and hereinafter specified. Work is to be complete in every respect whether specifically mentioned in contract documents or not. This work and material includes, but is not limited to, the following items:

1. Panelboards, lighting fixtures, wiring devices and complete feeder and branch circuit wiring.

2. Power supply to all HVAC equipment, motors, plumbing equipment, including the installation and final connection of motor starters, compressors, pushbuttons, and other miscellaneous equipment furnished under other sections of work and/or by Owner.

3. Fire alarm system as described in specifications and on drawings.

4. Telephone and data systems as described in specifications and on drawings.

5. Fees, permits, inspections, and provisions for metering. Verify all local requirements prior to bid and include proper method as part of base bid quotation.

6. Connection of electric source.

1.11 UTILITIES:

A. The location, size and characteristics of the electric and telephone services and points of service entrance are shown in accordance with data given this office by various departments of cities and/or utility companies involved. The points of connection to the utility lines are, therefore, approximate only and shall be verified by the Contractor bidding each portion of the work. Hold the Owner harmless as to addition all costs or extra regarding the utility connections.

B. This contractor shall contact the local power company prior to bidding the project to verify all requirements and, upon being awarded the contract, shall make all arrangements, pay all fees, and acquire all permits for the installation of the electrical service and systems as hereinafter specified and shown. The contractor shall hold the Owner harmless for any costs required for initial connections to utility lines.

C. The electric service shall be from the local utility company, with voltage, phase, and wire, all as shown on plans. The Electrical Contractor shall properly coordinate all his work, shall install all conduit and conductors as necessary to complete the electrical service. He shall make provisions for the metering equipment in accordance with the utility company standards.

1.12 FEES AND PERMITS:

A. Each contractor shall obtain all permits, inspections and approvals applicable to his trade as mandated by regulatory authorities. All fees and costs of any nature whatsoever incidental to these permits, inspections and approvals shall be assumed and paid by the contractor.

1.13 RESPONSIBILITY OF THE CONTRACTOR:

A. Each contractor shall be responsible for all work of every description in connection with his contract. He shall specifically and distinctly assume, and does so assume, all risk for damage or injury from whatever cause to property or person used or employed on or in connection with his work and of all damage or injury to any persons or property wherever located, resulting from any action of operation under the contract or in connection with the work.

B. Each contractor will be held responsible for the execution of a satisfactory and complete piece of work, in accordance with the true intent of the drawings and specifications and all bulletins and addenda which may be issued during the time of bidding. He shall provide, without extra charge, all incidental items required as part of his work, even though not particularly specified or indicated.

C. Each contractor shall be responsible for compliance with all national, state, local and county codes, standards, ordinances and regulations.

D. This contractor shall visit the site of the building before submitting a proposal on this work and thoroughly familiarize himself with existing conditions and operations. Removal or modification of part of existing or new work will not justify any additional payment of bidder because of failure to visit site.

1.14 DRAWINGS AND SPECIFICATIONS:

A. The interrelation of the specifications, drawings and schedules shall be as hereinbefore described in the architectural sections of the specifications.

B. Should the drawings disagree in themselves, or with the specifications, the better quality or greater quantity of work or materials shall be estimated upon, and unless otherwise ordered by the Architect in writing, shall be performed or furnished. In case the specifications should not fully agree with the schedules, the latter shall govern.

C. The "Scope of Work" as hereinbefore stated is intended to designate the general description of the work which shall be performed by each of the major contractors. It is not intended to include all items of work, either generally or specifically, nor is it intended to limit the scope of the work where plans, schedules, notes or standard practice requires the inclusion of other specific items.

D. When the drawings do not give exact details as to the elevations of pipe, conduit and ducts, the contractors shall physically arrange the systems to fit in the space available at the elevations intended with the proper grades for the functioning of the systems involved. Piping,exposed conduit and the duct systems are generally intended to be installed true and square to the building construction, and located as high as possible against the structure in a neat and workmanlike manner. Work shall be concealed in all finished areas except as shown.

1.15 COORDINATE WITH OTHER TRADES:

A. The Electrical Contractor shall check with the General Contractor and other

contractors, either under his control or those responsible solely to the Owner for any work being performed under this specification to determine whether there will be any interference with the electrical work. If the Electrical Contractor fails to check with the other contractors and the electrical work is later found to interfere with their work, then he shall make necessary changes without additional cost or delay to the Owner to eliminate such interferences.

B. Coordinate arrangement, mounting, and support of electrical equipment:

1. To allow maximum possible headroom unless specific mounting heights that reduce headroom are indicated.
2. To provide for ease of disconnecting the equipment with minimum interference to other installations.
3. To allow right of way for piping and conduit installed at required slope.
4. So connecting raceways, cables, wireways, cable trays, and busways will be clear of obstructions and of the working and access space of other equipment.

C. Coordinate installation of required supporting devices and set sleeves in cast-in-place concrete, masonry walls, and other structural components as they are constructed.

D. Coordinate location of access panels and doors for electrical items that are behind finished surfaces or otherwise concealed. Access doors and panels are specified in Division 08 Section "Access Doors and Frames."

E. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Firestopping." And as specified in sections of Division 26, 27 and 28.

1.16 TRENCHING, DIGGING, EXCAVATION, AND BACKFILLING:

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A. The Contractor shall notify Mississippi for underground utility locations at least 48 hours prior to trenching, digging, or excavation.

B. All necessary excavation and backfill for the installation of the electrical work shall be accomplished by each contractor under his phase of the work. All such work shall be included regardless of the type of materials encountered in the excavation. All excavation on this project shall be performed in accordance with applicable sections of Division 1 of the specifications or this article of the specification, whichever is the most stringent.

C. Trenches for all underground conduit shall be excavated to the required depths. The bottoms of the trenches shall be tamped hard and graded to secure maximum fall. Should rock be encountered, it shall be excavated to a depth of six inches below the bottom of the pipe and before laying the pipe, the space between the bottom of the pipe and rock surface shall be filled with gravel and thoroughly tamped. Pipe laid in trenches dug in fill shall be supported down to load bearing undistributed soil. After the conduit has been inspected and approved by the Construction Manager and by the local inspecting authorities, the trenches shall be backfilled with clean dirt and match type of backfill used in that area.

D. Backfill shall be installed in layers 12 inches deep, adequately tamped and wetted down or flushed before the second layer of earth is laid in place. This process shall be continued until the trenches are filled. No roots, rocks or foreign material of any

description shall be used for backfill by this contractor and any excess material and debris shall be removed from the site by this contractor. Any special backfill material shall be provided as hereinafter specified as shown on the drawings.

E. All excavating and backfilling shall be done in a manner so as not to disturb adjacent structure and any shoring required shall be furnished.

F. Electrical Contractor to refer to civil specification Division 31 for more specific requirements.

1.17 SCAFFOLDING, RIGGING, AND HOISTING:

A. Each contractor shall furnish all scaffolding for the installation of his work. He shall either arrange with the General Contractor servicing in connection with any rigging and hoisting required, or provide his own equipment to hoist apparatus to be installed by him into place. Each contractor shall see that any equipment too large to permit passage through normal doorways and access way is brought to the job and set in place before the spaces are enclosed.

1.18 CODES AND STANDARDS:

A. All materials and workmanship shall comply with all applicable local, county, state and national codes, specifications, ordinances, utility company regulations and specified industry standards.

B. In case of difference between building codes, specifications, regulations and the Contract Documents, the most stringent shall govern. The contractor shall promptly notify the Construction Manager in writing of any such difference. Should the Contractor perform any work that does not comply with the requirements of the applicable building codes, state laws, local ordinances, industry standards, utility company regulations, he shall bear all costs arising in correcting these deficiencies.

C. In addition to the local, county, and state ordinances, and the utility company regulations, the following industry standards and codes shall apply as applicable, except where the requirements of this specification are more stringent than the following standards, they shall take precedence:

ASTM - American Society of Testing Materials
IEEE - Institute of Electrical and Electronics
Engineers IES - Illuminating Engineering Society
NEC - National Electrical Code
NEMA - National Electrical Manufacturers
Association NFPA - National Fire Protection
Association
UL - Underwriters' Laboratories
ADA - Americans With Disabilities Act

1.19 CLEANING:

A. This Contractor shall thoroughly clean all fixtures, switches, panelboards and other devices and equipment furnished and set in place under this contract. All surfaces shall be properly polished and shall be free of paint and other dirt and debris.

B. This Contractor shall be required to touch up or refinish all equipment furnished with

factory applied finishes which have been damaged during the construction of the work. He shall properly protect the front of all panelboards, switchboards and other similar equipment to prevent marring and other defacing.

1.20 FIRESTOPPING:

A. Apply firestopping to penetrations of fire-rated floor and wall assemblies for electrical installations to restore original fire-resistance rating of assembly. Firestopping materials and installation requirements are specified in Division 07 Section "Firestopping."

1. Low Voltage Cabling Penetrations:

a. Provide STI EZ-Path Series 33 pathway, Wiremold Flamstopper or 3M Fire Barrier Pass Through.

2. Conduit, Wireway or Busway Penetrations:

a. 3m Fire Barrier Cast-In Device.
b. Composite sheets and pillows by 3M, STI.
c. Firestop putty or chalk by UL manufacturer

PART 2 - PRODUCTS

2.1 SLEEVES FOR RACEWAYS AND CABLES

A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.

B. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.

C. Sleeves for Rectangular Openings: Galvanized sheet steel.

1. Minimum Metal Thickness:

a. For sleeve cross-section rectangle perimeter less than 50 inches and no side more than 16 inches, thickness shall be 0.052 inch.
b. For sleeve cross-section rectangle perimeter equal to, or more than, 50 inches and 1 or more sides equal to, or more than, 16 inches, thickness shall be 0.138 inch.

PART 3 - EXECUTION

3.1 ROUGH-IN:

A. Verify final locations for rough-ins with field measurements and with the requirements of the actual equipment to be connected.

B. Refer to drawings and equipment specifications for rough-in requirements.

C. Owner reserves the right to approve final location of all outlet boxes prior to rough-in and may opt to move diagrammatic location indicated on Contract Drawings up to six feet horizontally, ten feet vertically.

3.2 ELECTRICAL INSTALLATIONS:

A. Comply with NECA 1.

B. General: Sequence, coordinate, and integrate the various elements of electrical systems, materials, and equipment. Comply with the following requirements:

1. Coordinate electrical systems, equipment, and materials installation with other building components.

2. Verify all dimensions by field measurements.

3. Arrange for chases, slots, and openings in other building components to allow for electrical installations.

4. Coordinate the installation of required supporting devices and sleeves to be set in poured-in-place concrete and other structural components, as they are constructed.

5. Sequence, coordinate, and integrate installations of electrical materials and equipment for efficient flow of the work. Give particular attention to large equipment requiring positioning prior to closing in the building.

6. Coordinate the cutting and patching of building components to accommodate the installation of electrical equipment and materials.

7. Where mounting heights are not detailed or dimensioned, install electrical services and overhead equipment to provide the maximum headroom possible.

8. Coordinate the installation of electrical materials and equipment above ceilings with suspension system, mechanical equipment and systems, and structural components.

9. Coordinate connection of electrical systems with exterior underground and overhead utilities and services. Comply with requirements of governing regulations, franchised service companies, and controlling agencies. Provide required connection for each service.

10. Install systems, materials, and equipment to conform with approved submittal data, including coordination drawings, to greatest extent possible. Conform to arrangements indicated by the Contract Documents, recognizing that portions of the work are shown only in diagrammatic form. Where coordination requirements conflict with individual system requirements, refer conflict to the Architect.

11. Install systems, materials, and equipment level and plumb, parallel and perpendicular to other building systems and components, where installed exposed in finished spaces.

12. Install electrical equipment to facilitate servicing, code clearance, maintenance, and repair or replacement of equipment components of both

electrical equipment and other nearby installations. As much as practical, connect equipment for ease of disconnecting, with minimum of interference with other installations.

3.3 CUTTING AND PATCHING:

A. General: Perform cutting and patching in accordance with General Conditions.

B. Protection of Installed Work: During cutting and patching operations, protect adjacent installations.

C. Provide and maintain temporary partitions or dust barriers adequate to prevent the spread of dust and dirt to adjacent areas.

D. Do not endanger or damage installed work through procedures and processes of cutting and patching.

E. Arrange for repairs required to restore other work because of damage caused as a result of electrical installations.

F. No additional compensation will be authorized for cutting and patching work that is necessitated by ill-timed, defective, or non-conforming installations.

G. Perform cutting, fitting, and patching of electrical equipment and materials required to:

1. Uncover work to provide for installation of ill-timed work.
2. Remove and replace defective work.
3. Remove and replace work not conforming to requirements of the Documents
4. Remove samples of installed work as specified for testing.
5. Upon written instructions from the Architect, uncover and restore work to provide for Architect observation of concealed work.

H. Locate, identify, and protect electrical services passing through remodeling or demolition area and serving other areas required to be maintained operational. When transit services must be interrupted, provide temporary services for the affected areas and notify the Owner prior to changeover.

I. Cut, remove, and legally dispose of selected electrical equipment, components, and materials as indicated, including but not limited to removal of electrical items indicated to be removed and items made obsolete by the new work.

J. Protect the structure, furnishings, finishes, and adjacent materials not indicated or scheduled to be removed.

3.4 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

A. Electrical penetrations occur when raceways, cables, wireways, cable trays, or busways penetrate concrete slabs, concrete or masonry walls, or fire-rated floor and wall assemblies.

B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.

C. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.

D. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.

E. Cut sleeves to length for mounting flush with both surfaces of walls.

F. Extend sleeves installed in floors 2 inches above finished floor level.

G. Size pipe sleeves to provide 1/4-inch annular clear space between sleeve and raceway or cable, unless indicated otherwise.

H. Seal space outside of sleeves with grout for penetrations of concrete and masonry

1. Promptly pack grout solidly between sleeve and wall so no voids remain. Tool exposed surfaces smooth; protect grout while curing.

I. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and raceway or cable, using joint sealant appropriate for size, depth, and location of joint. Comply with requirements in Division 07 Section "Joint Sealants.".

J. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway and cable penetrations. Install sleeves and seal raceway and cable penetration sleeves with firestop materials. Install manufacturer fire-rated Cable Firestopping Systems for low voltage and communication wiring. Comply with requirements in Division 07 Section "Firestopping."

K. Roof-Penetration Sleeves: Seal penetration of individual raceways and cables with flexible boot-type flashing units applied in coordination with roofing work.

L. Aboveground, Exterior-Wall Penetrations: Seal penetrations using steel or cast-iron pipe sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.

M. Underground, Exterior-Wall Penetrations: Install cast-iron pipe sleeves. Size sleeves to allow for 1-inch annular clear space between raceway or cable and sleeve for installing mechanical sleeve seals.

3.5 SLEEVE-SEAL INSTALLATION

A. Install to seal exterior wall penetrations.

B. Use type and number of sealing elements recommended by manufacturer for raceway or cable material and size. Position raceway or cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between raceway or cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.6 FIRESTOPPING

A. Apply firestopping to penetrations of fire-rated floor and wall assemblies for electrical installations to restore original fire-resistance rating of assembly. Firestopping materials and installation requirements are specified in Division 07 Section "Firestopping."

3.7 SYSTEM OPERATING TESTS

A. After the successful completion of all equipment start-up and test requirements, the following formal tests shall be performed on the complete electrical systems:

1. First Operating Test by Contractor: The Contractor shall prove the operation of the electrical systems and of each individual item in the systems. At least 10 days notice shall be given the Architect of such tests. If any item of the systems fails to perform, corrections shall be made and this test shall be repeated until the operating test is successful.

2. Three-Day Operating Test: An operating test under occupied conditions shall then be performed by the Contractor for a period of three days. If any element of the systems does not perform porperly, the Contractor shall make all necessary corrections, and the test shall be repeated until successfully performed.

3. Heat Scan Tests: Heat scan tests shall be made once each day of the three-day tests on all of the following items:

   a. Motors
   b. Fixture ballasts
   c. Feeder terminations
   d. Circuit breakers
   e. Disconnect Switches
   f. Panelboards

B. Instruments: The Contractor shall provide all instruments, materials and labor to perform the tests and to obtain and record the measurements specified herin, including the furnishing of all record forms as approved by the Architect.

C. Report: Copies of a written report of the 3-day operating test, on the approved form of record, shall be submitted to the Architect for approval and subsequent transmittal to the Owner.

3.8 CABLE TESTS

A. Secondary Wires and Cables: Megger all 600-volt conductors for each phase with a 500-volt megger for 1 minute and record the readings. Minimum value shall be one (1) megohm.The values shall be determined with all switchboards, panelboards, fuse holders, switches, and overcurrent devices in place. Motors and transformers shall not be connected during meggering. Wire and cable test measurements for record shall not be taken with wire or cable on reels, but after installation. Megger insulation tests shall be made before energizing. A summary of insulation resistance shall be made of all circuits and equipment, listing date, weather, electrical characteristics, and measured insulation resistance, and this summary shall be submitted to the Architect prior to final acceptance.

B. The Contractor shall furnish all instruments, test equipment, and personnel that are necessary for his tests. Testing equipment shall be as necessary for the particular test, and equipment shall be in good working order. Equipment subjected to damage during test shall be removed from line before test is started.

3.9 WARRANTIES:

A. Refer to Division 1 for procedures and submittal requirements for warranties. Refer to individual equipment specifications for warranty requirements.

B. Compile and assemble the warranties specified in Divisions 26, 27 and 28 into a separated set of vinyl covered, three-ring binders, tabulated and indexed for easy reference.

C. Provide complete warranty information for each item, product, or equipment to include date of beginning of warranty or bond; duration of warranty or bond; and names, addresses, and telephone numbers and procedures for filing a claim and obtaining warranty services.

D. Before final payment, the Contractor shall submit three (3) copies of Catalog Data for Owner, O & M Instructions, and all Test Reports.

E. Before final payment, the Contractor shall submit one (1) set of Record Drawings.

F. The Contractor warrants that electrical work performed under this contract conforms to the contract requirements and is free of any defect in equipment, material, or design furnished, or workmanship performed by the Contractor or any subcontractor or supplier at any tier.

3.10 CLEANING:

A. Refer to General Conditions for general requirements for final cleaning.

END OF SECTION 260500

SECTION 260519 - ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Building wires and cables rated 600 V and less.
2. Connectors, splices, and terminations rated 600 V and less.
3. Sleeves and sleeve seals for cables.

B. Related Sections include the following:

1. Division 26 Section "Medium-Voltage Cables" for single-conductor and multiconductor cables, cable splices, and terminations for electrical distribution systems with 2001 to 35,000 V.
2. Division 26 Section "Undercarpet Electrical Power Cables" for flat cables for undercarpet installations.
3. Division 27 Section "Communications Horizontal Cabling" for cabling used for voice and data circuits.

1.3 DEFINITIONS

A. EPDM: Ethylene-propylene-diene terpolymer rubber.

B. NBR: Acrylonitrile-butadiene rubber.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Qualification Data: For testing agency.

1.5 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a member company of the InterNational Electrical Testing Association or is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7, and that is acceptable to authorities having jurisdiction.

1. Testing Agency's Field Supervisor: Person currently certified by the InterNational Electrical Testing Association or the National Institute for Certification in Engineering Technologies to supervise on-site testing.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

C. Comply with NFPA 70.

1.6 COORDINATION

A. Set sleeves in cast-in-place concrete, masonry walls, and other structural components as they are constructed.

PART 2 - PRODUCTS

2.1 CONDUCTORS AND CABLES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Alcan Products Corporation; Alcan Cable Division.
2. American Insulated Wire Corp.; a Leviton Company.
3. General Cable Corporation.
4. Senator Wire & Cable Company.
5. Southwire Company.

B. Copper Conductors: Comply with NEMA WC 70.

C. Conductor Insulation:

1. Comply with NEMA WC 70 for Types THW, THHN-THWN, XHHW, UF, USE, and SO.
2. All cabling to be plenum-rated.

D. Multiconductor Cable: Comply with NEMA WC 70 for metal-clad cable, Type MC with ground wire. AC Cable not allowed.

2.2 CONNECTORS AND SPLICES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. AFC Cable Systems, Inc.
2. Hubbell Power Systems, Inc.
3. O-Z/Gedney; EGS Electrical Group LLC.
4. 3M; Electrical Products Division.
5. Tyco Electronics Corp.

B. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

2.3 SLEEVES FOR RACEWAYS AND CABLES

A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.

B. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.

C. Sleeves for Rectangular Openings: Galvanized sheet steel.

1. Minimum Metal Thickness:

a. For sleeve cross-section rectangle perimeter less than 50 inches and no side more than 16 inches, thickness shall be 0.052 inch.
b. For sleeve cross-section rectangle perimeter equal to, or more than, 50 inches and 1 or more sides equal to, or more than, 16 inches, thickness shall be 0.138 inch.

2.4 SLEEVE SEALS

A. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and raceway or cable.

1. Manufacturers: Subject to compliance with requirements, provide products or by one of the following:

a. Advance Products & Systems, Inc.
b. Calpico, Inc.
c. Metraflex Co.
d. Pipeline Seal and Insulator, Inc.

2. Sealing Elements: EPDM or NBR interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.
3. Pressure Plates: Carbon steel or Stainless steel. Include two for each sealing element.
4. Connecting Bolts and Nuts: Carbon steel with corrosion-resistant coating or Stainless steel of length required to secure pressure plates to sealing elements. Include one for each sealing element.

PART 3 - EXECUTION

3.1 CONDUCTOR MATERIAL APPLICATIONS

A. Feeders: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

B. Branch Circuits: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

C. Aluminum wiring and wiring substitutes are not allowed unless specifically called out on plans.

3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

A. Service Entrance: Type THHN-THWN, single conductors in raceway.

B. Exposed Feeders: Type THHN-THWN, single conductors in raceway.

C. Feeders Concealed in Ceilings, Walls, Partitions, and Crawlspaces: Type THHN-THWN, single conductors in raceway.

D. Feeders Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN-THWN, single conductors in raceway.

E. Feeders Installed below Raised Flooring: Type THHN-THWN, single conductors in raceway.

F. Feeders in Cable Tray: Type THHN-THWN, single conductors in raceway.

G. Exposed Branch Circuits, Including in Crawlspaces: Type THHN-THWN, single conductors in raceway or Metal-clad cable, Type MC, as allowed in Section 260533.

H. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN-THWN, single conductors in raceway or Metal-clad cable, Type MC, as specifically allowed in Section 260533-3.2H-1.

I. Branch Circuits Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN-THWN, single conductors in raceway.

J. Branch Circuits Installed below Raised Flooring: Type THHN-THWN, single conductors in raceway or Metal-clad cable, Type MC, as allowed in Section 260533.

K. Branch Circuits in Cable Tray: Type THHN-THWN, single conductors in raceway.

L. Cord Drops and Portable Appliance Connections: Type SO, hard service cord with stainless-steel, wire-mesh, strain relief device at terminations to suit application.

M. Class 1 Control Circuits: Type THHN-THWN, in raceway.

N. Class 2 Control Circuits: Type THHN-THWN, in raceway.

3.3 INSTALLATION OF CONDUCTORS AND CABLES

A. Conceal cables in finished walls, ceilings, and floors, unless otherwise indicated.

B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.

C. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.

D. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.

E. Support cables according to Division 26 Section "Hangers and Supports for Electrical Systems."

F. Identify and color-code conductors and cables according to Division 26 Section "Identification for Electrical Systems."

G. Minimum wire size on branch circuits shall be #12 gauge. Homeruns of greater than 75 feet of actual wire length shall be a minimum of #10 gauge for 120/208 volt systems.

3.4 CONNECTIONS

A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

B. Make splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.

C. Wiring at Outlets: Install conductor at each outlet, with at least 6 inches of slack.

3.5 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

A. Electrical penetrations occur when raceways, cables, wireways, cable trays, or busways penetrate concrete slabs, concrete or masonry walls, or fire-rated floor and wall assemblies.

B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.

C. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.

D. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.

E. Cut sleeves to length for mounting flush with both surfaces of walls.

F. Extend sleeves installed in floors 2 inches above finished floor level.

G. Size pipe sleeves to provide 1/4-inch annular clear space between sleeve and raceway or cable, unless indicated otherwise.

H. Seal space outside of sleeves with grout for penetrations of concrete and masonry

1. Promptly pack grout solidly between sleeve and wall so no voids remain. Tool exposed surfaces smooth; protect grout while curing.

I. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and raceway or cable, using joint sealant appropriate for size, depth, and location of joint. Comply with requirements in Division 07 Section "Joint Sealants.".

J. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway and cable penetrations. Install sleeves and seal raceway and cable penetration sleeves with firestop materials. Comply with requirements in Division 07 Section "Firestopping."

K. Roof-Penetration Sleeves: Seal penetration of individual raceways and cables with flexible boot-type flashing units applied in coordination with roofing work.

L. Aboveground, Exterior-Wall Penetrations: Seal penetrations using steel or cast-iron pipe sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.

M. Underground, Exterior-Wall Penetrations: Install cast-iron pipe sleeves. Size sleeves to allow for 1-inch annular clear space between raceway or cable and sleeve for installing mechanical sleeve seals.

3.6 SLEEVE-SEAL INSTALLATION

A. Install to seal exterior wall penetrations.

B. Use type and number of sealing elements recommended by manufacturer for raceway or cable material and size. Position raceway or cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between raceway or cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.7 FIRESTOPPING

A. Apply firestopping to penetrations of fire-rated floor and wall assemblies for electrical installations to restore original fire-resistance rating of assembly. Firestopping materials and installation requirements are specified in Division 07 Section "Penetration Firestopping."

3.8 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections and prepare test reports.

B. Perform tests and inspections and prepare test reports.

C. Tests and Inspections:

1. After installing conductors and cables and before electrical circuitry has been energized, test service entrance and feeder conductors for compliance with requirements.

2. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.

3. Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each splice in cables and conductors No. 3 AWG and larger including connections to generators and UPS systems. Remove box and equipment covers so splices are accessible to portable scanner.

a. Instrument: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values.

D. Remove and replace malfunctioning units and retest as specified above.

END OF SECTION 260519

SECTION 260533 – RACEWAY, WIREWAYS, AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.

1.3 DEFINITIONS

A. EMT: Electrical metallic tubing.

B. ENT: Electrical nonmetallic tubing.

C. EPDM: Ethylene-propylene-diene terpolymer rubber.

D. FMC: Flexible metal conduit.

E. IMC: Intermediate metal conduit.

F. LFMC: Liquidtight flexible metal conduit.

G. LFNC: Liquidtight flexible nonmetallic conduit.

H. NBR: Acrylonitrile-butadiene rubber.

I. RNC: Rigid nonmetallic conduit.

J. RSC: Rigid Steel Conduit

K. RAC: Rigid Aluminum Conduit

L. MC: Metal Clad Cables

M. Wireways

1.4 SUBMITTALS

A. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.

B. Shop Drawings: For the following raceway components. Include plans, elevations, sections, details, and attachments to other work.

1. Custom enclosures and cabinets.
2. For handholes and boxes for underground wiring, including the following:

    a. Duct entry provisions, including locations and duct sizes.
    b. Frame and cover design.
    c. Grounding details.
    d. Dimensioned locations of cable rack inserts, and pulling-in and lifting irons.
    e. Joint details.

C. Shop Drawings: Submit dimensioned drawings of under floor raceway systems showing layout of raceways and fittings, spatial relationships to associated equipment, and adjoining raceways, if any. Show connections to electrical power panels and feeders.

D. Maintenance Data: Submit maintenance data and parts lists for each type of raceway system installed, including furnished specialties and accessories. Include this data, product data, and shop drawings in maintenance manual.

1.5 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 METAL CONDUIT AND TUBING

A. Manufacturers: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

1. AFC Cable Systems, Inc.
2. Alflex Inc.
3. Allied Tube & Conduit; a Tyco International Ltd. Co.
4. Anamet Electrical, Inc.; Anaconda Metal Hose.
5. Electri-Flex Co.
6. Manhattan/CDT/Cole-Flex.
7. Southwire.
8. O-Z Gedney; a unit of General Signal.
9. Wheatland Tube Company.
10. SAPA - Aluminum Extrusions

B. Rigid Conduit: All above grade conduits over 2” diameter shall be rigid conduit.

1. Rigid Steel Conduit: ANSI C80.1 and UL6.
2. Rigid Aluminum Conduit: ANSI C80.5 and UL-6A
    a. Not allowed in areas with chlorine.

C. IMC: ANSI C80.6 and UL1242.

D. PVC-Coated Steel Conduit: PVC-coated rigid steel or conduit IMC.

1. Comply with NEMA RN 1.
2. Coating Thickness: 0.040 inch, minimum.

E. EMT: ANSI C80.3 and UL797.

F. FMC: Zinc-coated steel.

G. LFMC: Flexible steel conduit with PVC jacket.

H. MC: UL1569 and Standards of NEC Article 330 (AC cable is not approved).

I. Fittings for Conduit (Including all Types and Flexible and Liquidtight), EMT, and Cable: NEMA FB 1; listed for type and size raceway with which used, and for application and environment in which installed.

1. Conduit Fittings for Hazardous (Classified) Locations: Comply with UL 886.
2. Fittings for EMT: Steel compression type.
3. Coating for Fittings for PVC-Coated Conduit: Minimum thickness, 0.040 inch, with overlapping sleeves protecting threaded joints.

J. Joint Compound for Rigid Steel Conduit or IMC: Listed for use in cable connector assemblies, and compounded for use to lubricate and protect threaded raceway joints from corrosion and enhance their conductivity.

2.2 NONMETALLIC CONDUIT AND TUBING

A. Manufacturers: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

1. AFC Cable Systems, Inc.
2. Anamet Electrical, Inc.; Anaconda Metal Hose.
3. Arnco Corporation.
4. CANTEX Inc.
5. CertainTeed Corp.; Pipe & Plastics Group.
6. Condux International, Inc.
7. ElecSYS, Inc.
8. Electri-Flex Co.
9. Lamson & Sessions; Carlon Electrical Products.
10. Manhattan/CDT/Cole-Flex.
11. RACO; a Hubbell Company.
12. Thomas & Betts Corporation.

B. Electrical Plastic Conduit: NEMA TC-2 and UL651.
1. Heavy Wall Conduit: Schedule 40, 90 C, UL rated, construct of polyvinyl chloride for direct burial, or normal aboveground use and in conformity with NEC Article 347.
2. Extra Heavy Wall Conduit: Schedule 80, UL rated, construct of polyvinyl chloride compound C-200 PVC, and UL listed in accordance with NEC Article 347 for direct burial.
3. Thin Wall Conduit: Type A, UL rated for concrete encasement underground, construct of polyvinyl chloride, compound C-2000, and UL listed in accordance with NEC Article 347.

C. Provide all-weather quick-set clear cement and conduit bender designed specifically for PVC.

D. Fittings for ENT and RNC: NEMA TC 3 and UL514B; match to conduit or tubing type and material.

E. Fittings for LFNC: UL 514B.

F. Conduit and Tubing Accessories: Provide conduit, tubing and duct accessories of types, sizes, and materials, complying with manufacturer's published product information which mate and match conduit and tubing.

2.3 OPTICAL FIBER/COMMUNICATIONS CABLE RACEWAY AND FITTINGS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Arnco Corporation.
2. Endot Industries Inc.
3. IPEX Inc.
4. Lamson & Sessions; Carlon Electrical Products.

B. Description: Comply with UL 2024; flexible type, approved for plenum or riser installation.

2.4 METAL WIREWAYS

A. Manufacturers: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

1. Cooper B-Line, Inc.
2. Hoffman.
3. Square D; Schneider Electric.

B. Description: Sheet metal sized and shaped as indicated, NEMA 250, Type 1, 12, or 3R as required, unless otherwise indicated.

C. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.

D. Wireway Covers: Hinged type, Screw-cover type, or Flanged-and-gasketed type as indicated on drawings.

E. Finish: Manufacturer's standard enamel finish.

2.5 NONMETALLIC WIREWAYS

A. Manufacturers: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

1. Hoffman.
2. Lamson & Sessions; Carlon Electrical Products.

B. Description: Fiberglass polyester, extruded and fabricated to size and shape indicated, with no holes or knockouts. Cover is gasketed with oil-resistant gasket material and fastened with captive screws treated for corrosion resistance. Connections are flanged, with stainless-steel screws and oil-resistant gaskets.

C. Description: PVC plastic, extruded and fabricated to size and shape indicated, with snap-on cover and mechanically coupled connections with plastic fasteners.

D. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.

2.6 SURFACE RACEWAYS

A. Surface Metal Raceways: Galvanized steel with snap-on covers. Manufacturer's standard enamel finish in color selected by Architect.

1. Manufacturers: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

a. Wiremold Company (The); Electrical Sales Division.
b. Walker Systems, Inc.; Wiremold Company (The).
c. Hubbell Incorporated.

B. Surface Nonmetallic Raceways: Two-piece construction, manufactured of rigid PVC with texture and color selected by Architect from manufacturer's standard colors.

1. Manufacturers: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

a. Butler Manufacturing Company; Walker Division.
b. Enduro Systems, Inc.; Composite Products Division.
c. Hubbell Incorporated; Wiring Device-Kellems Division.
d. Lamson & Sessions; Carlon Electrical Products.
e. Panduit Corp.
f. Walker Systems, Inc.; Wiremold Company (The).
g. Wiremold Company (The); Electrical Sales Division.

2.7 BOXES, ENCLOSURES, AND CABINETS

A. Manufacturers: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

1. Cooper Crouse-Hinds; Div. of Cooper Industries, Inc.
2. EGS/Appleton Electric.
3. Erickson Electrical Equipment Company.
4. Hoffman.
5. Hubbell.
6. O-Z/Gedney; a unit of General Signal.
7. Thomas & Betts Corporation.
8. Walker Systems, Inc.; Wiremold Company (The).

B. Sheet Metal Outlet and Device Boxes: NEMA OS 1.

C. Cast-Metal Outlet and Device Boxes: NEMA FB 1, ferrous alloy or aluminum, Type FD, with gasketed cover.

D. Nonmetallic Outlet and Device Boxes: NEMA OS 2.

E. Metal Floor Boxes: Cast or sheet metal semi-adjustable rectangular. Provide proper barriers where required.

F. Nonmetallic Floor Boxes: Nonadjustable, round.

G. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.

H. Cast-Metal Access, Pull, and Junction Boxes: NEMA FB 1, cast aluminum, galvanized, or cast iron with gasketed cover.

I. Hinged-Cover Enclosures: NEMA 250, Type 1, with continuous-hinge cover with flush latch, unless otherwise indicated.

1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
2. Nonmetallic Enclosures: Plastic**,** finished inside with radio-frequency-resistant paint.

J. Cabinets:

1. Galvanized-steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel per NEMA 250.

    a. NEMA Type 1 Enclosure For Interior Installations.
    b. NEMA Type 3R Enclosure For Exterior and Damp Location Installations.

2. Hinged door in front cover with flush latch and concealed hinge.
3. Key latch to match panelboards.
4. Metal barriers to separate wiring of different systems and voltage.
5. Accessory feet where required for freestanding equipment.

2.8 HANDHOLES AND BOXES FOR EXTERIOR UNDERGROUND WIRING

A. Description: Comply with SCTE 77.

1. Color of Frame and Cover: Gray.
2. Configuration: Units shall be designed for flush burial and have open or closed bottom, unless otherwise indicated.
3. Cover: Weatherproof, secured by tamper-resistant locking devices and having structural load rating consistent with enclosure.
4. Cover Finish: Nonskid finish shall have a minimum coefficient of friction of 0.50.
5. Cover Legend: Molded lettering, "ELECTRIC." or "TELEPHONE." as indicated for each service.
6. Conduit Entrance Provisions: Conduit-terminating fittings shall mate with entering ducts for secure, fixed installation in enclosure wall.
7. Handholes 12 inches wide by 24 inches long and larger shall have inserts for cable racks and pulling-in irons installed before concrete is poured.

B. Polymer-Concrete Handholes and Boxes with Polymer-Concrete Cover: Molded of sand and aggregate, bound together with polymer resin, and reinforced with steel or fiberglass or a combination of the two.

1. Manufacturers: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

    a. Armorcast Products Company.

b. Carson Industries LLC.
c. CDR Systems Corporation.
d. NewBasis.
e. Quanzite, Hubbell.
f. Old Castle

C. Fiberglass Handholes and Boxes with Polymer-Concrete Frame and Cover: Sheet-molded, fiberglass-reinforced, polyester-resin enclosure joined to polymer-concrete top ring or frame.

1. Manufacturers: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

a. Armorcast Products Company.
b. Carson Industries LLC.
c. Christy Concrete Products.
d. Synertech Moulded Products, Inc.; a division of Oldcastle Precast.

D. Fiberglass Handholes and Boxes: Molded of fiberglass-reinforced polyester resin, with covers of polymer concrete, reinforced concrete, or hot-dip galvanized-steel diamond plate.

1. Manufacturers: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

a. Carson Industries LLC.
b. Christy Concrete Products.
c. Nordic Fiberglass, Inc.

2.9 SLEEVES FOR RACEWAYS

A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.

B. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.

C. Sleeves for Rectangular Openings: Galvanized sheet steel with minimum 0.052- or 0.138-inch thickness as indicated and of length to suit application.

D. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Firestopping."

2.10 SLEEVE SEALS

A. Manufacturers: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

1. Advance Products & Systems, Inc.
2. Calpico, Inc.
3. Metraflex Co.
4. Pipeline Seal and Insulator, Inc.

B. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and cable.

1. Sealing Elements: EPDM or NBR interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.
2. Pressure Plates: Plastic, Carbon steel, or Stainless steel. Include two for each sealing element.
3. Connecting Bolts and Nuts: Carbon steel with corrosion-resistant coating or Stainless steel of length required to secure pressure plates to sealing elements. Include one for each sealing element.

2.11 SOURCE QUALITY CONTROL FOR UNDERGROUND ENCLOSURES

A. Handhole and Pull-Box Prototype Test: Test prototypes of handholes and boxes for compliance with SCTE 77. Strength tests shall be for specified tier ratings of products supplied.

1. Tests of materials shall be performed by a independent testing agency.
2. Strength tests of complete boxes and covers shall be by either an independent testing agency or manufacturer. A qualified registered professional engineer shall certify tests by manufacturer.
3. Testing machine pressure gages shall have current calibration certification complying with ISO 9000 and ISO 10012, and traceable to NIST standards.

PART 3 - EXECUTION

3.1 RACEWAY APPLICATION

A. Outdoors: Apply raceway products as specified below, unless otherwise indicated:

1. Exposed Conduit: RSC, RAC, RNC Type EPC-40-PVC, or RNC Type EPC-80-PVC.
2. Concealed Conduit, Aboveground: RSC, RAC, IMC, or EMT.
3. Underground Conduit: RNC Type EPC-40 or 80-PVC, direct buried, as specified on plans.
4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC or LFNC.
5. Boxes and Enclosures, Aboveground: NEMA 250, Type 3R.
6. Application of Handholes and Boxes for Underground Wiring:

    a. Handholes and Pull Boxes in Driveway, Parking Lot, and Off-Roadway Locations, Subject to Occasional, Nondeliberate Loading by Heavy Vehicles: Polymer concrete or Fiberglass enclosures with polymer-concrete frame and cover, SCTE 77, Tier 15 structural load rating.
    b. Handholes and Pull Boxes in Sidewalk and Similar Applications with a Safety Factor for Nondeliberate Loading by Vehicles: Polymer-concrete units or Heavy-duty fiberglass units with polymer-concrete frame and cover, SCTE 77, Tier 8 structural load rating.
    c. Handholes and Pull Boxes Subject to Light-Duty Pedestrian Traffic Only: Fiberglass-reinforced polyester resin, structurally tested according to SCTE 77 with 3000-lbf vertical loading.

B. Comply with the following indoor applications, unless otherwise indicated:

1. Exposed, Not Subject to Physical Damage: EMT.
2. Exposed, Not Subject to Severe Physical Damage: EMT.

3. Exposed and Subject to Severe Physical Damage: Rigid steel conduit or IMC. Includes raceways in the following locations:

    a. Loading dock.
    b. Corridors used for traffic of mechanized carts, forklifts, and pallet-handling units.
    c. Mechanical rooms.
    d. Areas specified on Drawings.

4. Concealed in Ceilings and Interior Walls and Partitions: EMT.
5. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.
6. Damp or Wet Locations: RSC, RAC or IMC.
7. Raceways for Optical Fiber or Communications Cable in Spaces Used for Environmental Air: Plenum-type, optical fiber/communications cable raceway or EMT.
8. Raceways for Optical Fiber or Communications Cable Risers in Vertical Shafts: Riser-type, optical fiber/communications cable raceway or EMT.
9. Raceways for Concealed General Purpose Distribution of Optical Fiber or Communications Cable: General-use, optical fiber/communications cable raceway or EMT.
10. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4, stainless steel or nonmetallic in damp or wet locations.

C. Minimum Homerun Raceway Size: 3/4-inch trade size. 1/2-inch allowed between outlets located within the same room.

D. Raceway Fittings: Compatible with raceways and suitable for use and location.

1. Rigid and Intermediate Metal Conduit: Use threaded rigid steel conduit fittings, unless otherwise indicated.
2. PVC Externally Coated, Rigid Steel Conduits: Use only fittings listed for use with that material. Patch and seal all joints, nicks, and scrapes in PVC coating after installing conduits and fittings. Use sealant recommended by fitting manufacturer.

E. Install nonferrous conduit or tubing for circuits operating above 60 Hz.

3.2 INSTALLATION

A. General Requirements

1. Comply with NECA 1 for installation requirements applicable to products specified in Part 2 except where requirements on Drawings or in this Article are stricter.
2. Cut conduits straight, properly ream, and cut threads for heavy wall conduit deep and clean.
3. Field-bend conduit with benders designed for purpose so as not to distort nor vary internal diameter.
4. Size conduits to meet NEC, except no conduit smaller than 3/4 inch shall be embedded in concrete or masonry.
5. Fasten conduit terminations in sheet metal enclosures by two locknuts, and terminate with bushing. Install locknuts inside and outside enclosure.
6. Conduits are not to cross pipe shafts or ventilating duct openings.
7. Use of running threads at conduit joints and terminations is prohibited. Where required, use three-piece union or split coupling.

B. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.

C. Complete raceway installation before starting conductor installation.

D. Support raceways as specified in Division 26 Section "Hangers and Supports for Electrical Systems."

E. Arrange stub-ups so curved portions of bends are not visible above the finished slab.

F. Install no more than the equivalent of three 90-degree bends in any conduit run except for communications conduits, for which fewer bends are allowed.

G. General: Install concealed conduits in new construction work, either in walls, slabs, or above hung ceilings.

1. Mechanically fasten together metal conduits, enclosures, and raceways to form continuous electrical conductor. Connect to electrical boxes, fittings, and cabinets to provide electrical continuity and firm mechanical assembly.
2. Avoid use of dissimilar metals throughout system to eliminate possibility of electrolysis. Where dissimilar metals are in contact, coat surfaces with corrosion inhibiting compound before assembling.
3. Install miscellaneous fittings such as reducers, chase nipples, 3-piece unions, split couplings, and plugs that have been specifically designed and manufactured for their particular application. Install expansion fittings in raceways every 200’ linear run or wherever structural expansion joints are crossed.
4. Use roughing-in dimensions of electrically operated unit furnished by supplier. Set conduit and boxes for connection to units only after receiving review of dimensions and after checking location with other trades.
5. Conduits 2” and larger shall be rigid.
6. Metal Clad (MC) Cable may be used only where listed below. The use of Armored Cable (AC) is strictly prohibited.
7. For Floors-on-grade, install feeder conduits under concrete slabs, minimum of 24” below finished grade unless shown otherwise on partial riser diagram.

H. Metal Clad (MC) Cable:

1. The use of Metal Clad Cable may be used in the following conditions if approved for use by the local electrical inspector, Authority Having Jurisdiction and approving engineer:

    a. As a final connection to light fixture or equipment, not to exceed six feet of cable length.
    b. Fire alarm circuitry.
    c. Modular furniture connection.
    d. Control circuitry.
    e. Only if the Cable has a bare or green insulated grounding conductor suitable for use as an equipment ground.

2. Metal Clad Cable Shall Not be used where:

    a. As branch circuiting instead of conduit and wire as specified in Section 3.1.
    b. It must span perpendicular to steel members because support cannot be guaranteed as required by the NEC.
    c. Passing through firewalls with any other cable or raceway or chase.
    d. A panelboard entry is required.

e. A conduit/circuit homerun to panelboard is indicated on Drawings.
f. Where prohibited by its Listings or NEC.

I. Raceways Embedded in Slabs:

1. Run conduit larger than 1-inch trade size, parallel or at right angles to main reinforcement. Where at right angles to reinforcement, place conduit close to slab support.
2. Arrange raceways to cross building expansion joints at right angles with expansion fittings.
3. Where PVC is used below first floor slab, rigid steel ells shall be utilized in long radius form to extend vertically toward or through slab, and rigid steel entries into cabinets or terminal chambers, only shall be allowed. Do not extend any PVC into building spaces.
4. Place conduits between bottom reinforcing steel and top reinforcing steel.
5. Separate conduits by not less than diameter of largest conduit to ensure proper concrete band.
6. Embedded conduit diameter is not to exceed 1/3 of slab thickness.

J. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.

K. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors, including conductors smaller than No. 4 AWG.

L. Provide nylon pull cord, minimum 200 lb tensile strength, in all empty conduits. Test conduits required to be installed, but left empty; test with ball mandrel. Clear any conduit which rejects ball mandrel. Pay costs involved for restoration of conduit and surrounding surfaces to original condition.

M. Raceways for Optical Fiber and Communications Cable: Install raceways, metallic and nonmetallic, rigid and flexible, as follows:

1. 3/4-Inch Trade Size and Smaller: Install raceways in maximum lengths of 50 feet.
2. 1-Inch Trade Size and Larger: Install raceways in maximum lengths of 75 feet.
3. Install with a maximum of two 90-degree bends or equivalent for each length of raceway unless Drawings show stricter requirements. Separate lengths with pull or junction boxes or terminations at distribution frames or cabinets where necessary to comply with these requirements.

N. Install raceway sealing fittings at suitable, approved, and accessible locations and fill them with listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings at the following points:

1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
2. Where otherwise required by NFPA 70.

O. Expansion-Joint Fittings for RNC: Install in each run of aboveground conduit that is located where environmental temperature change may exceed 30 deg F, and that has straight-run length that exceeds 25 feet.

1. Install expansion-joint fittings for each of the following locations, and provide type and quantity of fittings that accommodate temperature change listed for location:

    a. Outdoor Locations Not Exposed to Direct Sunlight: 125 deg F temperature change.
    b. Outdoor Locations Exposed to Direct Sunlight: 155 deg F temperature change.
    c. Indoor Spaces: Connected with the Outdoors without Physical Separation: 125 deg F temperature change.
    d. Attics: 135 deg F temperature change.

2. Install fitting(s) that provide expansion and contraction for at least 0.00041 inch per foot of length of straight run per deg F of temperature change.
3. Install each expansion-joint fitting with position, mounting, and piston setting selected according to manufacturer's written instructions for conditions at specific location at the time of installation.

P. Flexible Conduit Connections: Use maximum of 72 inches of flexible conduit for recessed and semi-recessed lighting fixtures, equipment subject to vibration, noise transmission, or movement; and for transformers and motors.

1. Minimum size shall be 3/4 inch, except final flexible conduit for lighting fixtures may be minimum size of 1/2 inch.
2. Use LFMC in damp or wet locations subject to severe physical damage.
3. Use LFMC or LFNC in damp or wet locations not subject to severe physical damage.

Q. Recessed Boxes in Masonry Walls: Saw-cut opening for box in center of cell of masonry block, and install box flush with surface of wall.

R. Set metal floor boxes level and flush with finished floor surface.

S. Set nonmetallic floor boxes level. Trim after installation to fit flush with finished floor surface.

3.3 INSTALLATION OF UNDERGROUND CONDUIT

A. Direct-Buried Conduit:

1. Excavate trench bottom to provide firm and uniform support for conduit. Prepare trench bottom as specified in Division 31 for pipe less than 6 inches in nominal diameter.
2. Install backfill as specified in Division 31.
3. After installing conduit, backfill and compact. Start at tie-in point, and work toward end of conduit run, leaving conduit at end of run free to move with expansion and contraction as temperature changes during this process. Firmly hand pack backfill around conduit to provide maximum supporting strength. After placing controlled backfill to within 12 inches of finished grade, make final conduit connection at end of run and complete backfilling with normal compaction as specified in Division 31.
4. Install manufactured duct elbows for stub-ups at poles and equipment and at building entrances through the floor, unless otherwise indicated. Encase elbows for stub-up ducts throughout the length of the elbow.
5. Install manufactured rigid steel conduit elbows for stub-ups at poles and equipment and at building entrances through the floor. PVC elbows are not acceptable.

    a. Couple steel conduits to ducts with adapters designed for this purpose, and encase coupling with 3 inches of concrete.

b. For stub-ups at equipment mounted on outdoor concrete bases, extend steel conduit horizontally a minimum of 60 inches from edge of equipment pad or foundation. Install insulated grounding bushings on terminations at equipment.

6. Warning Tape: Bury warning tape approximately 12 inches above direct-buried conduits.

3.4 INSTALLATION OF UNDERGROUND HANDHOLES AND BOXES

A. Install handholes and boxes level and plumb and with orientation and depth coordinated with connecting conduits to minimize bends and deflections required for proper entrances.

B. Unless otherwise indicated, support units on a level bed of crushed stone or gravel, graded from 1/2-inch sieve to No. 4 sieve and compacted to same density as adjacent undisturbed earth.

C. Elevation: In paved areas, set so cover surface will be flush with finished grade. Set covers of other enclosures 1 inch above finished grade.

D. Install handholes and boxes with bottom below the frost line.

E. Install removable hardware, including pulling eyes, cable stanchions, cable arms, and insulators, as required for installation and support of cables and conductors and as indicated. Select arm lengths to be long enough to provide spare space for future cables, but short enough to preserve adequate working clearances in the enclosure.

F. Field-cut openings for conduits according to enclosure manufacturer's written instructions. Cut wall of enclosure with a tool designed for material to be cut. Size holes for terminating fittings to be used, and seal around penetrations after fittings are installed.

3.5 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

A. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Firestopping."

B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.

C. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.

D. Rectangular Sleeve Minimum Metal Thickness:

1. For sleeve cross-section rectangle perimeter less than 50 inches and no side greater than 16 inches, thickness shall be 0.052 inch.
2. For sleeve cross-section rectangle perimeter equal to, or greater than, 50 inches and 1 or more sides equal to, or greater than, 16 inches, thickness shall be 0.138 inch.

E. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.

F. Cut sleeves to length for mounting flush with both surfaces of walls.

G. Extend sleeves installed in floors 2 inches above finished floor level.

H. Size pipe sleeves to provide 1/4-inch annular clear space between sleeve and raceway unless sleeve seal is to be installed.

I. Seal space outside of sleeves with grout for penetrations of concrete and masonry and with approved joint compound for gypsum board assemblies.

J. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and raceway, using joint sealant appropriate for size, depth, and location of joint. Refer to Division 07 Section "Joint Sealants" for materials and installation.

K. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway penetrations. Install sleeves and seal with firestop materials. Comply with Division 07 Section "Firestopping."

L. Roof-Penetration Sleeves: Seal penetration of individual raceways with flexible, boot-type flashing units applied in coordination with roofing work.

M. Aboveground, Exterior-Wall Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.

N. Underground, Exterior-Wall Penetrations: Install cast-iron "wall pipes" for sleeves. Size sleeves to allow for 1-inch annular clear space between raceway and sleeve for installing mechanical sleeve seals.

3.6 SLEEVE-SEAL INSTALLATION

A. Install to seal underground, exterior wall penetrations.

B. Use type and number of sealing elements recommended by manufacturer for raceway material and size. Position raceway in center of sleeve. Assemble mechanical sleeve seals and install in annular space between raceway and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.7 FIRESTOPPING

A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly. Firestopping materials and installation requirements are specified in Division 07 Section "Firestopping."

3.8 PROTECTION

A. Provide final protection and maintain conditions that ensure coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.

1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
2. Repair damage to PVC or paint finishes with matching touchup coating recommended by manufacturer.

END OF SECTION 260533

SECTION 260553 - IDENTIFICATION FOR ELECTRICAL

SYSTEMS PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Identification for raceways.
2. Identification of power and control cables.
3. Identification for conductors.
4. Underground-line warning tape.
5. Warning labels and signs.
6. Instruction signs.
7. Equipment identification labels.
8. Miscellaneous identification products.

1.3 DOCUMENTATION

A. Identification Schedule: An index of nomenclature of electrical equipment and system components used in identification signs and labels.

1.4 QUALITY ASSURANCE

A. Comply with ANSI A13.1 and IEEE C2.

B. Comply with NFPA 70.

C. Comply with 29 CFR 1910.144 and 29 CFR 1910.145.

D. Comply with ANSI Z535.4 for safety signs and labels.

E. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.

1.5 COORDINATION

A. Coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual; and with those required by codes, standards, and 29 CFR 1910.145. Use consistent designations throughout Project.

B. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.

C. Coordinate installation of identifying devices with location of access panels and doors.

D. Install identifying devices before installing acoustical ceilings and similar concealment.

2 PART 2 - PRODUCTS

2.1 POWER RACEWAY IDENTIFICATION MATERIALS

A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway size.

B. Colors for Raceways Carrying Circuits at 600 V or Less:

1. Conduits

   a. Color-coded Plastic Tape: Provide manufacturer's standard self-adhesive vinyl tape not less than 3 mils thick by 1-1/2" wide.
   b. Colors: Unless otherwise indicated or required by governing regulations. Provide color tape corresponding to color-coding of phase conductors.

2. Wireways

   a. White letters on a black field.
   b. Legend: Indicate voltage and system.

C. Colors for Raceways Carrying Circuits at More Than 600 V:

1. Black letters on an orange field.
2. Legend: "DANGER CONCEALED HIGH VOLTAGE WIRING" with 3-inch-high letters on 20-inch centers.

D. Self-Adhesive Vinyl Labels for Raceways Carrying Circuits at 600 V or Less: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

E. Snap-Around Labels for Raceways Carrying Circuits at 600 V or Less: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeve, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

F. Snap-Around, Color-Coding Bands for Raceways Carrying Circuits at 600 V or Less: Slit, pretensioned, flexible, solid-colored acrylic sleeve, 2 inches long, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

G. Tape and Stencil for Raceways Carrying Circuits More Than 600 V: 4-inch- wide black stripes on 10-inch centers diagonally over orange background that extends full length of raceway or duct and is 12 inches wide. Stop stripes at legends.

H. Metal Tags: Brass or aluminum, 2 by 2 by 0.05 inch, with stamped legend, punched for use with self-locking cable tie fastener.

I. Write-On Tags: Polyester tag, 0.015 inch thick, with corrosion-resistant grommet and cable tie for attachment to conductor or cable.

1. Marker for Tags: Permanent, waterproof, black ink marker recommended by tag manufacturer.
2. Marker for Tags: Machine-printed, permanent, waterproof, black ink marker recommended by printer manufacturer.

2.2 ARMORED AND METAL-CLAD CABLE IDENTIFICATION MATERIALS

A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway and cable size.

B. Colors for Raceways Carrying Circuits at 600 V and Less:

1. Color-Coded Plastic Tape:

a. General: Provide manufacturer's standard self-adhesive vinyl tape not less than 3 mils thick by 1-1/2" wide.
b. Colors: Unless otherwise indicated or required by governing regulations. Provide color tape corresponding to color-coding of phase conductors.

C. Colors for Raceways Carrying Circuits at More Than 600 V:

1. Black letters on an orange field.
2. Legend: "DANGER CONCEALED HIGH VOLTAGE WIRING" with 3-inch-high
letters on 20-inch centers.

D. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

E. Self-Adhesive Vinyl Tape: Colored, heavy duty, waterproof, fade resistant; 2 inches wide; compounded for outdoor use.

2.3 POWER AND CONTROL CABLE IDENTIFICATION MATERIALS

A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway and cable size.

B. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

C. Metal Tags: Brass or aluminum, 2 by 2 by 0.05 inch, with stamped legend, punched for use with self-locking cable tie fastener.

D. Write-On Tags: Polyester tag, 0.015 inch thick, with corrosion-resistant grommet and cable tie for attachment to conductor or cable.

1. Marker for Tags: Permanent, waterproof, black ink marker recommended by tag manufacturer.
2. Marker for Tags: Machine-printed, permanent, waterproof, black ink marker recommended by printer manufacturer.

E. Snap-Around Labels: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeve, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

F. Snap-Around, Color-Coding Bands: Slit, pretensioned, flexible, solid-colored acrylic sleeve, 2 inches long, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

2.4 CONDUCTOR IDENTIFICATION MATERIALS

A. Color-Coding Conductor Tape: Colored, self-adhesive vinyl tape not less than 3 mils thick by 1 to 2 inches wide.

B. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

C. Snap-Around Labels: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeve, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

D. Snap-Around, Color-Coding Bands: Slit, pretensioned, flexible, solid-colored acrylic sleeve, 2 inches long, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

E. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer.

F. Write-On Tags: Polyester tag, 0.015 inch thick, with corrosion-resistant grommet and cable tie for attachment to conductor or cable.

1. Marker for Tags: Permanent, waterproof, black ink marker recommended by tag manufacturer.
2. Marker for Tags: Machine-printed, permanent, waterproof, black ink marker recommended by printer manufacturer.

2.5 FLOOR MARKING TAPE

A. 2-inch- wide, 5-mil pressure-sensitive vinyl tape, with black and white stripes and clear vinyl overlay.

2.6 UNDERGROUND-LINE WARNING TAPE

A. Tape:

1. Recommended by manufacturer for the method of installation and suitable to identify and locate underground electrical and communications utility lines.
2. Printing on tape shall be permanent and shall not be damaged by burial operations.
3. Tape material and ink shall be chemically inert, and not subject to degrading when exposed to acids, alkalis, and other destructive substances commonly found in soils.

B. Color and Printing:

1. Comply with ANSI Z535.1 through ANSI Z535.5.
2. Inscriptions for Red-Colored Tapes: ELECTRIC LINE, HIGH VOLTAGE.
3. Inscriptions for Orange-Colored Tapes:TELEPHONE CABLE, CATV CABLE, COMMUNICATIONS CABLE, OPTICAL FIBER CABLE.

C. Tag:

1. Multilayer laminate consisting of high-density polyethylene scrim coated with pigmented polyolefin, bright-colored, continuous-printed on one side with the inscription of the utility, compounded for direct-burial service.
2. Thickness: 12mils.
3. Weight: 36.1 lb/1000 sq. ft.
4. 3-Inch Tensile According to ASTM D 882: 400 lbf, and 11,500 psi.

2.7 WARNING LABELS AND SIGNS

A. Comply with NFPA 70 and 29 CFR 1910.145.

B. Self-Adhesive Warning Labels: Factory-printed, multicolor, pressure-sensitive adhesive labels, configured for display on front cover, door, or other access to equipment unless otherwise indicated.

C. Baked-Enamel Warning Signs:

1. Preprinted aluminum signs, punched or drilled for fasteners, with colors, legend, and size required for application.
2. 1/4-inch grommets in corners for mounting.
3. Nominal size, 7 by 10 inches.

D. Metal-Backed, Butyrate Warning Signs:

1. Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate signs with

0.0396- inch galvanized-steel backing; and with colors, legend, and size required for application.

2. 1/4-inch grommets in corners for mounting.
3. Nominal size, 10 by 14 inches.

E. Warning label and sign shall include, but are not limited to, the following legends:

1. Multiple Power Source Warning: "DANGER - ELECTRICAL SHOCK HAZARD - EQUIPMENT HAS MULTIPLE POWER SOURCES."

2.8 INSTRUCTION SIGNS

A. Engraved, laminated acrylic or melamine plastic, minimum 1/16 inch thick for signs up to 20 sq. inches and 1/8 inch thick for larger sizes.

1. Engraved legend with black letters on white face.
2. Punched or drilled for mechanical fasteners.
3. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.

B. Adhesive Film Label: Machine printed, in black, by thermal transfer. Minimum letter height shall be 3/8 inch.

C. Adhesive Film Label with Clear Protective Overlay: Machine printed, in black, by thermal transfer. Minimum letter height shall be 3/8 inch. Overlay shall provide a weatherproof and UV-resistant seal for label.

2.9 EQUIPMENT IDENTIFICATION LABELS

A. Engraved, Laminated Acrylic or Melamine Label: Punched or drilled for screw mounting.
White letters on a dark-gray background. Minimum letter height shall be 3/8 inch.

B. Self-Adhesive, Engraved, Laminated Acrylic or Melamine Label: Adhesive backed, with white letters on a dark-gray background. Minimum letter height shall be 3/8 inch.

C. Thickness: 1/16 inch, for units up to 20 sq. in. or 8 inch length; 1/8 inch for larger units.

D. Fasteners: Self-tapping stainless steel screws, except contact-type permanent adhesive where screws cannot or should not penetrate substrate.

2.10 CABLE TIES

A. General-Purpose Cable Ties: Fungus inert, self extinguishing, one piece, self locking, Type 6/6 nylon.

1. Minimum Width: 3/16 inch.
2. Tensile Strength at 73 deg F, According to ASTM D 638: 12,000 psi.
3. Temperature Range: Minus 40 to plus 185 deg F.
4. Color: Black except where used for color-coding.

B. UV-Stabilized Cable Ties: Fungus inert, designed for continuous exposure to exterior

sunlight, self extinguishing, one piece, self locking, Type 6/6 nylon.

1. Minimum Width: 3/16 inch.
2. Tensile Strength at 73 deg F, According to ASTM D 638: 12,000 psi.
3. Temperature Range: Minus 40 to plus 185 deg F.
4. Color: Black.

C. Plenum-Rated Cable Ties: Self extinguishing, UV stabilized, one piece, self locking.

1. Minimum Width: 3/16 inch.
2. Tensile Strength at 73 deg F, According to ASTM D 638: 7000 psi.
3. UL 94 Flame Rating: 94V-0.
4. Temperature Range: Minus 50 to plus 284 deg F.
5. Color: Black.

2.11 MISCELLANEOUS IDENTIFICATION PRODUCTS

A. Paint: Comply with requirements in Division 09 painting Sections for paint materials and application requirements. Select paint system applicable for surface material and location (exterior or interior).

B. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Verify identity of each item before installing identification products.

B. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.

C. Apply identification devices to surfaces that require finish after completing finish work.

D. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.

E. Attach signs and plastic labels that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.

F. System Identification Color-Coding Bands for Raceways and Cables: Each color-coding band shall completely encircle cable or conduit. Place adjacent bands of two-color markings in contact, side by side. Locate bands at changes in direction, at penetrations of walls and floors, at 50-foot maximum intervals in straight runs, and at 25-foot maximum intervals in congested areas.

G. Aluminum Wraparound Marker Labels and Metal Tags: Secure tight to surface of conductor or cable at a location with high visibility and accessibility.

H. Cable Ties: For attaching tags. Use general-purpose type, except as listed below:

1. Outdoors: UV-stabilized nylon.
2. In Spaces Handling Environmental Air: Plenum rated.

I. Underground-Line Warning Tape: During backfilling of trenches install continuous underground-line warning tape directly above line at 6 to 8 inches below finished grade. Use multiple tapes where width of multiple lines installed in a common trench or concrete envelope exceeds 16 inches overall. Install line marker for every buried cable regardless of whether direct buried or protected in conduit.

J. Painted Identification: Comply with requirements in Division 09 painting Sections for surface preparation and paint application.

3.2 IDENTIFICATION SCHEDULE

A. Concealed Raceways, Duct Banks, More Than 600 V, within Buildings: Tape and stencil 4- inch- wide black stripes on 10-inch centers over orange background that extends full length of raceway or duct and is 12 inches wide. Stencil legend "DANGER CONCEALED HIGH VOLTAGE WIRING" with 3-inch- high black letters on 20-inch centers. Stop stripes at legends. Apply to the following finished surfaces:

1. Floor surface directly above conduits running beneath and within 12 inches of a floor that is in contact with earth or is framed above unexcavated space.
2. Wall surfaces directly external to raceways concealed within wall.
3. Accessible surfaces of concrete envelope around raceways in vertical shafts, exposed in the building, or concealed above suspended ceilings.

B. Accessible Raceways, Armored and Metal-Clad Cables, More Than 600 V: Self-adhesive vinyl or Snap-around labels. Install labels at 30-foot maximum intervals.

C. Accessible Raceways and Metal-Clad Cables, 600 V or Less, for Service, Feeder, and Branch Circuits: Identify with self-adhesive vinyl label self-adhesive vinyl tape applied in bands. Install labels at 50 foot maximum intervals in straight runs and at 25 foot maximum intervals in congested areas.

D. Accessible Raceways and Cables within Buildings: Identify the covers of each junction and pull box of the following systems with self-adhesive vinyl labels or permanent black ink written with neat/readable handwriting with the wiring system legend and system voltage. System legends shall be as follows:

1. Emergency Power.
2. Power.
3. UPS.

E. Power-Circuit Conductor Identification, 600 V or Less: For conductors in vaults, pull and junction boxes, manholes, and handholes, use color-coding conductor tape to identify the phase.

1. Color-Coding for Phase and Voltage Level Identification, 600 V or Less: Use colors listed below for secondary service, feeder, and branch circuit conductors with factory applied color as follows:

a.

Phase	208/120 Volts	277/480 Volts
A	Black	Brown
B	Red	Orange
C	Blue	Yellow
Neutral	White	Gray
Ground	Green	Green
Isolated Ground	Green/Orange Stripe	---

b. Other common colors may be used for switch legs and control
c. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches from terminal points and in boxes where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding. Locate bands to avoid obscuring factory cable markings.

F. Power-Circuit Conductor Identification, More than 600 V: For conductors in vaults, pull and junction boxes, manholes, and handholes, use nonmetallic plastic tag holder with adhesive- backed phase tags, and a separate tag with the circuit designation.

G. Install instructional sign including the color-code for grounded and ungrounded conductors using adhesive-film-type labels.

H. Conductors to Be Extended in the Future: Attach write-on tags to conductors and list source.

I. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, and signal connections.

1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.
2. Use system of marker tape designations that is uniform and consistent with system used
by manufacturer for factory-installed connections.
3. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual.

J. Locations of Underground Lines: Identify with underground-line warning tape for power, lighting, communication, and control wiring and optical fiber cable.

1. Install underground-line warning tape for both direct-buried cables and cables in raceway.

K. Workspace Indication: Install floor marking tape to show working clearances in the direction of access to live parts. Workspace shall be as mandated by NFPA 70 and 29 CFR 1926.403 unless otherwise indicated. Do not install at flush-mounted panelboards and similar equipment in finished spaces.

L. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Baked- enamel warning signs or Metal-backed, butyrate warning signs.

1. Comply with 29 CFR 1910.145.
2. Identify system voltage with black letters on an orange background.
3. Apply to exterior of door, cover, or other access.
4. For equipment with multiple power or control sources, apply to door or cover of equipment including, but not limited to, the following:

    a. Power transfer switches.
    b. Controls with external control power connections.

M. Operating Instruction Signs: Install instruction signs to facilitate proper operation and maintenance of electrical systems and items to which they connect. Install instruction signs with approved legend where instructions are needed for system or equipment operation.

N. Emergency Operating Instruction Signs: Install instruction signs with white legend on a red background with minimum 3/8-inch- high letters for emergency instructions at equipment used for power transfer and load shedding.

O. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and the Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power, lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification.

1. Labeling Instructions:

    a. Indoor Equipment: Self-adhesive, engraved, laminated acrylic or melamine label or Engraved, laminated acrylic or melamine label. Unless otherwise indicated, provide a single line of text with 1/2-inch- high letters on 1-1/2-inch- high label; where two lines of text are required, use labels 2 inches high.
    b. Outdoor Equipment: Engraved, laminated acrylic or melamine label.
    c. Elevated Components: Increase sizes of labels and letters to those appropriate for viewing from the floor.
    d. Fasten labels with appropriate mechanical fasteners that do not change the NEMA
    or NRTL rating of the enclosure where screws cannot or should not penetrate substrate, provide with self-adhesive means of attachment.

2. Equipment to Be Labeled:

    a. Panelboards: Typewritten directory of circuits in the location provided by panelboard manufacturer. Panelboard identification shall be self-adhesive, engraved or engraved, laminated acrylic or melamine label.
    b. Enclosures and electrical cabinets.
    c. Access doors and panels for concealed electrical items.
    d. Switchgear.
    e. Switchboards.
    f. Transformers: Label that includes tag designation shown on Drawings for the transformer, feeder, and panelboards or equipment supplied by the secondary.
    g. Substations.
    h. Emergency system boxes and enclosures.

i. Motor-control centers.
j. Enclosed switches.
k. Enclosed circuit breakers.
l. Enclosed controllers.
m. Variable-speed controllers.
n. Push-button stations.
o. Power transfer equipment.
p. Contactors.
q. Remote-controlled switches, dimmer modules, and control devices.
r. Battery-inverter units.
s. Battery racks.
t. Power-generating units.
u. Monitoring and control equipment.
v. UPS equipment.

END OF SECTION 260553

SECTION 265100 - INTERIOR LIGHTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Interior lighting fixtures, lamps, and ballasts.
2. Emergency lighting units.
3. Exit signs.
4. Lighting fixture supports.
5. Retrofit kits for fluorescent lighting fixtures.

B. Related Sections:

1. Division 26 Section "Lighting Control Devices" for automatic control of lighting, including time switches, photoelectric relays, occupancy sensors, and multipole lighting relays and contactors.
2. Division 26 Sections for architectural dimming and control systems.
3. Division 26 Section "Wiring Devices" for manual wall-box dimmers for incandescent lamps.

1.3 DEFINITIONS

A. BF: Ballast factor.

B. CCT: Correlated color temperature.

C. CRI: Color-rendering index.

D. HID: High-intensity discharge.

E. LER: Luminaire efficacy rating.

F. Lumen: Measured output of lamp and luminaire, or both.

G. Luminaire: Complete lighting fixture, including ballast housing if provided.

1.4 SUBMITTALS

A. Product Data: For each type of lighting fixture, arranged in order of fixture designation. Include data on features, accessories, finishes, and the following:

1. Physical description of lighting fixture including dimensions.
2. Emergency lighting units including battery and charger.
3. Ballast, including BF.
4. Energy-efficiency data.
5. Life, output (lumens, CCT, and CRI), and energy-efficiency data for lamps.

B. Shop Drawings: For nonstandard or custom lighting fixtures. Include plans, elevations, sections, details, and attachments to other work.

1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
2. Wiring Diagrams: For power, signal, and control wiring.

C. Operation and Maintenance Data: Submit maintenance data and parts list for each interior lighting fixture and accessory; including “trouble-shooting” maintenance guide.

1.5 QUALITY ASSURANCE

A. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by manufacturers' laboratories that are accredited under the National Volunteer Laboratory Accreditation Program for Energy Efficient Lighting Products.

B. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by an independent agency, with the experience and capability to conduct the testing indicated, that is an NRTL as defined by OSHA in 29 CFR 1910, complying with the IESNA Lighting Measurements Testing & Calculation Guides.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

D. Comply with NFPA 70.

E. FM Global Compliance: Lighting fixtures for hazardous locations shall be listed and labeled for indicated class and division of hazard by FM Global.

1.6 COORDINATION

A. Coordinate layout and installation of lighting fixtures and suspension system with other construction that penetrates ceilings or is supported by them, including wires/cables, electrical boxes and fittings, raceways, HVAC equipment, fire-suppression system, and partition assemblies.

B. Handle interior lighting fixtures carefully to prevent damage, breaking, and scoring of finishes. Do not install damaged units or components; replace with new.

1.7 WARRANTY

A. Special Warranty for Emergency Lighting Batteries: Manufacturer's standard form in which manufacturer of battery-powered emergency lighting unit agrees to repair or replace components of rechargeable batteries that fail in materials or workmanship within specified warranty period.

1. Warranty Period for Emergency Lighting Unit Batteries: 10 years from date of Substantial Completion. Full warranty shall apply for first year, and prorated warranty for the remaining nine years.
2. Warranty Period for Emergency Fluorescent Ballast and Self-Powered Exit Sign Batteries: Seven years from date of Substantial Completion. Full warranty shall apply for first year, and prorated warranty for the remaining six years.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: See Light Fixture Schedule on Drawings.

2.2 GENERAL REQUIREMENTS FOR LIGHTING FIXTURES AND COMPONENTS

A. Recessed Fixtures: Comply with NEMA LE 4 for ceiling compatibility for recessed fixtures.

B. Incandescent Fixtures: Comply with UL 1598. Where LER is specified, test according to NEMA LE 5A.

C. Fluorescent Fixtures: Comply with UL 1598. Where LER is specified, test according to NEMA LE 5 and NEMA LE 5A as applicable.

D. HID Fixtures: Comply with UL 1598. Where LER is specified, test according to NEMA LE 5B.

E. Metal Parts: Free of burrs and sharp corners and edges.

F. Sheet Metal Components: Steel unless otherwise indicated. Form and support to prevent warping and sagging.

G. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position.

H. Diffusers and Globes:

1. Acrylic Lighting Diffusers: 100 percent virgin acrylic plastic. High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.

    a. Lens Thickness: At least 0.125 inch minimum unless otherwise indicated.
    b. UV stabilized.

2. Glass: Annealed crystal glass unless otherwise indicated.

I. Factory-Applied Labels: Comply with UL 1598. Include recommended lamps and ballasts. Labels shall be located where they will be readily visible to service personnel, but not seen from normal viewing angles when lamps are in place.

1. Label shall include the following lamp and ballast characteristics:

a. "USE ONLY" and include specific lamp type.
b. Lamp diameter code (T-4, T-5, T-8, etc.), tube configuration (twin, quad, triple, etc.), base type, and nominal wattage for fluorescent and compact fluorescent luminaires.
c. Lamp type, wattage, bulb type (ED17, BD56, etc.) and coating (clear or coated) for HID luminaires.
d. Start type (preheat, rapid start, instant start, etc.) for fluorescent and compact fluorescent luminaires.
e. ANSI ballast type (M98, M57, etc.) for HID luminaires.
f. CCT and CRI for all luminaires.

J. Electromagnetic-Interference Filters: Factory installed to suppress conducted electromagnetic interference as required by MIL-STD-461E. Fabricate lighting fixtures with one filter on each ballast indicated to require a filter.

2.3 BALLASTS FOR LINEAR FLUORESCENT LAMPS

A. General Requirements for Electronic Ballasts:

1. Comply with UL 935 and with ANSI C82.11.
2. Designed for type and quantity of lamps served.
3. Ballasts shall be designed for full light output unless another BF, dimmer, or bi-level control is indicated.
4. Sound Rating: Class A.
5. Total Harmonic Distortion Rating: Less than 10 percent.
6. Transient Voltage Protection: IEEE C62.41.1 and IEEE C62.41.2, Category A or better.
7. Operating Frequency: 42 kHz or higher.
8. Lamp Current Crest Factor: 1.7 or less.
9. BF: 0.88 or higher.
10. Power Factor: 0.95 or higher.
11. Parallel Lamp Circuits: Multiple lamp ballasts shall comply with ANSI C82.11 and shall be connected to maintain full light output on surviving lamps if one or more lamps fail.

B. Luminaires controlled by occupancy sensors shall have programmed-start ballasts.

C. Electronic Programmed-Start Ballasts for T8, T5 and T5HO Lamps: Comply with ANSI C82.11 and the following:

1. Lamp end-of-life detection and shutdown circuit for T5 diameter lamps.
2. Automatic lamp starting after lamp replacement.

D. Electromagnetic Ballasts: Comply with ANSI C82.1; energy saving, high-power factor, Class P, and having automatic-reset thermal protection.

1. Ballast Manufacturer Certification: Indicated by label.

E. Single Ballasts for Multiple Lighting Fixtures: Factory wired with ballast arrangements and bundled extension wiring to suit final installation conditions without modification or rewiring in the field.

F. Ballasts for Low-Temperature Environments:

1. Temperatures 0 Deg F and Higher: Electronic type rated for 0 deg F starting and operating temperature with indicated lamp types.

2. Temperatures Minus 20 Deg F and Higher: Electromagnetic type designed for use with indicated lamp types.

G. Ballasts for Residential Applications: Fixtures designated as "Residential" may use low-power-factor electronic ballasts having a Class B sound rating and total harmonic distortion of approximately 30 percent.

H. Ballasts for Low Electromagnetic-Interference Environments: Comply with 47 CFR 18, Ch. 1, Subpart C, for limitations on electromagnetic and radio-frequency interference for consumer equipment.

I. Ballasts for Dimmer-Controlled Lighting Fixtures: Electronic type.

1. Dimming Range: 100 to 5 percent of rated lamp lumens.
2. Ballast Input Watts: Can be reduced to 20 percent of normal.
3. Compatibility: Certified by manufacturer for use with specific dimming control system and lamp type indicated.
4. Control: Coordinate wiring from ballast to control device to ensure that the ballast, controller, and connecting wiring are compatible.

J. Ballasts for Bi-Level Controlled Lighting Fixtures: Electronic type.

1. Operating Modes: Ballast circuit and leads provide for remote control of the light output of the associated lamp between high- and low-level and off.

a. High-Level Operation: 100 percent of rated lamp lumens.
b. Low-Level Operation: 50 percent of rated lamp lumens.

2. Ballast shall provide equal current to each lamp in each operating mode.
3. Compatibility: Certified by manufacturer for use with specific bi-level control system and lamp type indicated.

K. Ballasts for Tri-Level Controlled Lighting Fixtures: Electronic type.

1. Operating Modes: Ballast circuit and leads provide for remote control of the light output of the associated lamp between high- and low-level and off.

a. High-Level Operation: 100 percent of rated lamp lumens.
b. Low-Level Operation: 30 and 60 percent of rated lamp lumens.

2. Ballast shall provide equal current to each lamp in each operating mode.
3. Compatibility: Certified by manufacturer for use with specific tri-level control system and lamp type indicated.

2.4 BALLASTS FOR COMPACT FLUORESCENT LAMPS

A. Description: Electronic-programmed rapid-start type, complying with UL 935 and with ANSI C 82.11, designed for type and quantity of lamps indicated. Ballast shall be designed for full light output unless dimmer or bi-level control is indicated:

1. Lamp end-of-life detection and shutdown circuit.
2. Automatic lamp starting after lamp replacement.
3. Sound Rating: Class A.
4. Total Harmonic Distortion Rating: Less than 20 percent.

5. Transient Voltage Protection: IEEE C62.41.1 and IEEE C62.41.2, Category A or better.
6. Operating Frequency: 20 kHz or higher.
7. Lamp Current Crest Factor: 1.7 or less.
8. BF: 0.95 or higher unless otherwise indicated.
9. Power Factor: 0.95 or higher.
10. Interference: Comply with 47 CFR 18, Ch. 1, Subpart C, for limitations on electromagnetic and radio-frequency interference for nonconsumer equipment.

2.5 EMERGENCY FLUORESCENT POWER UNIT

A. Internal Type: Self-contained, modular, battery-inverter unit, factory mounted within lighting fixture body and compatible with ballast. Comply with UL 924.

1. Emergency Connection: Operate one fluorescent lamp(s) continuously at an output of 1100 lumens each. Connect unswitched circuit to battery-inverter unit and switched circuit to fixture ballast.
2. Nightlight Connection: Operate one fluorescent lamp continuously.
3. Test Push Button and Indicator Light: Visible and accessible without opening fixture or entering ceiling space.

    a. Push Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.
    b. Indicator Light: LED indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.

4. Battery: Sealed, maintenance-free, nickel-cadmium type.
5. Charger: Fully automatic, solid-state, constant-current type with sealed power transfer relay.
6. All emergency fixtures shall have two lamp ballast, parallel circuit.

B. External Type: Self-contained, modular, battery-inverter unit, suitable for powering one or more fluorescent lamps, remote mounted from lighting fixture. Comply with UL 924.

1. Emergency Connection: Operate one fluorescent lamp continuously. Connect unswitched circuit to battery-inverter unit and switched circuit to fixture ballast.
2. Nightlight Connection: Operate one fluorescent lamp in a remote fixture continuously.
3. Battery: Sealed, maintenance-free, nickel-cadmium type.
4. Charger: Fully automatic, solid-state, constant-current type.
5. Housing: NEMA 250, Type 1 enclosure.
6. Test Push Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.
7. LED Indicator Light: Indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.

2.6 BALLASTS FOR HID LAMPS

A. Electromagnetic Ballast for Metal-Halide Lamps: Comply with ANSI C82.4 and UL 1029. Include the following features unless otherwise indicated:

1. Ballast Circuit: Constant-wattage autotransformer or regulating high-power-factor type.
2. Minimum Starting Temperature: Minus 22 deg F for single-lamp ballasts.
3. Rated Ambient Operating Temperature: 104 deg F.
4. Open-circuit operation that will not reduce average life.

5. Low-Noise Ballasts: Manufacturers' standard epoxy-encapsulated models designed to minimize audible fixture noise.

B. Electronic Ballast for Metal-Halide Lamps: Include the following features unless otherwise indicated:

1. Minimum Starting Temperature: Minus 20 deg F for single-lamp ballasts.
2. Rated Ambient Operating Temperature: 130 deg F.
3. Lamp end-of-life detection and shutdown circuit.
4. Sound Rating: Class A.
5. Total Harmonic Distortion Rating: Less than 20 percent.
6. Transient Voltage Protection: IEEE C62.41.1 and IEEE C62.41.2, Category A or better.
7. Lamp Current Crest Factor: 1.5 or less.
8. Power Factor: 0.90 or higher.
9. Interference: Comply with 47 CFR 18, Ch. 1, Subpart C, for limitations on electromagnetic and radio-frequency interference for nonconsumer equipment.
10. Protection: Class P thermal cutout.
11. Bi-Level Dimming Ballast: Ballast circuit and leads provide for remote control of the light output of the associated fixture between high- and low-level and off.

    a. High-Level Operation: 100 percent of rated lamp lumens.
    b. Low-Level Operation: 50 percent of rated lamp lumens.
    c. Compatibility: Certified by ballast manufacturer for use with specific bi-level control system and lamp type indicated. Certified by lamp manufacturer that ballast operating modes are free from negative effect on lamp life and color-rendering capability.

12. Continuous Dimming Ballast: Dimming range shall be from 100 to 35 percent of rated lamp lumens without flicker.

    a. Ballast Input Watts: Reduced to a maximum of 50 percent of normal at lowest dimming setting.

2.7 QUARTZ LAMP LIGHTING CONTROLLER

A. General Requirements for Controllers: Factory installed by lighting fixture manufacturer. Comply with UL 1598.

B. Standby (Quartz Restrike): Automatically switches quartz lamp on when a HID lamp in the fixture is initially energized and during the HID lamp restrike period after brief power outages.

C. Connections: Designed for a single branch -circuit connection.

D. Switching Off: Automatically switches quartz lamp off when HID lamp reaches approximately 60 percent light output.

2.8 EXIT SIGNS

A. General Requirements for Exit Signs: Comply with UL 924; for sign colors, visibility, luminance, and lettering size, comply with authorities having jurisdiction and as specified on Light Fixture Schedule.

B. Internally Lighted Signs:

1. Lamps for AC Operation: LEDs, 50,000 hours minimum rated lamp life.
2. Self-Powered Exit Signs (Battery Type): Integral automatic charger in a self-contained power pack.

    a. Battery: Sealed, maintenance-free, nickel-cadmium type.
    b. Charger: Fully automatic, solid-state type with sealed transfer relay.
    c. Operation: Relay automatically energizes lamp from battery when circuit voltage drops to 80 percent of nominal voltage or below. When normal voltage is restored, relay disconnects lamps from battery, and battery is automatically recharged and floated on charger.
    d. Test Push Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.
    e. LED Indicator Light: Indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.
    f. Remote Test: When specified in Light Fixture Schedule, switch in hand-held remote device aimed in direction of tested unit initiates coded infrared signal. Signal reception by factory-installed infrared receiver in tested unit triggers simulation of loss of its normal power supply, providing visual confirmation of either proper or failed emergency response.
    g. Integral Self-Test: Factory-installed electronic device automatically initiates code-required test of unit emergency operation at required intervals. Test failure is annunciated by an integral audible alarm and a flashing red LED.

3. Master/Remote Sign Configurations:

    a. Master Unit: Comply with requirements above for self-powered exit signs, and provide additional capacity in battery for power connection to remote unit.
    b. Remote Unit: Comply with requirements above for self-powered exit signs, except omit power supply, battery, and test features. Arrange to receive full power requirements from master unit. Connect for testing concurrently with master unit as a unified system.

2.9 EMERGENCY LIGHTING UNITS

A. General Requirements for Emergency Lighting Units: Self-contained units complying with UL 924.

1. Battery: Sealed, maintenance-free, lead-acid type.
2. Charger: Fully automatic, solid-state type with sealed transfer relay.
3. Operation: Relay automatically turns lamp on when power-supply circuit voltage drops to 80 percent of nominal voltage or below. Lamp automatically disconnects from battery when voltage approaches deep-discharge level. When normal voltage is restored, relay disconnects lamps from battery, and battery is automatically recharged and floated on charger.
4. Test Push Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.
5. LED Indicator Light: Indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.
6. Wire Guard: When specified on Fixture Schedule, Heavy-chrome-plated wire guard protects lamp heads or fixtures.
7. Integral Time-Delay Relay: Holds unit on for fixed interval of 15 minutes when power is restored after an outage.
8. Remote Test: When specified on Fixture Schedule, Switch in hand-held remote device aimed in direction of tested unit initiates coded infrared signal. Signal reception by

factory-installed infrared receiver in tested unit triggers simulation of loss of its normal power supply, providing visual confirmation of either proper or failed emergency response.

9. Integral Self-Test: When specified on Fixture Schedule, Factory-installed electronic device automatically initiates code-required test of unit emergency operation at required intervals. Test failure is annunciated by an integral audible alarm and a flashing red LED.

2.10 FLUORESCENT LAMPS

A. T8 rapid-start lamps, rated 32 W maximum, nominal length of 48 inches, 2800 initial lumens (minimum), CRI 75 (minimum), color temperature 4100 K, and average rated life 20,000 hours unless otherwise indicated.

B. T8 rapid-start lamps, rated 17 W maximum, nominal length of 24 inches, 1300 initial lumens (minimum), CRI 75 (minimum), color temperature 4100 K, and average rated life of 20,000 hours unless otherwise indicated.

C. T5 rapid-start lamps, rated 28 W maximum, nominal length of 45.2 inches, 2900 initial lumens (minimum), CRI 85 (minimum), color temperature 4100 K, and average rated life of 20,000 hours unless otherwise indicated.

D. T5HO rapid-start, high-output lamps, rated 54 W maximum, nominal length of 45.2 inches, 5000 initial lumens (minimum), CRI 85 (minimum), color temperature 4100 K, and average rated life of 20,000 hours unless otherwise indicated.

E. Compact Fluorescent Lamps: 4-Pin, CRI 80 (minimum), color temperature 4100 K, average rated life of 10,000 hours at three hours operation per start unless otherwise indicated. Suitable for use with dimming ballast where specified by Fixture Schedule.

1. 13 W: T4, double or triple tube, rated 900 initial lumens (minimum).
2. 18 W: T4, double or triple tube, rated 1200 initial lumens (minimum).
3. 26 W: T4, double or triple tube, rated 1800 initial lumens (minimum).
4. 32 W: T4, triple tube, rated 2400 initial lumens (minimum).
5. 42 W: T4, triple tube, rated 3200 initial lumens (minimum).
6. 57 W: T4, triple tube, rated 4300 initial lumens (minimum).
7. 70 W: T4, triple tube, rated 5200 initial lumens (minimum).

2.11 HID LAMPS

A. Metal-Halide Lamps: ANSI C78.43, with minimum CRI 65, and color temperature 4000 K.

B. Pulse-Start, Metal-Halide Lamps: Minimum CRI 65, and color temperature 4000 K.

C. Ceramic, Pulse-Start, Metal-Halide Lamps: Minimum CRI 80, and color temperature 4000 K.

2.12 LIGHTING FIXTURE SUPPORT COMPONENTS

A. Comply with Division 26 Section "Hangers and Supports for Electrical Systems" for channel- and angle-iron supports and nonmetallic channel and angle supports.

B. Single-Stem Hangers: 1/2-inch steel tubing with swivel ball fittings and ceiling canopy. Finish same as fixture.

C. Twin-Stem Hangers: Two, 1/2-inch steel tubes with single canopy designed to mount a single fixture. Finish same as fixture.

D. Wires: ASTM A 641/A 641M, Class 3, soft temper, zinc-coated steel, 12 gage.

E. Wires for Humid Spaces: ASTM A 580/A 580M, Composition 302 or 304, annealed stainless steel, 12 gage.

F. Rod Hangers: 3/16-inch minimum diameter, cadmium-plated, threaded steel rod.

G. Hook Hangers: Integrated assembly matched to fixture and line voltage and equipped with threaded attachment, cord, and locking-type plug.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Lighting fixtures:

1. Set level, plumb, and square with ceilings and walls unless otherwise indicated.
2. Install lamps in each luminaire.

B. Temporary Lighting: If it is necessary, and approved by Architect, to use permanent luminaires for temporary lighting, install and energize the minimum number of luminaires necessary. When construction is sufficiently complete, remove the temporary luminaires, disassemble, clean thoroughly, install new lamps, and reinstall.

C. Remote Mounting of Ballasts: Distance between the ballast and fixture shall not exceed that recommended by ballast manufacturer. Verify, with ballast manufacturers, maximum distance between ballast and luminaire.

D. Lay-in Ceiling Lighting Fixtures Supports: Use grid as a support element.

1. Install ceiling support system rods or wires, independent of the ceiling suspension devices, for each fixture. Locate not more than 6 inches from lighting fixture corners.
2. Support Clips: Fasten to lighting fixtures and to ceiling grid members at or near each fixture corner with clips that are UL listed for the application.
3. Fixtures of Sizes Less Than Ceiling Grid: Install as indicated on reflected ceiling plans or center in acoustical panel, and support fixtures independently with at least two 3/4-inch metal channels spanning and secured to ceiling tees.
4. Install at least one independent support rod or wire from structure to a tab on lighting fixture. Wire or rod shall have breaking strength of the weight of fixture at a safety factor of 3.

E. Suspended Lighting Fixture Support:

1. Pendants and Rods: Where longer than 48 inches, brace to limit swinging.
2. Stem-Mounted, Single-Unit Fixtures: Suspend with twin-stem hangers.
3. Continuous Rows: Use tubing or stem for wiring at one point and tubing or rod for suspension for each unit length of fixture chassis, including one at each end.
4. Do not use grid as support for pendant luminaires. Connect support wires or rods to building structure.

F. Connect wiring according to Division 26 Section "Electrical Power Conductors and Cables."

G. All bulbs per lamp type to be of the same lot number.

3.2 IDENTIFICATION

A. Install labels with panel and circuit numbers on concealed junction and outlet boxes. Comply with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."

3.3 FIELD QUALITY CONTROL

A. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery and retransfer to normal.

3.4 STARTUP SERVICE

A. Burn-in all lamps that require specific aging period to operate properly, prior to occupancy by Owner. Burn-in fluorescent and compact fluorescent lamps intended to be dimmed, for at least 100 hours at full voltage.

3.5 ADJUSTING

A. Occupancy Adjustments: When requested within 6 months of date of Substantial Completion, provide on-site assistance in adjusting aimable luminaires to suit actual occupied conditions. Provide up to two visits to Project during other-than-normal occupancy hours for this purpose. Some of this work may be required after dark.

1. Adjust aimable luminaires in the presence of Architect.

END OF SECTION 265100

1 Area-of-Refuge, Two-Way, Audio/Visual, Communication System (Rescue-Assistance System)

A. Submittals of any kind (e.g., shop drawings, prior-approval requests, etc.) which are involved with the "Area-of-Refuge, Two-Way, Audio/Visual, Communication System (Rescue-Assistance System)", as specified herein below and/or on the drawings, shall include adequate verbiage and/or other information, as required to indicate that all specified characteristics, features, options, etc. will be provided. In addition, the verbiage and/or other information verifying each specified characteristic, feature, option, etc. shall be highlighted and shall be labeled with a number corresponding to the respective paragraph number which is contained in these specifications, or in the respective addendum or change order, for that specified characteristic, feature, option, etc. Submittals received without all such required verbiage and/or other information, and/or without all such highlighting and labeling, will not be reviewed and will be considered informal.

B. Provide the area-of-refuge, two-way, audio/visual, communication system (rescue-assistance system; which is referenced herein as "the system") that is specified herein, intended, and required, for two-way communication between each required area (e.g., area of refuge, elevator landing, stairwell access, etc.) on the building second-floor, third-floor, fourth-floor, fifth-floor, sixth-floor, seventh-floor, eighth-floor, and ninth-floor levels, and a central control point (likely to be the Fire Command Center; verify) at the building first-floor level, such central control point being as located in coordination with the local fire department with all applicable governing authorities, with the architect, and with the owner (verify the exact location in advance), whether so indicated on the drawings or not.

C. The system shall:
    a. Include directions for the use of the system;
    b. Include instructions for summoning assistance via the two-way communication system;
    c. Include written identification of the respective location, and such identification shall be posted adjacent to the two-way communication system; and
    d. Be in strict accordance with ADA-ABA 207 and 216.

D. The system shall be in strict accordance with the requirements of all applicable codes, including the Americans with Disabilities Act (ADA-ABA; particularly ADA-ABA 207 and 216)), NFPA 101:Life Safety Code (particularly 101:7.2.12.1.1), and the International Building Code (particularly IBC 1007.8), and of all applicable governing authorities (verify all parameters and requirements in advance, and provide accordingly).

E. The system shall include all equipment, devices, signage, materials, hardware, software, interconnections, certifications, commissioning, etc. which are generally and specifically required for such a system, for "single-source responsibility".

F. Provide (completely under this division of the project), and be completely responsible for, the entire system as specified herein, as required, and as intended.

G. The system shall be complete in every respect. Provide all equipment, materials, signage, labor,

supervision, inspections, testing, calibrations, certifications, etc. which are required for each system to be a complete and functioning system, as per the requirements of all applicable codes and governing authorities, and as per the owner's needs, whether so indicated on the drawings and/or specified herein or not.

H. The system shall be installed and connected in strict accordance with installation and connection instructions, including interconnecting diagrams, from the system manufacturer. Request and obtain all required installation and connection instructions directly from such manufacturer in advance of the commencement of the system installation.

I. Provide all required system rough-ins, including outlet boxes, junction boxes, pull boxes, raceways, electrical power cables, signal cables, monitoring cables, control cables, etc. where and as required.

J. After the installation and connection of the system is complete, test, adjust, calibrate, and certify the system (all components), as required for first-class operation.

K. The specifications for the system require that code-approved, two-way, audio/visual communication be established and maintained between each required area (e.g., area of refuge, elevator landing, stairwell access, etc.) on the building second-floor, third-floor, fourth-floor, fifth-floor, sixth-floor, seventh-floor, eighth-floor, and ninth-floor level, and a central control point (likely to be the fire command center; verify in advance with the applicable governing authorities) at the building first-floor level which is located in coordination with the local fire department (verify the exact location in advance). Locate the system master control panel and the system power supply in the exact location which is respectively stipulated by the architect (subject, of course, to approval by the governing authorities) at the central control point (the system master control panel and the system power supply might not be indicated on the drawings at such location).

L. Before ordering the proposed system, furnish complete shop-drawing information, relative to all system components, to the architect for approval and obtain the resulting comments.

M. All system interconnecting wiring shall be run in raceways which are dedicated for such wiring (i.e., so as to be separate from all other wiring).

N. Provide to the owner, to the owner's complete satisfaction, system orientation and training by authorized factory representatives, at the times and on the dates which are stipulated by the architect and the owner.

O. The system shall be modified and augmented as necessary to meet all project requirements (verify in advance) and which is comprised of a master control panel, power supply/control unit, call stations; all required ADA-compliant, rescue-assistance signage (illuminated, where and as required; verify in advance and provide accordingly); and all other required appurtenances.

P. Provide a 20A, 120V, dedicated branch circuit, which emanates from the nearest "normal-and-emergency" circuit-breaker panelboard, and connect such circuit as required to feed the system for incoming power; provide the circuit breaker. Also, provide additional 20A, 120V, dedicated branch circuits, which emanate from the respectively-nearest "normal-and-emergency" circuit-breaker panelboards, for all system illuminated signage (verify all parameters and requirements in advance, and provide accordingly).

SECTION 32 74 10 - ASPHALT PAVING SEAL COAT

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes hot-mix asphalt paving.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated. Include technical data and tested physical and performance properties.

B. Job-Mix Designs: Certification, by authorities having jurisdiction, of approval of each job mix proposed for the Work.

C. Material certificates.

1.3 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer shall be registered with and approved by authorities having jurisdiction or the DOT of the state in which Project is located.

B. Regulatory Requirements: Comply with applicable standards of the State of Louisiana DOT for asphalt paving work.

C. Asphalt-Paving Publication: Comply with AI MS-22, "Construction of Hot Mix Asphalt Pavements," unless more stringent requirements are indicated.

1.4 PROJECT CONDITIONS

A. Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively damp or if the following conditions are not met:

1. Tack Coat: Minimum surface temperature of 60 deg F .
2. Asphalt Base Course: Minimum surface temperature of 40 deg F and rising at time of placement.
3. Asphalt Surface Course: Minimum surface temperature of 60 deg F at time of placement.

B. Pavement-Marking Paint: Proceed with pavement marking only on clean, dry surfaces and at a minimum ambient or surface temperature of 40 deg F for oil-based materials, 50 deg F for water-based materials, and not exceeding 95 deg F.

PART 2 - PRODUCTS

2.1 AGGREGATES

A. Coarse Aggregate: ASTM D 692, sound; angular crushed stone, crushed gravel, or properly cured, crushed blast-furnace slag.

B. Fine Aggregate: ASTM D 1073, sharp-edged natural sand or sand prepared from stone, gravel, properly cured blast-furnace slag, or combinations thereof.

2.2 ASPHALT MATERIALS

A. Asphalt Binder: AASHTO MP 1.

B. Seal Coat: The seal coat mixture shall be mixed in the following proportions based upon a 220 pound aggregate mixture. A larger mix may be made using the proper proportions.

Material Weight (lbs) Aggregate including 220 mineral filler;Asphalt emulsion 33-66 ; Water, including 22-33 water present in the (as required for emulsion and aggregate proper consistency)

C. Tack Coat: (on vertical Concrete surfaces) ASTM D 977, emulsified asphalt or ASTM D 2397, cationic emulsified asphalt, slow setting, diluted in water, of suitable grade and consistency for application.

2.3 AUXILIARY MATERIALS

A. Herbicide: Commercial chemical for weed control, registered by the EPA. Provide in granular, liquid, or wettable powder form.

B. Pavement-Marking Paint: Latex, waterborne emulsion, lead and chromate free, ready mixed, complying with FS TT-P-1952, with drying time of less than 45 minutes.

1. Color: White & Blue as indicated on drawings.

2.4 MIXES

A. Hot-Mix Asphalt: Dense, hot-laid, hot-mix asphalt plant mixes approved by authorities having jurisdiction; designed according to procedures in AI MS-2, "Mix Design Methods for Asphalt Concrete and Other Hot-Mix Types"; and complying with the following requirements:

1. Provide mixes with a history of satisfactory performance in geographical area where Project is located.
2. Base Course: Mix currently used by the Louisiana DOTD
3. Surface Course: Mix currently used by the Louisiana DOTD

PART 3 - EXECUTION

3.1 SURFACE PREPARATION

A. Proof-roll subbase using heavy, pneumatic-tired rollers to locate areas that are unstable or that require further compaction.

B. Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.

1. Sweep loose granular particles from surface of unbound-aggregate base course. Do not dislodge or disturb aggregate embedded in compacted surface of base course.

C. Herbicide Treatment: Apply herbicide according to manufacturer's recommended rates and written application instructions. Apply to dry, prepared subgrade or surface of compacted-aggregate base before applying paving materials.

3.2 HOT-MIX ASPHALT PLACING

A. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand to areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness when compacted.

1. Spread mix at minimum temperature of 250 deg F (121 deg C).
2. Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.

B. Place paving in consecutive strips not less than 10 feet (3 m) wide unless infill edge strips of a lesser width are required.

C. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

3.3 COMPACTION

A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or vibratory-plate compactors in areas inaccessible to rollers.

1. Complete compaction before mix temperature cools to 185 deg F (85 deg C).

B. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.

C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:

1. Average Density: 92 percent of reference maximum theoretical density according to ASTM D 2041, but not less than 90 percent nor greater than 96 percent.

D. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.

E. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

F. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.4 INSTALLATION TOLERANCES

A. Thickness: Compact each course to produce the thickness indicated within the following tolerances:

1. Base Course: Plus or minus 1/2 inch (13 mm).
2. Surface Course: Plus 1/4 inch (6 mm), no minus.

B. Surface Smoothness: Compact each course to produce a surface smoothness within the following tolerances as determined by using a 10-foot (3-m) straightedge applied transversely or longitudinally to paved areas:

1. Base Course: 1/4 inch (6 mm).
2. Surface Course: 1/8 inch (3 mm).

3.5 PAVEMENT MARKING

A. Do not apply pavement-marking paint until layout, colors, and placement have been verified with Architect.

B. Allow paving to age for 30 days before starting pavement marking.

C. Sweep and clean surface to eliminate loose material and dust.

D. Apply paint with mechanical equipment to produce pavement markings, of dimensions indicated, with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 mils (0.4 mm).

1. Broadcast glass spheres uniformly into wet pavement markings at a rate of 6 lb/gal. (0.72 kg/L).

END OF SECTION 32 74 10