SKAGIT COUNTY
COURTHOUSE HEARING ROOM
PROJECT

County Courthouse, 3rd Floor
205 West Kincaid
Mount Vernon, WA 98273

CONSTRUCTION SPECIFICATIONS

May 15th, 2025

SECTION 00 01 00

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TECHNICAL SPECIFICATIONS

END OF SECTION

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INFORMATION AVAILABLE TO BIDDERS

PART 1 - GENERAL

1.01 REPORTS

A. The following reports are included:

1. The Contract Work area is in current Public Defender Office in the Courthouse at 205 W Kincaid, where asbestos containing material was identified in two flooring samples. 13-page report prepared by ALL4 and dated January 3, 2025 has been included.

2. Assumption is that all carpeted rooms except the break room have carpet mastic containing chrysotile asbestos. Owner is in process of getting all rooms tested, and results will be shared.

1.02 PURPOSE

A. Reports are for information and reference purposes only and do not contain Contract Work.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION

January 3, 2025

Mr. Eric Peterson
Skagit County Facilities
1800 Continental Place
Mount Vernon, WA 98273

Re: Asbestos Containing Material and Lead Based Paint Survey – Skagit County Superior Courthouse Complex – Mount Vernon, WA

Mr. Peterson:

ALL4 LLC has performed an asbestos containing material (ACM) and lead based paint (LBP) survey at the Skagit County Superior Courthouse Complex (Subject Property) located at 605 South Third Street in Mount Vernon, Washington. Two office suites were surveyed for the presence of ACM and LBP. The Public Defender's Offices and the Prosecutor's Offices were the subject of this investigation. The survey was conducted in preparation for renovation and remodel work planned at the property.

SCOPE OF WORK

This survey evaluated client specified interior building components located in the two office suites. The intent of this survey was to comply with the requirement of a "good faith inspection" in conjunction with redevelopment work being considered at the subject property. The inspection results and information should be made available to any workers that have the potential to disturb suspected building materials determined to contain asbestos. The survey was conducted by visually evaluating the client specified building materials in all accessible areas of the offices and collecting samples from suspect ACM for laboratory analysis. The sample locations and a summary of results are presented in Tables 1 and 2. The survey was limited to 'visible and accessible' materials specified by the client as part of the potential planned renovation.

The survey was conducted on December 10, 2024 by Mr. Thomas Davis. Mr. Davis is a registered AHERA Asbestos Building Inspector (Certification #: NES-BIR-20240826-21) and a Certified Lead Inspector (Certification #: 6063).

Potential ACM samples were analyzed using Polarized Light Microscopy by EPA Method 600/R-93/116 at NVL Laboratories in Seattle, Washington. For samples containing more than one layer of material, the laboratory identified each layer individually and provided a total percentage of asbestos contained in each layer. The definition of an ACM is a material that contains greater than 1% asbestos by weight (29 CFR 1910.1001(b), WAC 296-62-07703).

Potential LBP samples were collected as paint chips from painted surfaces. The paint-chip samples were analyzed at NVL Laboratories in Seattle, Washington using EPA Method 7000B. The definition of an LBP

is a paint, or surface coating, that contains greater than 0.5% lead by weight (24 CFR 35.110; WAC 365-230-020(50)).

ASBESTOS CONTAINING MATERIAL RESULTS

Twenty-three bulk asbestos samples were collected from flooring material, wall material, and related miscellaneous building materials (mastics, etc.) specified by the client in the Public Defender's and the Prosecutor's offices. Ten samples were collected in the Public Defender's offices and thirteen samples were collected from the Prosecutor's offices. ACM sample descriptions and results are presented in Table 1.

ACM was identified at two sampled locations inside the Public Defender's Suite.

1. Sample *Floor-1* and *Floor-3* were collected from brown patterned sheet vinyl flooring located below the older carpet in the western section of the office suite. The samples contained between 34% and 58% Chrysotile asbestos in the sheet vinyl's fibrous backing material.

No ACM was identified at the Prosecutor's offices.

The original laboratory-provided asbestos analytical data report (Method 600/R-93/116) is included in Appendix A.

LEAD BASED PAINT RESULTS

Ten paint chip samples were collected from the variety of paint colors observed inside the two surveyed office suites. LBP sample descriptions and results are presented in Table 2.

LBP was not identified at the sampled locations in either office suite.

The original laboratory-provided lead-based paint analytical data report is included in Appendix B.

CONCLUSIONS

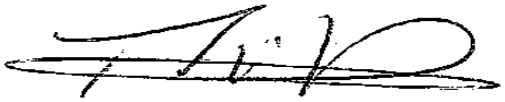
ACM was identified in two of twenty-three samples collected from the Skagit County Superior Court complex.

The off-white to beige fibrous backing material associated with brown patterned sheet vinyl located in the Public Defender's office suite was identified as ACM. If the brown patterned sheet vinyl material is encountered at any other location during remodel work, it should be assumed to be ACM or tested to confirm a negative result. Due to the sheet vinyl being hidden by carpet, the area of the ACM was not able to be calculated.

No LBP was identified at the sampled locations. It should be noted that Federal OSHA considers any amount of lead in paint as 'lead-containing' and worker protection requirements may need to be considered. If the coating is disturbed or removed in a manner that could generate airborne lead concentrations above the OSHA Action Level or Permissible Exposure Limit (PEL).

On behalf of ALL4 LLC, I appreciate the opportunity to provide Skagit County Facilities with this ACM/LBP survey for the Public Defender's Offices and the Prosecutor's Offices located at the Skagit County Superior Court complex in Mount Vernon, Washington. If you have any questions regarding the report's findings, please call me at (360) 752-9571.

Sincerely,



Thomas Davis, L.G. - **ALL4 LLC**
AHERA Building Inspector Certification #BI/R-NES-07-28-23-10
Lead Inspector Certification #6063

Table 1
ACM Sample Analytical Results
605 S. Third, Mount Vernon, WA 98273
Skagit County Facilities

Sample ID	Date	Sample Location and Description	Analytical Result (%)	Designation[(a)]
Samples listed in the order collected. Started at the public defender's offices.				
Wall Coating-1	12/10/2024	Collected from wall plaster located in the NW room	ND	Not ACM
Floor-1	**12/10/2024**	**Collected from brown patterned sheet vinyl located below carpet in the NW room. The asbestos was identified in the beige fibrous backing with mastic (Layer 2 of 3).**	**34% Chrysotile**	**ACM**
Floor-2	12/10/2024	Collected from white sheet vinyl located in the kitchen area	ND	Not ACM
Mastic-1	12/10/2024	Collected from brown brittle mastic located below the old carpet located in the kitchen	ND	Not ACM
Floor-3	**12/10/2024**	**Collected from brown patterned sheet vinyl located below carpet in the SW meeting room. The asbestos was identified in the off-white fibrous backing with gold mastic (Layer 4 of 4).**	**58% Chrysotile**	**ACM**
Wall Coating-2	12/10/2024	Collected from wall plaster located in SW meeting room	ND	Not ACM
Mastic-2	12/10/2024	Collected from brown mastic below newer blue carpet located in the waiting room behind door under fake Ficus plant	ND	Not ACM
Mastic-3	12/10/2024	Collected from brown mastic located below new blue carpet located behind door in the copy room	ND	Not ACM
Wall Coating-3	12/10/2024	Collected from fibrous wall covering (wall paper?) located low on wall behind the door in the copy room	ND	Not ACM
Wall Coating-4	12/10/2024	Collected from fibrous wall covering (wall paper?) located low on wall near the door in the NE corner of the waiting room	ND	Not ACM
Move to the prosecutor's offices.				
Floor-4	12/10/2024	Collected from the 12"x12" floor tiles and mastic located in the janitor's closet in the men's room	ND	Not ACM
Caulk-1	12/10/2024	Collected from flexible white caulking material located at the bottom of the mop sink in the janitors closet	ND	Not ACM
Wall Coating-5	12/10/2024	Collected from outer fibrous layer of drywall material with paint located in the janitors closet	ND	Not ACM
Floor-5	12/10/2024	Collected from the blue and the white 12x12 floor tiles located behind door in the copy room	ND	Not ACM

Table 1
ACM Sample Analytical Results
605 S. Third, Mount Vernon, WA
98273 Skagit County Facilities

Sample ID	Date	Sample Location and Description	Analytical Result (%)	Designation[(a)]
Cove Base-1	12/10/2024	Collected from black vinyl cove base material located in the file storage hallway	ND	Not ACM
Ceiling Tile-1	12/10/2024	Collected from drop ceiling tile material located in the copy room	ND	Not ACM
Floor-6	12/10/2024	Collected from 12x12 blue and white floor tiles located in the lunchroom area	ND	Not ACM
Floor-7	12/10/2024	Collected from the speckled white sheet vinyl located in women's room. Appears to have a lower layer of flooring	ND	Not ACM
Wall Coating-6	12/10/2024	Collected from the skim coating located at the short wall by the men's room	ND	Not ACM
Caulk-2	12/10/2024	Collected from flexible caulking material located at the edge of metal door frames in the hallway	ND	Not ACM
Mastic-4	12/10/2024	Collected from sticky brown mastic located below carpet in the file storage hallway	ND	Not ACM
Floor-8	12/10/2024	Collected from the 12x12 floor tiles located in the waiting room	ND	Not ACM
Cove Base-2	12/10/2024	Collected from black vinyl cove base material with mastic located in the waiting room	ND	Not ACM

[(a)] Asbestos containing material is defined as a building material containing >1.0% asbestos by volume

BOLD and Shaded - indicates that the detected concentration exceeded the definition of an ACM

ND - indicates analyte was Not Detected at level above reporting limit (shown in parentheses)

Table 2
LBP Sample Analytical Results
605 S. Third, Mount Vernon, WA 98273
Skagit County Facilities

Sample ID	Date	Sample Location and Description	Analytical Result (%)	Designation[(a)]
Started at the public defender's offices.				
PC-1	12/10/2024	Seafoam green color paint collected from the NW room	0.05%	Not LBP
PC-2	12/10/2024	White wall paint collected from SW meeting room	0.19%	Not LBP
PC-3	12/10/2024	Tan color paint collected from the copy room	<0.0048%	Not LBP
PC-4	12/10/2024	Light blue color paint collected from the kitchen area	<0.0073%	Not LBP
Move to the prosecutor's offices.				
PC-5	12/10/2024	Off-white color paint collected from the janitors closet in the Men's Room	<0.0055%	Not LBP
PC-6	12/10/2024	Green color paint collected from the file storage hallway	<0.0085%	Not LBP
PC-7	12/10/2024	Blue color paint collected from the office side of the hallway	<0.0052%	Not LBP
PC-7a	12/10/2024	Red color paint collected from the office side of the hallway	<0.0056%	Not LBP
PC-8	12/10/2024	Brown color paint collected from the paint located on post/beams on the edge of the office side of the hallway	<0.0051%	Not LBP
PC-9	12/10/2024	Yellow color paint collected from the waiting area outside the office suite	<0.0051%	Not LBP

[(a)] Lead based paint is defined as a surface coating containing 0.5% lead by volume or greater

APPENDIX A

Asbestos Containing Material Laboratory Analytical Report
(Method EPA 600/R-93/116)

December 17, 2024

NVL
INDUSTRIAL HYGIENE SERVICES
LABORATORY + MANAGEMENT + TRAINING

Thomas Davis
All4 LLC
228 E Champion St #101
Bellingham, WA 98225

RE: Bulk Asbestos Fiber Analysis; NVL Batch # 2422085.00

Client Project: Skagit Co. Facilities Dec 2024 Courthouse ACMLBP
Location: 004563-0003.00 205 W Kincaid St. Mount Vernon, WA 98273

Dear Mr. Davis,

Enclosed please find test results for the 23 sample(s) submitted to our laboratory for analysis on 12/11/2024.

Examination of these samples was conducted for the presence of identifiable asbestos fibers using polarized light microscopy (PLM) with dispersion staining in accordance with **U. S. EPA 40 CFR Appendix E to Subpart E of Part 763**, Interim Method for the Determination of Asbestos in Bulk Insulation Samples and **EPA 600/R-93/116**, Method for the Determination of Asbestos in Bulk Building Materials.

For samples containing more than one separable layer of materials, the report will include findings for each layer (labeled Layer 1 and Layer 2, etc. for each individual layer). The asbestos concentration in the sample is determined by calibrated visual estimation.

For those samples with asbestos concentrations between 1 and 10 percent based on visual estimation, the EPA recommends a procedure known as point counting (NESHAPS, 40 CFR Part 61). Point counting is a statistically more accurate means of quantification for samples with low concentrations of asbestos.

The detection limit for the calibrated visual estimation is <1%, 400 point counts is 0.25% and 1000 point counts is 0.1%

Samples are archived for two weeks following analysis. Samples that are not retrieved by the client are discarded after two weeks.

Thank you for using our laboratory services. Please do not hesitate to call if there is anything further we can assist you with.

Sincerely,

Munaf Khan, President/Laboratory Director

NVLAP
Testing
Lab Code: 102063-0

Enc.: Sample Results

Phone: 206 547.0100 | Fax: 206 634.1936 | Toll Free: 1.888.NVL.LABS (685.5227)
4708 Aurora Avenue North | Seattle, WA 98103-6516

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: All4 LLC
Address: 228 E Champion St #101
Bellingham, WA 98225

Attention: Mr. Thomas Davis
Project Location: 004563-0003.00 205 W Kincaid St. Mount Vernon, WA 98273

Batch #: 2422085.00
Client Project #: Skagit Co. Facilities Dec 2024 Courthouse ACMLBP
Date Received: 12/11/2024
Samples Received: 23
Samples Analyzed: 23
Method: EPA/600/R-93/116

Lab ID: 24133004 **Client Sample #: Caulk-1**

Location: 004563-0003.00 205 W Kincaid St. Mount Vernon, WA 98273

Layer 1 of 1 **Description:** White soft/elastic rubbery material with partially yellow mastic and debris

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Rubber/Binder, Mastic, Fine particles	Synthetic fibers 2%	**None Detected ND**
Debris	Cellulose 1%	

Lab ID: 24133005 **Client Sample #: Caulk-2**

Location: 004563-0003.00 205 W Kincaid St. Mount Vernon, WA 98273

Layer 1 of 4 **Description:** White soft/elastic rubbery material with paint and debris

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Rubber/Binder, Fine particles, Paint	Synthetic fibers 1%	**None Detected ND**
Debris		

Layer 2 of 4 **Description:** Gray soft material

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Binder/Filler, Fine particles	None Detected ND	**None Detected ND**

Layer 3 of 4 **Description:** White compacted powdery material with paint

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Calcareous binder, Calcareous particles, Paint	Cellulose <1%	**None Detected ND**

Layer 4 of 4 **Description:** White small amount chalky material with paper

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Gypsum/Binder, Fine particles	Cellulose 31%	**None Detected ND**

Lab ID: 24133006 **Client Sample #: Ceiling Tile-1**

Location: 004563-0003.00 205 W Kincaid St. Mount Vernon, WA 98273

Sampled by: Client
Analyzed by: Ghulam Nazari **Date:** 12/16/2024
Reviewed by: Munaf Khan **Date:** 12/17/2024

Munaf Khan, President/Laboratory Director

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and EPA 40 CFR Appendix E to Subpart E of Part 763 with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: All4 LLC
Address: 228 E Champion St #101
Bellingham, WA 98225

Attention: Mr. Thomas Davis
Project Location: 004563-0003.00 205 W Kincaid St. Mount Vernon, WA 98273

Batch #: 2422085.00
Client Project #: Skagit Co. Facilities Dec 2024 Courthouse ACMLBP
Date Received: 12/11/2024
Samples Received: 23
Samples Analyzed: 23
Method: EPA/600/R-93/116

Layer 1 of 1 **Description:** Beige compressed fibrous material with paint

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Binder/Filler, Perlite, Fine particles	Cellulose 38%	**None Detected ND**
Paint	Synthetic fibers 1%	

Lab ID: 24133007 **Client Sample #: Cove Base-1**

Location: 004563-0003.00 205 W Kincaid St. Mount Vernon, WA 98273

Layer 1 of 3 **Description:** Black rubbery material

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Vinyl/Binder, Fine particles	Cellulose <1%	**None Detected ND**

Layer 2 of 3 **Description:** Yellow soft mastic

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Mastic/Binder, Fine particles	None Detected ND	**None Detected ND**

Layer 3 of 3 **Description:** White thin compacted powdery material with paint and tan paper

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Calcareous binder, Calcareous particles	Cellulose 41%	**None Detected ND**

Lab ID: 24133008 **Client Sample #: Cove Base-2**

Location: 004563-0003.00 205 W Kincaid St. Mount Vernon, WA 98273

Layer 1 of 3 **Description:** Black rubbery material with partial yellow paint

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Rubber/Binder, Rubber, Fine particles	Cellulose <1%	**None Detected ND**
Paint		

Layer 2 of 3 **Description:** White soft mastic

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Mastic/Binder, Fine particles	None Detected ND	**None Detected ND**

Sampled by: Client
Analyzed by: Ghulam Nazari **Date:** 12/16/2024
Reviewed by: Munaf Khan **Date:** 12/17/2024

Munaf Khan, President/Laboratory Director

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and EPA 40 CFR Appendix E to Subpart E of Part 763 with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

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Batch #: 2422085.00
Client Project #: Skagit Co. Facilities Dec 2024 Courthouse ACMLBP
Date Received: 12/11/2024
Samples Received: 23
Samples Analyzed: 23
Method: EPA/600/R-93/116

Layer 3 of 3	**Description:** White thin compacted powdery material with paint and tan paper		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Calcareous binder, Calcareous particles, Fine particles	Cellulose 43%	**None Detected ND**

Lab ID: 24133009 **Client Sample #: Floor-1**

Location: 004563-0003.00 205 W Kincaid St. Mount Vernon, WA 98273

Layer 1 of 3	**Description:** Brown patterned sheet vinyl		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Vinyl/Binder, Fine grains, Fine particles	Synthetic fibers 1%	**None Detected ND**
Layer 2 of 3	**Description:** Beige fibrous backing with mastic		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Binder/Filler, Fine particles, Mastic	Cellulose 11%	**Chrysotile 34%**
Layer 3 of 3	**Description:** Gray sandy/brittle material		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Binder/Filler, Fine grains, Mineral grains	Synthetic fibers 2%	**None Detected ND**
	Fine particles	Cellulose 1%	

Lab ID: 24133010 **Client Sample #: Floor-2**

Location: 004563-0003.00 205 W Kincaid St. Mount Vernon, WA 98273

Layer 1 of 3	**Description:** Beige pattern sheet vinyl		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Vinyl/Binder, Fine grains, Fine particles	Synthetic fibers <1%	**None Detected ND**
Layer 2 of 3	**Description:** Beige fibrous backing with mastic		
	Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
	Binder/Filler, Mastic, Fine particles	Cellulose 35%	**None Detected ND**
		Glass fibers 11%	

Sampled by: Client
Analyzed by: Ghulam Nazari **Date:** 12/16/2024
Reviewed by: Munaf Khan **Date:** 12/17/2024

Munaf Khan, President/Laboratory Director

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and EPA 40 CFR Appendix E to Subpart E of Part 763 with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: All4 LLC
Address: 228 E Champion St #101
Bellingham, WA 98225

Attention: Mr. Thomas Davis
Project Location: 004563-0003.00 205 W Kincaid St. Mount Vernon, WA 98273

Batch #: 2422085.00
Client Project #: Skagit Co. Facilities Dec 2024 Courthouse ACMLBP
Date Received: 12/11/2024
Samples Received: 23
Samples Analyzed: 23
Method: EPA/600/R-93/116

Layer 3 of 3 **Description:** Tan crumbly material

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Binder/Filler, Fine grains, Fine particles	Synthetic fibers 4%	**None Detected ND**

Lab ID: 24133011 Client Sample #: Floor-3

Location: 004563-0003.00 205 W Kincaid St. Mount Vernon, WA 98273

Layer 1 of 4 **Description:** Multi-colored woven fibrous material with mastic

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Binder/Filler, Fine particles, Mastic	Synthetic fibers 63%	**None Detected ND**

Layer 2 of 4 **Description:** Black soft material with adhesive

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Vinyl/Binder, Fine particles, Fine grains	Glass fibers 9%	**None Detected ND**
Adhesive	Synthetic fibers <1%	

Layer 3 of 4 **Description:** Brown pattern sheet vinyl

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Vinyl/Binder, Fine particles, Fine grains	Synthetic fibers <1%	**None Detected ND**

Layer 4 of 4 **Description:** Off-white fibrous backing with gold mastic

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Binder/Filler, Fine particles, Mastic	Cellulose 6%	**Chrysotile 58%**

Lab ID: 24133012 Client Sample #: Floor-4

Location: 004563-0003.00 205 W Kincaid St. Mount Vernon, WA 98273

Layer 1 of 2 **Description:** Beige vinyl tile with debris at sides

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Vinyl/Binder, Fine particles, Fine grains	Synthetic fibers 3%	**None Detected ND**

Sampled by: Client
Analyzed by: Ghulam Nazari **Date:** 12/16/2024
Reviewed by: Munaf Khan **Date:** 12/17/2024

Munaf Khan, President/Laboratory Director

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and EPA 40 CFR Appendix E to Subpart E of Part 763 with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

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Project Location: 004563-0003.00 205 W Kincaid St. Mount Vernon, WA 98273

Batch #: 2422085.00
Client Project #: Skagit Co. Facilities Dec 2024 Courthouse ACMLBP
Date Received: 12/11/2024
Samples Received: 23
Samples Analyzed: 23
Method: EPA/600/R-93/116

		Debris	Cellulose	2%	
Layer 2 of 2	**Description:** Yellow soft mastic with debris				
		Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
		Mastic/Binder, Fine particles, Fine grains	Cellulose	1%	**None Detected ND**
		Debris	Synthetic fibers	1%	

Lab ID: 24133013 **Client Sample #: Floor-5**

Location: 004563-0003.00 205 W Kincaid St. Mount Vernon, WA 98273

Layer 1 of 3	**Description:** Beige vinyl tile				
		Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
		Vinyl/Binder, Fine particles, Fine grains	Synthetic fibers	1%	**None Detected ND**
Layer 2 of 3	**Description:** Gray vinyl tile				
		Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
		Vinyl/Binder, Fine grains, Fine particles	Synthetic fibers	<1%	**None Detected ND**
Layer 3 of 3	**Description:** Tan brown crumbly material with mastic				
		Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
		Binder/Filler, Fine grains, Fine particles	Cellulose	4%	**None Detected ND**
		Mastic	Synthetic fibers	3%	

Lab ID: 24133014 **Client Sample #: Floor-6**

Location: 004563-0003.00 205 W Kincaid St. Mount Vernon, WA 98273

Layer 1 of 4	**Description:** Beige vinyl tile with debris at sides and gold mastic				
		Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
		Vinyl/Binder, Fine grains, Fine particles	Synthetic fibers	2%	**None Detected ND**
		Debris, Mastic	Cellulose	1%	

Sampled by: Client
Analyzed by: Ghulam Nazari **Date:** 12/16/2024
Reviewed by: Munaf Khan **Date:** 12/17/2024

Munaf Khan, President/Laboratory Director

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and EPA 40 CFR Appendix E to Subpart E of Part 763 with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

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Bellingham, WA 98225

Attention: Mr. Thomas Davis
Project Location: 004563-0003.00 205 W Kincaid St. Mount Vernon, WA 98273

Batch #: 2422085.00
Client Project #: Skagit Co. Facilities Dec 2024 Courthouse ACMLBP
Date Received: 12/11/2024
Samples Received: 23
Samples Analyzed: 23
Method: EPA/600/R-93/116

Layer 2 of 4	**Description:** Tan brown crumbly material with mastic			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Binder/Filler, Fine grains, Fine particles	Synthetic fibers	2%	**None Detected ND**
	Mastic	Cellulose	1%	
Layer 3 of 4	**Description:** Gray vinyl tile with debris at sides			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Vinyl/Binder, Fine grains, Fine particles	Synthetic fibers	3%	**None Detected ND**
	Debris	Cellulose	2%	
Layer 4 of 4	**Description:** Tan brown crumbly material with mastic			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Binder/Filler, Fine grains, Fine particles	Cellulose	2%	**None Detected ND**
	Mastic	Synthetic fibers	2%	

Lab ID: 24133015 **Client Sample #: Floor-7**

Location: 004563-0003.00 205 W Kincaid St. Mount Vernon, WA 98273

Layer 1 of 3	**Description:** Bluish gray pattern sheet vinyl			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Vinyl/Binder, Fine grains, Fine particles	Synthetic fibers	<1%	**None Detected ND**
Layer 2 of 3	**Description:** Off-white fibrous backing with mastic			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Binder/Filler, Fine particles	Synthetic fibers	16%	**None Detected ND**
		Glass fibers	7%	
Layer 3 of 3	**Description:** Tan brown crumbly material with coating			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Binder/Filler, Fine grains, Fine particles	Synthetic fibers	7%	**None Detected ND**

Sampled by: Client
Analyzed by: Ghulam Nazari **Date:** 12/16/2024
Reviewed by: Munaf Khan **Date:** 12/17/2024

Munaf Khan, President/Laboratory Director

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and EPA 40 CFR Appendix E to Subpart E of Part 763 with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: All4 LLC
Address: 228 E Champion St #101
Bellingham, WA 98225

Attention: Mr. Thomas Davis
Project Location: 004563-0003.00 205 W Kincaid St. Mount Vernon, WA 98273

Batch #: 2422085.00
Client Project #: Skagit Co. Facilities Dec 2024 Courthouse ACMLBP
Date Received: 12/11/2024
Samples Received: 23
Samples Analyzed: 23
Method: EPA/600/R-93/116

	Debris	Cellulose	3%	

Lab ID: 24133016 **Client Sample #: Floor-8**

Location: 004563-0003.00 205 W Kincaid St. Mount Vernon, WA 98273

Layer 1 of 2 **Description:** Beige vinyl tile

	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Vinyl/Binder, Fine grains, Fine particles	Synthetic fibers	<1%	**None Detected ND**

Layer 2 of 2 **Description:** Yellow crumbly mastic with debris

	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Mastic/Binder, Fine particles, Debris	Synthetic fibers	2%	**None Detected ND**

Lab ID: 24133017 **Client Sample #: Mastic-1**

Location: 004563-0003.00 205 W Kincaid St. Mount Vernon, WA 98273

Layer 1 of 2 **Description:** Tan brittle mastic

	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Mastic/Binder, Fine grains, Fine particles	Cellulose	4%	**None Detected ND**

Layer 2 of 2 **Description:** Brown crumbly putting material with clear adhesive

	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Binder/Filler, Fine particles, Fine grains	Synthetic fibers	5%	**None Detected ND**
	Adhesive	Cellulose	2%	

Lab ID: 24133018 **Client Sample #: Mastic-2**

Location: 004563-0003.00 205 W Kincaid St. Mount Vernon, WA 98273

Layer 1 of 2 **Description:** Yellow soft mastic

	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Mastic/Binder, Fine particles, Fine grains	Cellulose	4%	**None Detected ND**
		Synthetic fibers	2%	

Sampled by: Client
Analyzed by: Ghulam Nazari **Date:** 12/16/2024
Reviewed by: Munaf Khan **Date:** 12/17/2024

Munaf Khan, President/Laboratory Director

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and EPA 40 CFR Appendix E to Subpart E of Part 763 with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: All4 LLC
Address: 228 E Champion St #101
Bellingham, WA 98225

Attention: Mr. Thomas Davis
Project Location: 004563-0003.00 205 W Kincaid St. Mount Vernon, WA 98273

Batch #: 2422085.00
Client Project #: Skagit Co. Facilities Dec 2024 Courthouse ACMLBP
Date Received: 12/11/2024
Samples Received: 23
Samples Analyzed: 23
Method: EPA/600/R-93/116

Layer 2 of 2 **Description:** Brown crumbly putting material with clear adhesive

Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
Binder/Filler, Fine particles, Fine grains	Synthetic fibers	6%	**None Detected ND**
Adhesive	Cellulose	3%	

Lab ID: 24133019 Client Sample #: Mastic-3

Location: 004563-0003.00 205 W Kincaid St. Mount Vernon, WA 98273

Layer 1 of 2 **Description:** Yellow soft mastic

Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
Mastic/Binder, Fine particles, Fine grains	Cellulose	5%	**None Detected ND**
	Synthetic fibers	2%	

Layer 2 of 2 **Description:** Brown crumbly putting material with clear adhesive

Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
Binder/Filler, Fine particles, Fine grains	Synthetic fibers	4%	**None Detected ND**
Adhesive	Cellulose	2%	

Lab ID: 24133020 Client Sample #: Mastic-4

Location: 004563-0003.00 205 W Kincaid St. Mount Vernon, WA 98273

Layer 1 of 1 **Description:** Light brown soft mastic with debris and paint

Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
Mastic/Binder, Fine particles, Debris	Synthetic fibers	4%	**None Detected ND**
Paint			

Lab ID: 24133021 Client Sample #: Wall Coatings-1

Location: 004563-0003.00 205 W Kincaid St. Mount Vernon, WA 98273

Sampled by: Client
Analyzed by: Ghulam Nazari **Date:** 12/16/2024
Reviewed by: Munaf Khan **Date:** 12/17/2024

Munaf Khan, President/Laboratory Director

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and EPA 40 CFR Appendix E to Subpart E of Part 763 with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: All4 LLC
Address: 228 E Champion St #101
Bellingham, WA 98225

Attention: Mr. Thomas Davis
Project Location: 004563-0003.00 205 W Kincaid St. Mount Vernon, WA 98273

Batch #: 2422085.00
Client Project #: Skagit Co. Facilities Dec 2024 Courthouse ACMLBP
Date Received: 12/11/2024
Samples Received: 23
Samples Analyzed: 23
Method: EPA/600/R-93/116

Layer 1 of 1 **Description:** Gray sandy/brittle material with layered paint

Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
Binder/Filler, Fine grains, Mineral grains	Cellulose	3%	**None Detected ND**
Fine particles, Paint			

Lab ID: 24133022 **Client Sample #: Wall Coatings-2**

Location: 004563-0003.00 205 W Kincaid St. Mount Vernon, WA 98273

Layer 1 of 1 **Description:** Gray sandy material with layered paint

Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
Binder/Filler, Sand, Fine grains	Cellulose	4%	**None Detected ND**
Mineral grains, Paint			

Lab ID: 24133023 **Client Sample #: Wall Coatings-3**

Location: 004563-0003.00 205 W Kincaid St. Mount Vernon, WA 98273

Layer 1 of 2 **Description:** White fibrous material with paint and foam

Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
Binder/Filler, Synthetic foam, Fine particles	Synthetic fibers	28%	**None Detected ND**
Paint	Cellulose	3%	

Layer 2 of 2 **Description:** White crumbly material with yellow brittle mastic

Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
Binder/Filler, Perlite, Fine grains	Synthetic fibers	2%	**None Detected ND**
Fine particles, Mastic			

Lab ID: 24133024 **Client Sample #: Wall Coatings-4**

Location: 004563-0003.00 205 W Kincaid St. Mount Vernon, WA 98273

Sampled by: Client
Analyzed by: Ghulam Nazari **Date:** 12/16/2024
Reviewed by: Munaf Khan **Date:** 12/17/2024

Munaf Khan, President/Laboratory Director

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and EPA 40 CFR Appendix E to Subpart E of Part 763 with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: All4 LLC
Address: 228 E Champion St #101
Bellingham, WA 98225

Attention: Mr. Thomas Davis
Project Location: 004563-0003.00 205 W Kincaid St. Mount Vernon, WA 98273

Batch #: 2422085.00
Client Project #: Skagit Co. Facilities Dec 2024 Courthouse ACMLBP
Date Received: 12/11/2024
Samples Received: 23
Samples Analyzed: 23
Method: EPA/600/R-93/116

Layer 1 of 2 **Description:** White fibrous with foamy material and paint

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Binder/Filler, Synthetic foam, Fine particles	Synthetic fibers 27%	**None Detected ND**
Paint	Cellulose 2%	

Layer 2 of 2 **Description:** White compacted powdery material with paint

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Calcareous binder, Calcareous particles, Fine grains	Synthetic fibers 2%	**None Detected ND**
Fine particles, Paint		

Lab ID: 24133025 **Client Sample #: Wall Coatings-5**

Location: 004563-0003.00 205 W Kincaid St. Mount Vernon, WA 98273

Layer 1 of 1 **Description:** White thin compacted powdery material with paint and tan paper

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Calcareous binder, Calcareous particles, Fine grains	Cellulose 36%	**None Detected ND**
Fine particles, Paint		

Lab ID: 24133026 **Client Sample #: Wall Coatings-6**

Location: 004563-0003.00 205 W Kincaid St. Mount Vernon, WA 98273

Layer 1 of 1 **Description:** White compacted powdery material with paint

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Calcareous binder, Calcareous particles, Fine grains	Cellulose <1%	**None Detected ND**
Paint		

Sampled by: Client
Analyzed by: Ghulam Nazari **Date:** 12/16/2024
Reviewed by: Munaf Khan **Date:** 12/17/2024

Munaf Khan, President/Laboratory Director

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and EPA 40 CFR Appendix E to Subpart E of Part 763 with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

ASB-02

ASBESTOS LABORATORY SERVICES

Company	All4 LLC	**NVL Batch Number**	**2422085.00**
Address	228 E Champion St #101 Bellingham, WA 98225	**TAT** 5 Days **AH** No **Rush TAT**	
Project Manager	Mr. Thomas Davis	**Due Date** 12/18/2024 **Time** 3:30 PM	
Phone	(360) 752-9571	**Email**	tdavis@all4inc.com
Cell	(253) 906-6648	**Fax**	(360) 752-9573

Project Name/Number: Skagit Co. Facilities Dec 2024 Courthouse AOML RR **Project Location:** 004563-0003.00 205 W Kincaid St. Mount Vernon, WA 98273

Subcategory PLM Bulk

Item Code ASB-02 EPA 600/R-93-116 Asbestos by PLM <bulk>

Total Number of Samples 23 Rush Samples

	Lab ID	Sample ID	Description	A/R
1	24133004	Caulk-1		A
2	24133005	Caulk-2		A
3	24133006	Ceiling Tile-1		A
4	24133007	Cove Base-1		A
5	24133008	Cove Base-2		A
6	24133009	Floor-1		A
7	24133010	Floor-2		A
8	24133011	Floor-3		A
9	24133012	Floor-4		A
10	24133013	Floor-5		A
11	24133014	Floor-6		A
12	24133015	Floor-7		A
13	24133016	Floor-8		A
14	24133017	Mastic-1		A
15	24133018	Mastic-2		A
16	24133019	Mastic-3		A
17	24133020	Mastic-4		A
18	24133021	Wall Coatings-1		A

	Print Name	Signature	Company	Date	Time
Sampled by	Client				
Relinquished by	UPS				

Office Use Only	Print Name	Signature	Company	Date	Time
Received by	Kelly AuVu		NVL	12/11/24	1530
Analyzed by	Ghulam Nazari		NVL	12/16/24	
Results Called by					
☐ **Faxed** ☐ **Emailed**					

Special Instructions:

Date: 12/11/2024
Time: 4:58 PM
Entered By: Fatima Khan

ASBESTOS LABORATORY SERVICES

Company	All4 LLC	**NVL Batch Number**	**2422085.00**
Address	228 E Champion St #101 Bellingham, WA 98225	**TAT** 5 Days	**AH** No
		Rush TAT	
Project Manager	Mr. Thomas Davis	**Due Date** 12/18/2024	**Time** 3:30 PM
Phone	(360) 752-9571	**Email**	tdavis@all4inc.com
Cell	(253) 906-6648	**Fax**	(360) 752-9573

Project Name/Number: Skagit Co. Facilities Dec 2024 Courthouse ACM/LBP **Project Location:** 004563-0003.00 205 W Kincaid St. Mount Vernon, WA 98273

Subcategory PLM Bulk

Item Code ASB-02 EPA 600/R-93-116 Asbestos by PLM <bulk>

Total Number of Samples 23 Rush Samples

	Lab ID	Sample ID	Description	A/R
19	24133022	Wall Coatings-2		A
20	24133023	Wall Coatings-3		A
21	24133024	Wall Coatings-4		A
22	24133025	Wall Coatings-5		A
23	24133026	Wall Coatings-6		A

	Print Name	Signature	Company	Date	Time
Sampled by	Client				
Relinquished by	UPS				

Office Use Only	Print Name	Signature	Company	Date	Time
Received by	Kelly AuVu		NVL	12/11/24	1530
Analyzed by	Ghulam Nazari		NVL	12/16/24	
Results Called by					
☐ **Faxed** ☐ **Emailed**					

Special Instructions:

Date: 12/11/2024
Time: 4:58 PM
Entered By: Fatima Khan

2422085

NVL
INDUSTRIAL HYGIENE SERVICES
LABORATORY + MANAGEMENT + TRAINING

ASBESTOS CHAIN OF CUSTODY

Turnaround Time
- ☐ 1 Hour
- ☐ 2 Hours
- ☐ 4 Hours
- ☐ 24 Hours
- ☐ 2 Days
- ☐ 3 Days
- ☐ 4 Days
- ☒ 5 Days
- ☐ 10 Days

Please call for TAT less than 24 Hours

Company ALL4 Inc.
Address 228 East Champion Street, Suite #101
Bellingham, WA 98225
Phone (360) 752-9571

Project Manager Thom Davis
Cell (253) 906 - 6648
Email tdavis@all4inc.com
Fax ( ) -

Project Name: Skagit Co. Facilities: Dec. 2024 Courthouse ACM/LBP
Project Number: 004563-0003.00
Project Location: ☒ 205 W Kincaid St, Mount Vernon, WA 98273

- ☐ PCM Air (NIOSH 7400)
- ☒ PLM (EPA 600/R-93-116)
- ☐ PLM Gravimetry (600/R-93-116)
- ☐ Asbestos Friable/Non-Friable (EPA 600/R-93/116)
- ☐ TEM (NIOSH 7402)
- ☐ EPA 400 Points (600/R-93-116)
- ☐ Asbestos in Vermiculite (EPA 600/R-04/004)
- ☐ TEM (AHERA)
- ☐ Other
- ☐ TEM (EPA Level II Modified)
- ☐ EPA 1000Points (600/R-93-116)
- ☐ Asbestos in Sediment (EPA 1900 Points)

Reporting Instructions
☐ Call ( ) - ☐ Fax ( ) - ☒ Email

Total Number of Samples ____

	Sample ID	Description	A/R
1	Caulk-1		
2	Caulk-2		
3	Ceiling Tile-1		
4	Cove Base-1		
5	Cove base-2		
6	Floor-1		
7	Floor-2		
8	Floor-3		
9	Floor-4		
10	Floor-5		
11	Floor-6		
12	Floor-7		
13	Floor-8		
14	Mastic-1		
15	Mastic-2		

	Print Name	Signature	Company	Date	Time
Sampled by	Thom Davis		ALL4	~~Nov. 12, 2024~~ 12-10-24	1555
Relinquish by					

P. 1 of 2

Office Use Only

	Print Name	Signature	Company	Date	Time
Received by	Ken Allen			12/11/24	~~1515~~ 1530 LPS
Analyzed by					
Called by					
Faxed/Email by					

2422085

NVL
INDUSTRIAL HYGIENE SERVICES
LABORATORY + MANAGEMENT + TRAINING

ASBESTOS CHAIN OF CUSTODY

Turn Around Time
- ☐ 1 Hour
- ☐ 2 Hours
- ☐ 4 Hours
- ☐ 24 Hours
- ☐ 2 Days
- ☐ 3 Days
- ☐ 4 Days
- ☒ 5 Days
- ☐ 10 Days

Please call for TAT less than 24 Hours

Company ALL4 Inc.
Address 228 East Champion Street, Suite #101
Bellingham, WA 98225
Phone (360) 752-9571

Project Manager Thom Davis
Cell (253) 906 - 6648
Email tdavis@all4inc.com
Fax ( ) -

Project Name: Skagit Co. Facilities: Dec. 2024 Courthouse ACM/LBP
Project Number: 004563-0003.00
Project Location: 205 W Kincaid St, Mount Vernon, WA 98273

- ☐ PCM Air (NIOSH 7400)
- ☒ PLM (EPA 600/R-93-116)
- ☐ PLM Gravimetry (600/R-93-116)
- ☐ Asbestos Friable/Non-Friable (EPA 600/R-93/116)
- ☐ TEM (NIOSH 7402)
- ☐ EPA 400 Points (600/R-93-116)
- ☐ Asbestos in Vermiculite (EPA 600/R-04/004)
- ☐ TEM (AHERA)
- ☐ Other
- ☐ TEM (EPA Level II Modified)
- ☐ EPA 1000Points (600/R-93-116)
- ☐ Asbestos in Sediment (EPA 1900 Points)

Reporting Instructions
☐ Call ( ) - ☐ Fax ( ) - ☒ Email

Total Number of Samples _____

	Sample ID	Description	A/R
1	Mastic-3		
2	Mastic-4		
3	Wall Coating-1		
4	Wall Coating-2		
5	Wall Coating-3		
6	Wall Coating-4		
7	Wall Coating-5		
8	Wall Coating-6		
9			
10			
11			
12			
13			
14			
15			

	Print Name	Signature	Company	Date	Time
Sampled by	Thom Davis		ALL4	12-10-24 ~~Nov. 12, 2024~~	1555
Relinquish by					

P. 2 of 2

Office Use Only

	Print Name	Signature	Company	Date	Time
Received by	Kelsten			12/11/24	1530
Analyzed by					
Called by					
Faxed/Email by					

APPENDIX B

Lead Based Paint Laboratory Analytical Report
(Method EPA 7000B)

December 16, 2024

Thomas Davis
All4 LLC
228 E Champion St #101
Bellingham, WA 98225

NVL Batch # 2422086.00

RE: Total Metal Analysis
Method: EPA 7000B Lead by FAA <paint>
Item Code: FAA-02

Client Project: Skagit Co. Facilities Dec 2024 Courthouse ACMLBP
Location: 004563-0003.00 4205 W Kincaid St. Mount Vernon, WA 98273

Dear Mr. Davis,

NVL Labs received 10 sample(s) for the said project on 12/11/2024. Preparation of these samples was conducted following protocol outlined in EPA 3051/7000B , unless stated otherwise. Analysis of these samples was performed using analytical instruments in accordance with EPA 7000B Lead by FAA <paint>. The results are usually expressed in mg/Kg and percentage (%). Test results are not blank corrected.

For recent regulation updates pertaining to current regulatory levels or permissible exposure levels, please call your local regulatory agencies for more detail.

At NVL Labs all analyses are performed under strict guidelines of the Quality Assurance Program. If samples were collected by the customer, then the reported test results apply only to the samples as received by NVL Labs. This report is considered highly confidential and will not be released without your approval. Samples are archived after two weeks from the analysis date. Please feel free to contact us at 206-547-0100, in case you have any questions or concerns.

Sincerely,

Shalini Patel, Manager Metals/Org Laboratory

Enc.: Sample results

Analysis Report

Total Lead (Pb)

Client: All4 LLC

Address: 228 E Champion St #101
Bellingham, WA 98225

Attention: **Mr. Thomas Davis**

Project Location: 004563-0003.00 4205 W Kincaid St. Mount Vernon, WA 98273

Batch #: 2422086.00

Matrix: Paint

Method: EPA 3051/7000B

Client Project #: Skagit Co. Facilities Dec 2024 Courthouse

Date Received: 12/11/2024

Samples Received: 10

Samples Analyzed: 10

Lab ID	Client Sample #	Sample Weight (g)	RL in mg/Kg	Results in mg/Kg	Results in percent
24133027	PC-1	0.1939	52	500	0.050
24133028	PC-2	0.2066	48	1900	0.19
24133029	PC-3	0.2086	48	< 48	<0.0048
24133030	PC-4	0.1376	73	< 73	<0.0073
24133031	PC-5	0.1807	55	< 55	<0.0055
24133032	PC-6	0.1178	85	< 85	<0.0085
24133033	PC-7	0.1937	52	< 52	<0.0052
24133034	PC-7a	0.1801	56	< 56	<0.0056
24133035	PC-8	0.1967	51	< 51	<0.0051
24133036	PC-9	0.1963	51	< 51	<0.0051

Sampled by: Client

Analyzed by: Yasuyuki Hida

Reviewed by: Shalini Patel

Date Analyzed: 12/16/2024

Date Issued: 12/16/2024

Shalini Patel, Manager Metals/Org Laboratory

mg/ Kg =Milligrams per kilogram

Percent = Milligrams per kilogram / 10000

RL = Reporting Limit

'<' = Below the reporting Limit

Note : Method QC results are acceptable unless stated otherwise.
Unless otherwise indicated, the condition of all samples was acceptable at time of receipt.

Bench Run No: 2024-1216-01

FAA-02

LEAD LABORATORY SERVICES

Company	All4 LLC	**NVL Batch Number**	**2422086.00**
Address	228 E Champion St #101 Bellingham, WA 98225	**TAT** 5 Days **AH** No **Rush TAT**	
Project Manager	Mr. Thomas Davis	**Due Date** 12/18/2024 **Time** 3:30 PM	
Phone	(360) 752-9571	**Email** tdavis@all4inc.com	
Cell	(253) 906-6648	**Fax** (360) 752-9573	

Project Name/Number:	Skagit Co. Facilities Dec 2024 Courthouse ACM LBP	**Project Location:**	004563-0003.00 4205 W Kincaid St. Mount Vernon, WA 98273

Subcategory Flame AA (FAA)

Item Code FAA-02 EPA 7000B Lead by FAA <paint>

Total Number of Samples 10 Rush Samples

	Lab ID	Sample ID	Description	A/R
1	24133027	PC-1		A
2	24133028	PC-2		A
3	24133029	PC-3		A
4	24133030	PC-4		A
5	24133031	PC-5		A
6	24133032	PC-6		A
7	24133033	PC-7		A
8	24133034	PC-7a		A
9	24133035	PC-8		A
10	24133036	PC-9		A

	Print Name	Signature	Company	Date	Time
Sampled by	Client				
Relinquished by	UPS				

Office Use Only	Print Name	Signature	Company	Date	Time
Received by	Kelly AuVu		NVL	12/11/24	1530
Analyzed by	Yasuyuki Hida		NVL	12/16/24	
Results Called by					
☐ **Faxed** ☐ **Emailed**					

Special Instructions:

Date: 12/11/2024
Time: 5:02 PM
Entered By: Fatima Khan

2422086

NVL
INDUSTRIAL HYGIENE SERVICES
LABORATORY + MANAGEMENT + TRAINING

METALS CHAIN OF CUSTODY

- ☐ 2 Hour ☐ 4 Hours ☐ 24 Hours
- ☐ 2 Days ☐ 3 Days ☐ 4 Days
- ☒ 5 Days ☐ 6-10 Days
- Please call for TAT less than 24 Hours

Company: All4 Inc.
Address: 228 E Champion #101, Bellingham, WA 98225
Phone: (360) 752-9571

Project Manager: Thom Davis
Cell: (253) 906 - 6648
Email: tdavis@whatcom-es.com
Fax: ( ) -

Project Name	Project Number	Project Location
Skagit Co. Facilities: Dec. 2024 Courthouse ACM/LBP	Project Number: 004563-0003.00	4205 W Kincaid St, Mount Vernon, WA 98273

- ☒ Total Metals
- ☐ TCLP
- ☒ FAA (ppm
- ☐ ICP (PPM
- ☐ GFAA (ppb)
- ☐ CVAA (ppb)
- ☐ Air Filter
- ☐ Paint Chips (cm)
- ☐ Drinking Water
- ☒ Paint Chips (%)
- ☐ Dust Wipes
- ☐ Waste Water
- ☐ Soil
- ☐ Other

RCRA 8
- ☐ Barium
- ☐ Arsenic
- ☐ Selenium
- ☐ Chromium
- ☐ Mercury
- ☐ Cadmium
- ☐ Silver
- ☒ Lead

RCRA 11
- ☐ Copper
- ☐ Zinc
- ☐ Other

Reporting Instructions
☐ Call ( ) - ☐ Fax ( ) - ☐ Email

Total Number of Samples

	Sample ID	Description	A/R
1	PC-1		
2	PC-2		
3	PC-3		
4	PC-4		
5	PC-5		
6	PC-6		
7	PC-7		
8	PC-7a		
9	PC-8		
10	PC-9		
11			
12			
13			
14			
15			

	Print Name	Signature	Company	Date	Time
Sampled by	Thom Davis		All4 Inc.	December 10, 2024	1555
Relinquish by					

P. 1 61

Office Use Only

	Print Name	Signature	Company	Date	Time
Received by	[illegible]			12/11/24	1530 PS
Analyzed by					
Called by					
Faxed/Email by					

SECTION 02210

Asbestos & Hazardous Materials Abatement

Part 1 – General

1.01 DESCRIPTION

A. Work Included – Provide asbestos removal work as specified in this document in a safe and proper manner.

B. Scope –Identified asbestos containing materials mastic materials were tested and found to contain Chrysotile asbestos in two rooms leading to assumption ACM is under all carpeting.

C. Asbestos containing mastic shall be completely removed and disposed of in project area. In no case shall any disturbance of flooring materials be performed by anyone without proper training and certification for handling asbestos containing materials.

The work includes total, complete, and safe removal and disposal of all identified asbestos listed in the attached Asbestos and Hazardous Materials Survey.

D. All asbestos abatement activities shall take place between the hours of 5:00 PM and 6:00 AM.

E. Any mastic removal solvents used shall be of the low-odor/no-odor type

F. All removal and disposal of asbestos containing material including proper regulatory agency notification shall be performed by a Licensed Asbestos Abatement Contractor in complete and strict compliance with all applicable regulations including but not necessarily limited to the latest revisions of:

1) EPA 40 CFR part 763, Asbestos-Containing Material in Schools
2) EPA 40 CFR part 61, National Emissions Standards for Hazardous Air Pollutants
3) WAC 296-62-077 through 296-62-07751
4) WAC 296-65-001 through 296-65-050
5) WAC 296-155
6) All current regulations of Washington State Department of Ecology
7) All current regulations of Washington State Department of Transportation
8) Northwest Clean Air Agency (NWCAA) Section 570, Removal and Encapsulation of Asbestos-Containing Material
9) All regulations of the landfill where hazardous materials are deposited

G. Receipts for proper disposal of asbestos containing materials shall be provided to the building owner at the completion of the work.

Part 2 Products Not Used

Part 3 Execution Not Used

END OF SECTION

SECTION 02 22 00

SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 REFERENCES

A. American National Standards Institute (ANSI).
   1. A10.6 "American National Standard Safety Requirements for Demolition."

1.2 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with applicable rules, codes, regulations, and safety orders of all public agencies having jurisdiction.

1.2 SITE CONDITIONS

A. This is a secured building and all personnel, tools and equipment will be subject to search. Access routes of materials, personnel, tools, etc will need to be coordinated with Owners Rep. at a Pre-Construction meeting.

B. The overall building, but not this work area, will be occupied during demolition and construction. Contractor will take all precautions to ensure the site is safe and clean.

C. Provide dirt and dust barriers, debris containers, removal routes, and disposal to protect areas utilized by Owner.

D. Where existing unidentified utilities, structures or services are discovered submit information for resolution prior to proceeding.

E. See Site Plan for contractor parking, project access, staging areas and other safety and access requirements.

1.4 RELATED SECTIONS

A. Section 00 31 00 - Information Available to Bidders; Limited Good Faith Asbestos and Lead Inspection.

1.5 WORK INCLUDED

A. Removal and disposal of existing walls, doors, plaster, drywall, flooring, electrical, light fixtures, interior relights, and other items as noted on the Drawings.

B. Removal of existing hazardous materials as noted within Section 00 31 00 - Information Available to Bidders.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Carefully remove items marked or designated for salvage or reuse and store as directed by Owner.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas affected by Work of this Section and verify that necessary shoring and other required protection is in place.

3.2 PREPARATION

A. Provide protection as necessary and in accordance with applicable regulations.

B. Verify existing utility services to remain in operation, cooperate with Owner in scheduling Work so there will be a minimum of interference. Prearrange utility shutdown or temporary interruption with Owners Project Manager prior to Work commencement.

C. Notify utilities having service connections within the building in a timely manner.

D. Contact municipal and regulatory agencies affected by and interested in the Work. Secure necessary information and permits required, and make detailed arrangements for smooth safe prosecution of the Work.

3.3 DEMOLITION

A. Perform Work in accordance with ANSI A10.6, and regulatory requirements.

B. Contractor shall be solely responsible for safety, adequacy and satisfactory performance of methods and means employed.

C. Sequence of removal of demolished items so as to minimize impact on adjacent materials and utilities.

D. Unless noted for salvage and/or reuse, legally dispose of demolition materials off site. Location of disposal site and length of haul are the Contractor's responsibility.

E. Carefully remove items to be retained by Owner for reuse and place in an area that is secure and safe from damage.

F. Remove and dispose of all items marked for demolition as shown on Drawings.

G. At beginning of construction, take appropriate measures to minimize construction dust and dirt from entering the existing HVAC system. At conclusion of construction, contractor shall replace all existing and new HVAC equipment filters with new filters.

3.4 CUTTING AND PATCHING

A. General: Provide requirements and be responsible for all cutting, fitting, and patching required to complete the Work, or to:

Make it so several parts fit together and provide for installation of ill-timed Work.
Uncover portions of Work to provide for installation of ill-timed Work.
Remove and replace defective Work.
Remove and replace Work not conforming to Contract Document requirements.
Remove samples of installed Work as specified for testing.
Provide routine penetrations on non-structural surfaces for installation of piping.

B. Project Conditions:
1. Inspect existing conditions including elements subject to damage or movement during cutting and patching.
2. After uncovering Work, inspect conditions affecting installation of products or performance of Work.
3. Report unsatisfactory or questionable conditions to Owner in writing. Do not proceed with Work until Owner provides further instructions.

C. Materials:
1. Those required for original installation.
2. For any change in materials, submit request for substitution to Owner.

D. Preparation:
1. Provide adequate temporary support as required to assure structural value or integrity of the affected portion of the Work.
2. Provide devices and methods to protect other portions of the Project which may be exposed by uncovering Work.

E. Performance:
1. Execute cutting and demolition by methods which will avoid damage to other areas, and will provide proper surfaces to receive patching and finishing.
1. Execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances, and finishes.
2. Restore Work which has been cut or removed; install new products to provide completed Work in accordance with Contract Document requirements.
4. Refinish entire surfaces as required to provide even finish to match adjacent finishes.
5. Cutting: At limits of demolition Work required or specified, provide neat, orderly, and clean joints, lines, and edges of surfaces, whether for junctions with new materials or surfaces or whether to be left as existing.
6. Patching: Repair or replace any surfaces selectively removed to access the Work and any surfaces to remain which become exposed, defaced, or damaged as a result of demolition Work at no increase in Contract Sum. Repair surfaces to existing level of finish to nearest change in plane.
7. Provide cutting of gypsum board as required for access and performance of Work. Review areas to be cut, for each type of unit, at pre-construction conference.

8. Avoid cutting into walls that are finished with wall covering unless absolutely necessary for completion of Work.
9. Patch and otherwise prepare gypsum board surfaces for painting where existing wall coverings are removed. Provide surfaces true, even, free of humps and depressions.
10. Saw cut or core drill concrete at foundations or inside building envelope as required.

F. At limits of demolition Work shown or specified, provide neat, orderly and clean joints, lines, and edges of surfaces, whether for junctions with new materials or surfaces or whether to be left as existing. Where methods or controls may not permit intended joining, submit conditions and alternatives, and obtain resolution prior to commencing Work.

3.5 PATCHING

A. Repair or replace any surfaces to remain which become exposed, defaced, or damaged as a result of demolition work at no increase in Contract Sum. Repair and repaint surfaces to nearest change in plane.

3.6 CLEANING

A. Provide cleaning during demolition as necessary and to the acceptance of the Owner.

B. Leave all portions of demolition area in a level, safe, and sanitary condition acceptable to public authorities and the Owner.

3.7 SCHEDULE

A. Items to be removed from the Site by Contractor: As shown.

B. Items to remain in place and protected for reuse: As shown.

END OF SECTION

SECTION 06 05 73

FIRE RETARDANT WOOD TREATMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Fire-retardant treatment of dimensional lumber and plywood as indicated on the drawings.

1.2 RELATED SECTIONS

A. Section 06 10 00 - Rough Carpentry.

1.3 REFERENCES

A. ASTM International (ASTM):

1. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

2. ASTM A653 / A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron

Alloy-Coated (Galvannealed) by the Hot-Dip Process.

3. ASTM D3201 - Standard Test Method for Hygroscopic Properties of Fire-Retardant Wood and Wood-

Base Products.

4. ASTM D5516 - Standard Test Method for Evaluating the Flexural Properties of Fire-Retardant Treated

Softwood Plywood Exposed to Elevated Temperatures.

5. ASTM D5664 - Standard Test Method for Evaluating the Effects of Fire-Retardant Treatments and

Elevated Temperatures on Strength Properties of Fire-Retardant Treated Lumber.

6. ASTM D6305 - Standard Practice for Calculating Bending Strength Design Adjustment Factors for Fire retardant Treated Plywood Sheathing.

7. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

B. American Wood-Protection Association (AWPA):

1. AWPA E12 - Standard Method of Determining the Corrosion of Metal in Contact with Wood.

2. AWPA M4 - Standard for the Care of Preservative Treated Wood Products.

3. AWPA P5 - Standard for Waterborne Preservatives.

4. AWPA P17 - Fire Retardant Formulations.

5. AWPA P50 - Standard for Fire Retardant FR-2 (FR-2).

6. AWPA T1 - Use Category System: Processing and Treatment Standard.

7. AWPA U1 - Use Category System: User Specification for Treated Wood.

C. GREENGUARD Environmental Institute: GREENGUARD Green Certified Products.

D. National Fire Protection Association (NFPA) 255 Method of Test of Surface Burning Characteristics of Building Materials.

E. ESR 2645 D-Blaze Fire Retardant Treatment; International Code Council -Evaluation Service, ICC-ES.

F. Underwriters Laboratories, Inc. (UL) 723 Tests for Surface Burning Characteristics of Building Materials.

1.4 SUBMITTALS

A. Product Data: Manufacturer's instructions for use, including requirements for storage, cutting, and finishing.

B. Preservative Treatment Certification: Treating plant's certification of compliance with specified standards, process employed, and preservative retention values.

C. Fire-Retardant Treatment Certification: Treating plant's certification of compliance with specified requirements.

1.5 QUALITY ASSURANCE

A. Wood Treatment Plant Qualifications: Wood treatment plant experienced in performing work of this section.

B. Source Quality: Obtain treated wood products from a single approved source.

C. Preservative Treatment: Mark each piece of plywood and lumber to show compliance with specified standards.

D. Fire-Retardant Treatment: Mark each piece of plywood and lumber to show compliance with specified standards.

E. Regulatory Requirements: Provide fire retardant treatment which complies with the following regulatory requirements:

1. International Building Code (IBC).

2. International Residential Code (IRC).

3. International Code Council Evaluation Service ICC-ES ESR 2645.

F. Kiln Dry after Treatment (KDAT): Provide kiln dry material as indicated or required.

1. Kiln dry after treatment to 19 percent maximum moisture content for lumber and 18 percent for plywood in accordance with AWPA T1, Section 7 - Drying After Treatment (lumber) and AWPA T1,

1.6 DELIVERY, STORAGE, AND HANDLING

A. Exposure: Prevent wood products against moisture and dimensional changes, in accordance with instructions from treating plant.

1.7 WARRANTY

A. Manufacturer's Warranty: Provide manufacturer's standard 50-year limited warranty for pressure-treated FRTW wood.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Viance - Treated Wood Solutions, which is located at: 8001 IBM Dr. Building 403; Charlotte, NC 28262; Toll Free Tel: 800-421-8661; Tel: 704-522-0825; Fax: 704-527-8232; Email: request info (info@viance.net); Web: www.treatedwood.com

B. Requests for substitutions will be considered when proposed.

SECTION 06 10 00

ROUGH CARPENTRY

PART 1 - GENERAL

1.0 RELATED SECTIONS

A. SECTION 06 05 73 FIRE RETARDENT WOOD

1.02 SECTION INCLUDES

A. Rough Carpentry. Also see Section 06 05 73 Fire Retardent Wood

1.03 REFERENCES

A. All reference shall be the latest adopted edition, or as noted.

B. AWPA C2 - Lumber, Timbers, Bridge Ties and Mine Ties--Preservative Treatment by Pressure Processes; American Wood-Preservers' Association

C. AWPA C20 - Structural Lumber--Fire Retardant Treatment by Pressure Processes; American Wood-Preservers' Association

D. PS 20 - American Softwood Lumber Standard.

E. IEBC – International Building Code

F. ICC – International Code Council

G. WCLB (GR) - Standard Grading and Dressing Rules No. 17; West Coast Lumber Inspection Bureau

H. WWPA G-5 - Western Lumber Grading Rules; Western Wood Products Association

1.04 QUALITY ASSURANCE

A. Lumber: Comply with PS 20 and approved grading rules and inspection agencies.
   1. Acceptable Lumber Inspection Agencies: WCLB and WWPA.

1.05 DELIVERY, STORAGE & HANDLING

A. Cover wood products to protect against moisture and growth of mold/mildew. Support stacked products to prevent deformation and to allow air circulation.

PART 2 - PRODUCTS

2.01 DIMENSION LUMBER

A. Species: Douglas Fir/Larch.

B. Sizes: Nominal sizes as indicated on drawings, S4S.

C. Moisture Content: Maximum 19 percent, stack or kiln-dried.

D. Backing: 2 x 6 and larger solid lumber, cut from No. 2 Douglas Fir/Larch dimension lumber that is free of large knots, splits or other defects that would reduce the strength of the backing piece.

2.02 ACCESSORIES

A. Fasteners, Anchors and Anchorbolts: As specified or noted on the drawings. Make sure fasteners are approved for use with Fire Retardant Wood products

PART 3 - EXECUTION

3.01 COORDINATION

A. Review, coordinate and accommodate work of other trades that interface with, affect or are affected by the work of this Section so as to facilitate the execution of the overall Work of this project in a coordinated and efficient manner.

B. Coordinate the layout of wall, floor, ceiling and roof framing to accommodate the location of mechanical and electrical penetrations and recessed items and to minimize cutting framing members and/or framing openings in these assemblies.

C. Coordinate the layout and location of wall framing and solid 2x wood backing for attachment of finish wood fabrications with Section 06 20 00.

D. Coordinate the layout and location of wall framing and solid 2x wood backing required for attachment and support of Contractor and Owner furnished toilet and miscellaneous accessories shown on the Drawings.

E. Coordinate the layout and location of wall framing and solid 2x wood backing to accommodate layout of cabinets and/or counter tops shown on the Drawings.

F. Coordinate the layout and location of wall framing and solid 2x wood backing required for attachment and support of surface-mounted plumbing items specified.

G. Coordinate the layout and location of wall framing and solid 2x wood backing required for attachment and support of surface-mounted electrical items specified.

H. Coordinate the layout and location of wall framing and solid 2x wood backing required for attachment and support of surface-mounted Owner Furnished Owner Installed (OFOI) items.

3.02 GENERAL

A. Drilling, Notching & Cutting: Coordinate and control drilling, notching and cutting of all framing members required to admit or install work of other trades, do not violate the structural integrity of any wood framed members, comply with restrictions and requirements of Structural Engineer, IBC and local Building Official.

B. Nailing: Nailing shall conform to the size and spacing shown on the Structural Drawings; where nailing is not indicated, provide nailing per IBC Table 2304.9.1. Fastener Schedule.

3.03 FRAMING INSTALLATION

A. Cut and fit framing members accurately, set members level, plumb, and true to line. Discard crooked or twisted pieces or with defects that would lower required strength or result in unacceptable appearance of exposed members.

B. Wall Plates:
1. Bottom plates bearing on concrete shall be preservative pressure treated.
2. Bore holes of proper diameter for anchor bolts accurately; oversized or elongated holes are not acceptable.
3. Install continuous sill gasket under bottom plates of exterior walls.

C. Wall Framing: Cull out crooked, twisted or inconsistent width framing, align framing members so that finish walls are straight and free of waviness.

D. Make provisions for temporary construction loads, and provide temporary bracing sufficient to maintain structure in true alignment and safe condition until completion of erection and installation of permanent bracing.

E. Comply with member sizes, spacing, and configurations indicated, and fastener size and spacing indicated on Drawings and Structural General Notes, but not less than required by applicable codes.

F. Install horizontal spanning members with crown edge up and not less than 1-1/2 inches of bearing at each end.

G. Provide framing members at all vertical ends/edges of GWB and wall sheathing and at ends of floor sheathing.

H. Frame wall openings required by the design and for work of other trades. Where not shown, provide a minimum two or more studs at each jamb; support headers on cripple studs; coordinate with requirements of Structural Drawings.

I. Provide blocking between framing members wherever required by Drawings,

IBC, Building Official, or good construction practice.

J. Fire Stops: Install solid 2x lumber blocking fire stops (or other approved material) in accordance with the requirements of the IBC and the Building Official including, but not limited to the following locations:

1. In concealed spaces of stud walls and partitions, including furred spaces, at the ceiling and floor levels and at 10-foot intervals both horizontal and vertical.
2. At all interconnections between concealed vertical and horizontal spaces such as occur at soffits, drop ceilings, cove ceilings and suspended lay-in ceilings.
3. Concealed spaces behind combustible trim and finish: Fire stop at intervals not exceeding 10 feet.
4. Concealed spaces behind exterior cornices or other elements: Fire stop at intervals not exceeding 20 feet.
5. In wall framing in line with stair stringers and between stair stringers and wall.

K. Provide additional framing members and/or modifications required to accommodate work of other trades.

L. Provide backing and miscellaneous members as indicated or as required to support work provided by other trades (finishes, fixtures, specialty items, trim, etc.).

3.04 INSTALLATION - WOOD BACKING

A. Provide backing and miscellaneous 2x framing members as indicated or as required to support work provided by other trades (finishes, fixtures, specialty items, trim, etc.).

B. Door Hardware:
1. Provide 2x6 wood backing for door wall stops.

C. Casework/Counter tops: Provide solid 2x wood backing for attachment/support of casework.

3.05 DRILLING, CUTTING & NOTCHING

A. Do not drill, cut, notch or alter any structural framing, except as noted on the Drawings and in this specification, without the approval of the Structural Engineer.

3.06 WORKMANSHIP

A. Carpentry work shall be accomplished using the best workmanship, including the following:
1. Crooked, bowed, twisted or damaged lumber culled out and used for blocking/backing.

2. End cuts at proper angle and length for tight fit.
3. Nailed connections free of splitting or damage.
4. Framing aligned plumb and square.
5. Framing conforming to specified tolerances.
6. Bolt/anchor holes not oversized or misaligned.
7. Panel ends aligned at center of supporting framing member.
8. Panel ends and edges properly gapped.
9. Consistent nail spacing on panels.

B. Any part of the carpentry work installed with improper or poor workmanship shall be removed and replaced at Contractor's expense.

3.07 TOLERANCES

A. Framing Members: 1/4 inch from true position, maximum, provided other tolerances are met.

B. Wall & Roof Plane (Flatness): Maximum of ¼" in 10'-0" out of plane (this equates to no more than 1/8" gap at each end of a 10'-0" long straightedge center on high spot in wall, or no more than 1/8" gap at center of a 10'-0" long straightedge centered on low spot in wall).

END OF SECTION

SECTION 06 20 00

FINISH CARPENTRY

PART 1 – GENERAL

This Section primarily describes requirements for the built in Custom cabinetry as indicated on the drawings.

1.1 RELATED SECTIONS

A. 12 32 00 – Custom Casework. See this Section for requirements for 4, rolling file cabinets.

1.2 REFERENCES

A. American Plywood Association (APA).

B. Architectural Woodwork Institute (AWI).

C. United States Product Standard (PS).
1. PS-1 - "Construction and Industrial Plywood."

1.3 SUBMITTALS

A. Shop Drawings: Show materials, methods of fabrication, and details of installation.

B. Samples: Furnish required samples with finishes specified.

1.4 QUALITY ASSURANCE

A. Qualifications: Provide finish carpentry Work in accordance with AWI "Quality Standards," in the grades specified.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Trim: Solid stock oak, finish clear lacquered. Sizes and shapes as shown on drawings. Note that trim details are actual sizes and not nominal.

B. Plywood: Oak veneer, custom grade cabinet plywood, ½ inch.

C. Kevlar: Fortified Ballistic Panels. 7/16” thick, Level 3 Protection. As manufactured by Dupont and sold by Fortified Estate LLC 1900 Jay Ell Dr. Richardson Texas, 75081. 844-656-3678. See details where located.

D. Shelving: Oak plywood, 3/4 inch thick with edge band at all exposed edges.

E. Fasteners:

As shown, specified, or as normally required to securely install materials.

Size of fasteners for siding and paneling shall be as recommended by manufacturer.

F. Knee Braces: Knee brace locations are called out on the drawings. Knee braces are to be, L-Shape, steel, 24 x 24, black such as by FUTURA Functional Hardware or similar. Minimal capacity 1300 lb's per pair.

G. Fold Up table: Location indicated on drawings. Coordinate with Custom Casework subcontractor. Pre-manufactured, heavy duty, powder coated steel hinged assembly, 16 inch, 350 lb. capacity minimum. In a resting position it lays flat against the casework. When needed, folds up and locks into place with minimal intrusion on knee space. Top to be supplied and installed by Custom Casework subcontractor. Top to match adjacent custom casework.

H. Countertops: Counter tops are indicated on the drawings and to be supplied and installed by the Custom casework subcontractor. Tops to be 1-1/2" cabinet grade particle board with Plastic Laminate top with solid Oak trim at exposed edges.

J. Grommets: Provide and install 10, 2 inch grommets to be field located by Owner.

2.2 FABRICATION

A. Conform with AWI "Quality Standards," Section 300, Custom Grade requirements as applicable. Standard wood moldings shall conform with Western Wood Product Association WP Series, where applicable.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install all millwork and trim in accordance with reviewed shop drawings and AWI "Quality Standards."

B. Cope internal corners and miter external corners at all standing and running trim or as indicated on the details.

C. Provide running trim in as long lengths as practical or as specifically noted in the drawings.

D. Install materials straight and true. Tightly butt ends of trim.

E. Countersink nails and fill nail holes.

F. Machine sand trim and finish with hand sanding. Leave free from machine or tool marks that will show through finishes specified. Ease all edges of trim.

G. Install all finish hardware, accurately fit, securely apply, and carefully adjust to provide smooth and proper operation of all hardware.

H. Miscellaneous Items: Install all items shown and specified, which are not called for to be installed under other Sections, to plumb, true, and level lines and positions. Install in accordance with details, manufacturer's printed instructions and additional requirements specified. Provide connections and miscellaneous items required to make Work of this Section complete. Securely fasten wall and ceiling mounted items to solid backing or blocking.

3.2 CLEANING

A. Remove dirt and other foreign matter from installed materials.

B. Upon completion of installation, leave materials clean and ready for finishing.

END OF SECTION

SECTION 07 84 00

FIRESTOPPING/SMOKE SEAL SYSTEMS

PART 1 - GENERAL

.

1.01 WORK INCLUDES

A. Firestopping and Smoke Seal Systems

1.02 SCOPE OF WORK

A. Provide Firestopping/Smoke Seal System(s) conforming to IBC, ASTM E814 and requirements of the authority having jurisdiction at the following locations:
   1. Around structural, mechanical, electrical and other penetrations through fire rated assemblies.
   2. At cracks, gaps and openings in fire rated assemblies.
   3. At perimeter of fire rated assemblies where there are cracks, gaps, voids or openings.

1.03 REFERENCES

A. All references shall be the latest adopted edition, except as noted.

B. ASTM E814 - Standard Test Method for Fire Tests of Through-Penetration Fire Stops

C. ITS (DIR) - Directory of Listed Products; Intertek Testing Services NA, Inc.; current edition

D. FM P7825 - Approval Guide; Factory Mutual Research Corporation; current edition

E. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition

F. IBC – International Building Code, 2018

G. WH (CERT) - Certification Listings; Warnock Hersey

1.04 SUBMITTALS

A. Refer to Section 01 33 00 for submittal procedures.

1.05 QUALITY ASSURANCE

A. Fire Testing: Provide firestopping/smoke seal system designs which provide the required fire ratings when tested in accordance with ASTM E814.

1. Listing in the current classification or certification books of UL, FM, or ITS (Warnock Hersey) will be considered as constituting an acceptable test report.

B. Installer Qualifications: Installer shall have at least 5 years of experience installing firestop systems in buildings of similar construction to that found on this project.

C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years experience.

1.06 ENVIRONMENTAL REQUIREMENTS

A. Comply with firestopping manufacturer's recommendations for temperature and conditions during and after installation.

PART 2 - PRODUCTS

2.01 FIRESTOPPING/SMOKE SEAL SYSTEMS

A. Manufacturers/Product Group and ICC Evaluation Service Report Number:
1. 3M Company, Inc. *Fire Protection Products* – ICC Report NER-243
2. Tremco, Inc. *Through-Penetration Fire-Stop Systems* – ICC Report ER-3198
3. United States Gypsum Company *USG Firestop Penetration Systems* - ICC Report ER-5050
4. W.R. Grace & Company *FlameSafe Products* – ICC Report ESR-1043

B. Firestopping/Smoke Seal System(s): Provide complete Firestop/Smoke Seal System(s) that conform to the requirements of Chapter 7 of the International Building Code (IBC) and are designed, tested and fire-resistance rated to resist for a prescribed period of time the spread of fire through each different type of penetration, fire rated assembly and construction type found in this Project.
1. Firestop/Smoke Seal System(s) shall be tested and listed by one of the testing agencies listed in 1.04 above.
2. The F and T rating criteria for the Firestop/Smoke Seal System(s) shall be in accordance with ASTM E814 and IBC.
3. Firestopping/Smoke Seal Exposed To View: Firestop/Smoke Seal System must either be concealed from view behind the finish; or have an appearance matching the adjacent finish appearance and be paintable; or have a suitable finished trim or escutcheon to cover the firestopping.
4. Provide firestopping/smoke seal products from the same manufacturer on any single assembly or condition, do not mix different manufacturer’s products.

C. Rock Wool: Rock wool insulation spun from slab or basalt rock; 2.8 pound density, with formaldehyde-free binder, friction fit, unfaced, conform to ASTM C665; Roxul *AFB* or approved.

PART 3 - EXECUTION

3.01 COORDINATION

A. Review, coordinate and accommodate work of other trades that interface with, affect or are affected by the work of this Section so as to facilitate the execution of the overall Work of this project in a coordinated and efficient manner.

B. Coordinate the timing of when to execute the work of this section with the work of other trades.

C. Coordinate firestopping/smoke seal at mechanical and electrical penetrations made by Divisions 20 through 28.

3.02 EXAMINATION

A. Verify that all penetrations and openings are completed and ready to receive the work of this section.

3.03 PREPARATION

A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter that may affect bond of firestopping material in accordance with manufacturer’s instructions.

B. Remove incompatible materials that may affect bond.

3.04 INSTALLATION

A. Select the specific firestopping/smoke seal assembly that will provide the specific fire rating required for the type of construction and conditions found and that conforms to the criteria stated in the testing agency listing.

B. Install materials in manner described in fire test report and in accordance with manufacturer's instructions, completely closing cracks/gaps and providing a firestop of each gap/crack in a fire-rated assembly equal to the fire rating of the assembly.

C. Where firestopping/smoke seal is exposed to view, finish to match adjacent surfaces.

3.05 CLEANING AND PROTECTION

A. Clean adjacent surfaces of firestopping/smoke seal materials.

B. Protect adjacent surfaces from damage by material installation.

3.06 FIRESTOPPING LOCATIONS

A. Install firestopping/smoke seal in all locations required by the IBC and Authorities

Having Jurisdiction.

B. Install firestopping/smoke seal at cracks, gaps or openings within and around perimeter of fire rated wall, floor or roof assemblies (refer to Drawings for location of rated assemblies).

C. Install firestopping/smoke seal around penetrations (structural, mechanical and electrical) through fire rated assemblies; coordinate with structural mechanical and electrical work.

D. Install firestopping/smoke seal wherever noted on Drawings.

END OF SECTION

SECTION 08 14 00

FLUSH WOOD DOORS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Flush Hardwood Veneer-Faced Solid Core Wood Doors pre-hung in wood frames

1.02 REFERENCES

A. All references shall be the latest adopted edition, except as noted.

B. ANSI/WDMA I.S.1-A – Architectural Flush Wood Doors (Window & Door Manufacturer's Association)

C. ASTM E90 – Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements

D. AWI - Architectural Woodwork Quality Standards; Architectural Woodwork Institute

E. IBC – International Building Code, 2021 Edition

1.03 SUBMITTALS

A. Product Data: Submit manufacturer's product literature, indicate door core materials and construction; veneer species. Submit manufacturer's product data on metal vision panel frames.

B. Shop Drawings: Illustrate door opening criteria, elevations, sizes, types, swings, undercuts required, special beveling, factory machining criteria, finishing system criteria, identify cutouts for glazing.

C. Door Schedule: Provide door, frame, and hardware schedule on format matching SDI 111-D in accordance with Door Schedule included on Drawings.

D. Samples – Hardwood Veneer: Submit samples of hardwood veneer specified, 8 x 11 x 1/4 inch in size illustrating species, wood grain and finish system.

E. Test Report: Submit copy of test report form independent testing laboratory certifying the STC rating of the sound rated doors.

1.04 QUALITY ASSURANCE

A. Perform work in accordance with ANSI/WDMA I.S.1-A.

B. Manufacturer: Company specializing in manufacturing the products specified in this section with minimum ten years of experience.

1.05 DELIVERY, STORAGE, AND PROTECTION

A. Accept doors on site in manufacturer's packaging. Inspect for damage.

B. Protect doors with individual resilient packaging. Do not store in damp or wet areas; or in areas where sunlight might bleach veneer. Seal top and bottom edges with tinted sealer. Break seal on site to permit ventilation.

1.06 PROJECT CONDITIONS

A. Coordinate the work with door opening construction, door frame and door hardware installation.

1.07 WARRANTY

A. Provide manufacturer’s warranty for the following term:
1. Interior Doors: Life of installation.

B. Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, and telegraphing core construction.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. LyndenDoor

B. Oregon Door

C. Vancouver Door (Puyallup)

D. VT Industries

E. Substitutions: Contact Owner with proposed product.

2.02 FLUSH WOOD DOORS

A. Flush Wood Doors: Bonded Core 5 or 7 ply doors conforming to ANSI/WDMA I.S.1-A and the following:
1. Grade: WDMA Premium Grade
2. Duty Level: WDMA Extra Heavy Duty
3. Stiles and rails bonded to core
4. Core: Structural composite lumber core (engineered wood) or particleboard cores.
    a. Hardware Blocking – Particleboard Core: Provide solid wood blocking for hardware attachment (not required for structural composite lumber core).

5. Stiles And Rails: 1 inch minimum thickness solid hardwood, finger-jointing not allowed; vertical edge species solid hardwood matching face veneer species.
6. Door Facing: Hardwood veneer.

B. Sound-Rated Doors (Where Noted On Drawings): STC-42 minimum Sound Transmission Class when tested in accordance with ASTM E90.

C. Frames: Solid Oak or similar so as to match existing adjacent hardwood frames.

2.03 MATERIALS

A. Door Face Veneer: Hardwood veneer suitable for transparent finish:
1. Hardwood Veneer Species: Oak to match existing adjacent.
2. Veneer Cut: Plain sliced.
3. Leaf Matching: Book match veneer leafs, balance matched on width of door face.

2.04 FABRICATION

A. Fabricate doors in accordance with ANSI/WDMA I.S.1-A requirements.

B. Fabricate fire rated doors in accordance with fire testing agency requirements. Attach metal fire rating label to door.

C. Vertical Exposed Edge of Stiles - Solid Edge: Of same species as veneer facing.

D. Bond edge banding to cores.

E. Bevel strike edge of door.

F. Coordinate size of door and edge clearances with frames specified in Section 08 11 00 and hardware specified so that field planing door edges for proper fit is not required.

G. Factory machine doors for finish hardware specified in accordance with hardware requirements and dimensions. Do not machine for surface hardware.

H. Cut out openings for vision panel frames or louvers where indicated on drawings..

I. Factory fit doors for frame opening dimensions.

J. Provide edge clearances in accordance with AWI 1300.

2.05 FACTORY FINISH

A. Transparent Finish: Factory finish doors in accordance with ANSI/WDMA I.S.1-A Premium Grade:
1. Finish System: TR-6 Catalyzed Polyurethane, including reduced vinyl sealer washcoat (if required), washcoat, stain, vinyl sealer, sanding with

220 grit, first topcoat and second topcoat; satin finish. UV Curable Polyester or Urethane finish systems are also acceptable.

PART 3 - EXECUTION

3.01 COORDINATION

A. Review, coordinate and accommodate work of other trades that interface with, affect or are affected by the work of this Section so as to facilitate the execution of the overall Work of this project in a coordinated and efficient manner.

3.02 EXAMINATION

A. Inspect frames and existing conditions before starting work.

B. Verify that frames, opening sizes and tolerances are acceptable.

C. Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

D. Beginning of installation indicates acceptance of frame installation and conditions.

3.03 INSTALLATION

A. Install doors in accordance with manufacturer's instructions and WDMA installation requirements.
   1. Install fire-rated doors in accordance with NFPA 80 requirements and fire listing.

B. Gap between bottom of door and floor shall not exceed 5/8 inch on non-rated doors; on fire rated doors gap shall not exceed code and fire listing requirements.

C. Coordinate installation of glass and glazing.

3.04 ADJUSTING

A. Adjust doors for smooth and balanced door movement.

B. Adjust closers for full closure.

3.05 SCHEDULE – Refer To Drawings

END OF SECTION

SECTION 09 22 00

PORTLAND CEMENT PLASTER REPAIR

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of 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. Portland cement plastering repair if indicated on the drawings.

1.3 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Bid Specifications.

B. Product data consisting of manufacturer's product specifications and installation instructions for each product, including data showing compliance with the requirements.

C. Samples for initial selection purposes in form of manufacturer's color charts consisting of actual units or sections of units at least 12 inches square showing full range of colors, textures, and patterns available for each type of finish indicated.
   1. Where finish involves normal color and texture variations, include sample sets composed of two or more units showing full range of variations expected.
   2. Include similar samples of material for joints and accessories involving color selection.

D. Samples for verification purposes in units at least 12 inches square of each type of finish indicated, in sets for each color, texture, and pattern specified, showing full range of variations expected in these characteristics.

E. Material Certificates: Submit producer's certificate for each kind of plaster aggregate indicated evidencing that materials comply with requirements.

1.4 QUALITY ASSURANCE

A. Fire-Resistance Ratings: Where plaster systems with fire-resistance ratings are indicated, provide materials and installations identical to those of applicable assemblies tested per ASTM E 119 by fire testing laboratories acceptable to authorities having jurisdiction.

1. Provide plaster for fire-resistance-rated systems that has same aggregate as specified for similar non-rated work, unless specified aggregate has not been tested by accepted fire testing laboratories.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original packages, containers, or bundles bearing brand name and identification of manufacturer.
B. Store materials inside, under cover, and in manner to keep them dry, protected from weather, direct sunlight, surface contamination, aging, corrosion, and damage from construction traffic and other causes.

1.6 PROJECT CONDITIONS

A. Environmental Requirements, General: Comply with requirements of referenced plaster application standards and recommendations of plaster manufacturer for environmental conditions before, during, and after application of plaster.

B. Cold Weather Protection: When ambient outdoor temperatures are below 40 deg F (4.4 deg C), maintain continuous uniform temperature of not less than 40 deg F (4.4 deg C), nor more than 80 deg F (26 deg C) for not less than one week prior to beginning plaster application, during its application, and until plaster is dry but for not less than one week after application is complete. Distribute heat evenly; prevent concentrated or uneven heat from contacting plaster near heat source.

C. Protect contiguous work from soiling, spattering, moisture deterioration and other harmful effects that might result from plastering.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in 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. Expanded Metal Lath:
   a. Alabama Metal Industries Corp. (AMICO)
   b. Gold Bond Building Products Div., National Gypsum Co.
   c. United States Gypsum Co.
   d. Western Metal Lath Co.
2. Accessories:
   a. Fry Reglet Corp.
   b. Gold Bond Building Products Div., National Gypsum Co.
   c. Keene Corp.
   d. MM Systems Corp.
   e. Plastic Components, Inc.
   f. United States Gypsum Co.
   g. Western Metal Lath Co.

2.2 LATH

A. Expanded Metal Lath: Fabricate expanded metal lath from uncoated or zinc-coated (galvanized) steel sheet to produce lath complying with ASTM C 847 for type, configuration, and other characteristics indicated below, with uncoated steel sheet painted after fabrication into lath.

1. Diamond Mesh Lath: Comply with the following requirements:
   a. Configuration: Self-furring
   b. Weight: 3.4 lbs. per sq. yd.

B. Lath Attachment Devices: Devices of material and type required by referenced standards and recommended by lath manufacturer for secure attachment of lath to framing members or solid masonry.

C. Water-proof Building Paper asphalt saturated kraft paper, non-perforated R-15 water vapor permeable fed spec. UU-B-790A/UBC standard 17-1 grade D.

2.3 PLASTER ACCESSORIES FOR PORTLAND CEMENT PLASTER

A. General: Comply with material provisions of ASTM C 1063; coordinate depth of accessories with thickness and number of coats required.

B. Metal Corner and Edge Reinforcement: Expanded large-mesh diamond mesh lath fabricated from zinc-alloy or welded wire mesh fabricated from 0.0475-inch-diameter zinc-coated (galvanized) wire and specifically formed to reinforce external corners of edges of Portland cement plaster on exterior exposures while allowing full plaster encasement.

C. Metal Corner / Edge Beads: Small nose corner / edge beads fabricated from zinc alloy, with expanded flanges of large-mesh diamond lath to allow full encasement by plaster.

D. Casing Beads: Squared-edged style, with expanded flanges and removable protective tape, of the following material:

1. Material: Zinc-coated (galvanized) steel.
   Note: Provide casing beads with weep holes at all stucco applications.

E. Control Joints: Prefabricated, of material and type indicated below:
1. Material: Zinc-coated (galvanized) steel.
2. Two-Piece Type: Pair of casing beads with back flanges formed to provide slip-joint action, adjustable for joint widths from 1/8 inch to 5/8 inch, except to match existing.
3. Locate expansion joints to match existing sq. ft. total.

2.4 PORTLAND CEMENT PLASTER MATERIALS

A. Base Coat Cements: Type as indicated below:
1. Portland cement, ASTM C 150, Type I or II.

B. Finish Coat Cement: Type as indicated below:

1. Portland cement, ASTM C 150, Type I for finish to match existing

C. Factory-Prepared Finish Coat (if required to match existing): Manufacturer's standard product requiring addition of water only.
1. Product: Subject to compliance with requirements, provide quality equal to Oriental Exterior Finish Stucco manufactured by United States Gypsum Co.

D. Lime: Special hydrated lime for finishing purposes, ASTM C 206, Type S.

E. Sand Aggregate for Base Coats: ASTM C 897.

F. Aggregate for Finish Coats: ASTM C 897 and as indicated below.
1. Manufactured or natural sand, white if required to match existing.

G. Fiber Additive 3/8" or 1/2" chopped reinforced strand; type A/R glass fiber polypropylene or nylon-6.

2.5 MISCELLANEOUS MATERIALS

A. Water for Mixing and Finishing Plaster: Drinkable and free of substances capable of affecting plaster set or of damaging plaster, lath, or accessories.

B. Bonding Agent for Portland Cement Plaster: ASTM C 932.

2.6 PORTLAND CEMENT PLASTER MIXES AND COMPOSITIONS

A. General: Comply with ASTM C 926 for Portland cement plaster base and finish coat mixes as applicable to plaster bases, materials, and other requirements indicated.

B. Portland Cement Plaster Base Coat Mixes and Compositions: Proportion materials for respective base coats in parts by volume for cementitious materials and in parts by volume per sum of cementitious materials for aggregates to comply with the following requirements for each method of application and plaster base indicated. Adjust mix proportions below within limits specified to attain workability.
1. Three-Coat Work Over Metal Lath: Base coats as indicated below: Total thickness 7/8".
a. Base coats 1 part Portland Cement 1 part masonry cement, 4-5 parts sand.
b. Chopped strands per manufacturer spec for amount and mix time.

C. Job-Mixed Portland Cement Plaster Finish Coats: Proportion materials for finish coats in parts by volume for cementitious materials and parts by volume per sum of cementitious materials for aggregates to comply with the following requirements:

1. 1 part Portland Cement, 3/4 to 1-1/2 parts lime, 3-4 parts sand.

2.7 MIXING

A. Mechanically mix cementitious and aggregate materials for plasters to comply with applicable referenced application standard and with recommendations of plaster manufacturer.

PART 3 - EXECUTION

3.1 INSTALLATION OF LATHING AND FURRING GENERAL

A. Portland Cement Plaster Lathing and Furring Installation Standard: Install lathing and furring materials indicated for Portland cement plaster to comply with ASTM C 1063.

B. Install supplementary framing, blocking, and bracing at terminations in the work and for support of equipment services, heavy trim, and similar work to comply with details indicated or, if not otherwise indicated, to comply with applicable published recommendations of plaster manufacturer or, if not available, of “Gypsum Construction Handbook” published by United States Gypsum Co.

C. Isolation: Where lathing and metal support system abuts building structure horizontally and where partition/wall work abuts overhead structure, isolate the work from structural movement sufficiently to prevent transfer of loading into the work from the building structure. Install slip- or cushion-type joints to absorb deflections but maintain lateral support.

1. Frame both sides of control and expansion joints independently, and do not bridge joints with furring and lathing or accessories.

3.2 METAL LATHING

A. Install expanded metal lath for the following applications where plaster base coats are required. Provide appropriate type, configuration, and weight of metal lath selected from materials indicated that comply with referenced lathing installation standards.

1. Exterior Soffits using 3.4 lbs per sq yd. minimum weight self furring galvanized diamond mesh lath over water-proof building paper.

3.3 INSTALLATION OF PLASTERING ACCESSORIES

A. General: Comply with referenced lathing and furring installation standards for provision and location of plaster accessories of type indicated. Miter or cope accessories transitions; install with tight joints and in alignment. Attach accessories securely to plaster bases to hold accessories in place and alignment during plastering. Provide decorative lines and forms to match exiting patterns and appearances.

B. Accessories for Portland Cement Plaster: Provide the following types to compny with requirements indicated for location:

1. Corner or Edge Reinforcement: Install at external corners or edges.
2. Corner / Edge Bead: Install at external corners or edges.

3. Casing Beads: Install at terminations of plaster work unless otherwise indicated.
4. Control Joints: Install control joints at locations to match existing.

3.4 PLASTER APPLICATION, GENERAL

A. Prepare monolithic surfaces for bonded base coats and use bonding compound or agent to comply with requirements of referenced plaster application standards for conditioning of monolithic surfaces.

B. Tolerances: Do not deviate more than 1/8 inch 10'-0" from a true plane in finished plaster surfaces, as measured by a 10'-0" straightedge placed at any location on surface.

C. Grout other work occurring in areas with base coat plaster material, and prior to lathing where necessary. Full grouting is required.

D. Sequence plaster application with the installation and protection of other work so that neither will be damaged by the installation of the other.

E. Plaster flush with other work and other built-in metal items or accessories that act as a plaster ground, unless otherwise indicated. Where plaster is not terminated by casing beads, cut base coat free from metal before plaster sets and groove finish coat at the junctures with metal.

F. Apply thicknesses and number of coats of plaster as indicated or as required by referenced standards. 7/8" total thickness. 1/2" last coat, 1/4" 2nd coat, 1/8" finish coat.

3.5 PORTLAND CEMENT PLASTER APPLICATION

A. Portland Cement Plaster Application Standard: Apply Portland cement plaster materials, compositions, and mixes to comply with ASTM C 926.

B. Number of Coats: Apply Portland cement plaster, of composition indicated, to comply with the following requirements:
1. Use three-coat work over the following plaster bases:
a. Metal lath over waterproof building paper sheathed surfaces.
2. Finish Coat: Finish to match existing.

B. Moisture-cure Portland cement plaster base and finish coats to comply with ASTM C 926, including recommendations for time between coats and curing.

3.6 CUTTING AND PATCHING

A. Cut, patch, point up, and repair plaster as necessary to accommodate other work and to restore cracks, dents, and imperfections. Repair or replace work to eliminate blisters, buckles, excessive crazing and check cracking, dry outs,

efflorescence, sweat outs, and similar defects and where bond to the substrate has failed.

B. Remove trowel marks and arises from finished surfaces.

3.7 CLEANING AND PROTECTION

A. Remove temporary protection and enclosure of other work. Promptly remove plaster from other surfaces that are not to be plastered. Repair floors, walls, and other surfaces that have been stained, marred, or otherwise damaged during the plastering work. When plastering work is completed, remove unused materials, containers, and equipment and clean floors of plaster debris. Cover all concrete walks and masonry walls.

B. Provide final protection and maintain conditions, in a manner suitable to Installer that ensure plaster work's being without damage or deterioration at time of Substantial Completion.

END OF SECTION

SECTION 09 29 00

GYPSUM BOARD ASSEMBLIES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Interior Gypsum Board (GWB)

B. Finishing Gypsum Board

1.02 REFERENCES

A. All references shall be the latest adopted edition.

B. ASTM C475 - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board

C. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board

D. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs

E. ASTM C1177 - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing

F. ASTM C1178 - Standard Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel

G. ASTM C1278 - Standard Specification for Fiber-Reinforced Gypsum Panel

H. ASTM C1280 - Standard Specification for Application of Gypsum Sheathing

I. ASTM C1396 – Standard Specification for Gypsum Board

J. ASTM D3273 – Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber

K. GA-214 - Recommended Levels of Gypsum Board Finish; Gypsum Association

L. GA-216 - Application and Finishing of Gypsum Board; Gypsum Association

1.03 SUBMITTALS

A. Product Data: Submit manufacturer's product data for each proposed product sufficient to show compliance with each product specified.

B. Samples: Submit 6 inch long sample of each different corner metal and trim specified.

1.04 QUALITY ASSURANCE

A. Applicator Qualifications: Company specializing in performing the work of this section with minimum 5 years of consecutive successful experience.

1.05 REGULATORY REQUIREMENTS

A. Conform to applicable codes and installation requirements for fire rated assemblies indicated on drawings.

1.06 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in original and unopened packages, containers, or bundles, with brand names and manufacturer's labels intact and legible.

B. Store materials in dry location, fully protected from weather and direct exposure to sunlight.

C. Stack gypsum board products flat and level, properly supported to prevent sagging or damage to ends and edges.

D. Store corner bead and other metal and plastic accessories to prevent bending, sagging, distortion, or other mechanical damage.

1.07 PROJECT CONDITIONS

A. Environmental Conditions: Establish and maintain environmental conditions for applying and finishing gypsum board to comply with ASTM C840 requirements or gypsum board manufacturer's recommendations, whichever are more stringent.

B. Ventilation: Provide controlled ventilation during joint finishing operations, to eliminate excessive moisture. Avoid drafts during hot, dry weather to prevent finishing materials from drying too quickly.

PART 2 - PRODUCTS

2.01 GYPSUM BOARD MATERIALS (GWB)

A. Interior Gypsum Board (GWB): ASTM C1396; Type X, fire rated, UL or WH tested and listed; sizes to minimize joints in place; ends square cut.
   1. Thickness: 5/8 inch.

2. Edges: Tapered.
3. Length: Longest lengths possible for least number of butt joints.
4. Radius/Curved Walls: Use any thickness gypsum board that will bend to the required radius.
   a. Single Layer Minimum Thickness: 5/8-inch.
   b. 1/4-inch thick board requires 3 layers.
   c. 3/8-inch thick board requires 2 layers.

2.02 ACCESSORIES

A. Acoustic Sealant: Non-hardening, non-skinning, for use in conjunction with gypsum board; USG *Sheetrock Acoustical Sealant* or similar.

B. Outside Square Corners: Galvanized metal corner bead factory clad with paper tape; Beadex *Microbead* or approved.

C. Angled Corners: Beadex *B1 Flex 100' Tape-On Flexible Corner Bead*, or approved.

D. J-Mold (Where GWB Abuts Dissimilar Material And Is Exposed To View): Galvanized metal J-shaped trim factory clad with paper; Beadex *B9J Tape-On "J" Trim* or approved.
   1. GWB Abuts Windows: Provide temporary heavy weight cardboard strip 3 inches wide between trim and face of window frame to protect frame from dirt and damage.

E. Control Joint: GA 216; roll-formed metal control joint with removable strip, similar to USG *No. 93,* or approved.

F. Joint Materials: Provide products by manufacturer of gypsum board. Conform to ASTM C475 and as recommended by gypsum board manufacturer for project conditions.
   1. Interior Applications: Ready-mixed vinyl-based joint compound
      a. Taping Compound: Type specifically formulated for embedding tape and accessories and for pre-filling.
      b. Topping Compound: Type specifically formulated for finishing drywall over taping compound.
      c. Joint Tape: Manufacturer's standard paper reinforcing tape.

G. Primer/Surfacer: *Sheetrock Brand Primer-Surfacer Tuff-Hide* manufactured by U.S. Gypsum.

H. Acoustical Insulation: Owens-Corning, *Noise Barrier Batts*, ASTM C 665, 3 1/2" thick.

I. Screws:
   1. Interior Application: Conform to ASTM C1002; bugle-head steel, self-drilling type, black phosphate finish.
   2. Exterior Application and Tile Backer Board: Conform to ASTM C1002;

bugle-head steel, self-drilling type, provide with yellow zinc corrosion resistant coating.

PART 3 - EXECUTION

3.01 COORDINATION

A. Review, coordinate and accommodate work of other trades that interface with, affect or are affected by the work of this Section so as to facilitate the execution of the overall Work of this project in a coordinated and efficient manner.

B. Coordinate location of framing and backing for supporting ends of GWB and control joints with Section 06 10 00.

C. Inspect finished surfaces with Section 09 90 00 painting applicator and project superintendent, mark areas that require additional finishing.

3.02 EXAMINATION

A. Verify that project conditions are appropriate for work of this section to commence.

B. Confirm that the framing is straight, is within specified tolerances and meets minimum allowable deflection requirements.

C. Confirm that utility rough-in fits properly within framing width and will not prevent GWB from fitting tight to face of framing members.

D. Confirm that there is adequate temporary heat and light.

E. Beginning of installation indicates acceptance of framing and conditions.

3.03 FLOOR PROTECTION

A. Protect concrete floors from contact with GWB dust, taping mud and primer/surfacer using heavy paper or other method.

3.04 GYPSUM BOARD INSTALLATION

A. Install GWB in conformance with ASTM C840, C1280, GA-216, and manufacturer's installation instructions.
   1. Install in longest lengths possible for minimum number of joints.
   2. Install to minimize butt end joints, especially in highly visible locations.
   3. Comply with the installation requirements of fire rated assemblies listed on the Drawings.

B. Install full width panels with cut pieces only at top of wall (no "belly bands").

C. Place wrapped edges adjacent to one another; do not place cut edges or butt ends adjacent to wrapped edges.

D. Maintain 1/4 inch maximum gap between bottom of gypsum board and floor.

E. Acoustic Sealant: Install at perimeter of all sound walls in accordance with manufacturer's instructions and as follows:
   1. Place continuous bead at perimeter of each layer of gypsum board.
   2. Seal around all penetrations by conduit, pipe, ducts, rough-in boxes, and at other similar penetrations.

F. Run gypsum board full depth behind steel door and relight frames.

3.05 INSTALLATION OF TRIM AND ACCESSORIES

A. Corner Beads: Install at external corners in a single full length piece free of butt joints, using longest practical lengths, no short pieces; place into a solid bed of soft joint compound for secure installation.
   1. Align bead straight and plumb.
   2. Align juncture with other corner bead flush.

B. J-Shaped Edge Trim: Install at any exposed to view location where gypsum board abuts any dissimilar material or ends with exposed edge (around window frames, exposed structure, etc.).
   1. Install heavy cardboard continuous at window perimeter to protect frame from dirt and damage.

C. Control Joints: Place control joints consistent with lines of building spaces and as follows:
   1. As determined by installer to avoid cracking in finished surfaces, generally not more than 30 feet apart on walls and ceilings over 50 feet long. Location and layout subject to Architect’s approval; review with Architect prior to starting installation.

3.06 JOINT TREATMENT

A. Finish gypsum board (whether exposed to view or not) in accordance with GA-214 to the following minimum level of finish:
   1. Painted Finish Exposed To View: Level 4, substitute a coat of Primer/Surfacer (15 – 20 wet mil thickness) in lieu of skim coating with joint compound; sand surface of Primer-Surfacer smooth.
   2. Surfaces in Mechanical/Electrical and Storage Rooms: Level 4.
   3. Concealed from View with Thick Adhered Surface Finish (sheet vinyl or rubber base, plastic sheet wainscot, etc.): Level 3.
   4. Concealed from View without Surface Finish Above Suspended Lay-In Ceilings: Level 1.

B. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
   1. Feather coats of joint compound so that camber is maximum 1/32 inch.

3.07 APPLICATION – PRIMER/SURFACER

A. Apply Primer/Surfacer to all surfaces exposed to view in accordance with manufacturer's installation instructions and at recommended application rate to achieve GA-214 Level 4 appearance, free of visible tape joint lines after finish painting is completed.
   1. Spray-apply Primer/Surfacer to 15 - 20 mil wet film thickness applied in two separate passes at 90 degrees to each other for proper coverage.
   2. Sand surface of Primer/Sealer lightly after it has dried to eliminate any unwanted stipple pattern or texture.

B. After application of Primer/Sealer, carefully inspect walls and mark any defects in surface finish.
   1. Fill/sand defective areas in surface finish and recoat with primer/surfacer.

3.08 INSPECTION WITH PAINTER AND PROJECT SUPERINTENDENT

A. Coordinate an inspection walkthrough of all finished GWB surfaces with the painter and project superintendent; mark any defects in the surface finish.
   1. Fill/sand defective areas in surface finish and recoat with primer/surfacer.

3.09 TOLERANCES

A. Gap Between Bottom Of GWB and Floor: 1/4 inch Maximum.

B. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

C. Butt Joint Finishing: Not readily visible under the normal lighting conditions found for any given area/surface.

D. Finishing Tolerances: All exposed surfaces shall be smooth and free from visible ridges, waves, ripples, holes, defects, delamination, roughness, depressions, screw pops, etc. Taped joints shall not be visible after finish paint application.

E. Final texture: Final texture should be light "orange peel" to match as closely as possible to existing adjacent.

3.10 CLEAN UP

A. Remove all excess gypsum board and finishing materials from the site.

B. Remove gypsum board scraps and dust from all concealed spaces including interior spaces of wall framing.

C. Remove gypsum dust, taping mud and primer/sealer completely from window frames, door frames, subfloor surfaces and any surface/material exposed to view.
   1. Subfloor cleanliness/condition shall conform to floor covering installation requirements.

3.11 WORKMANSHIP

A. Gypsum wallboard shall be installed and finished using the best workmanship, including the following:
   1. No damaged board or paper face.
   2. Ends centered on framing.
   3. GWB tucked full depth behind hollow metal door frames.
   4. Gap at bottom of GWB 1/4 inch or less.
   5. Cut-outs for outlets and devices cut neatly with saw or router.
   6. GWB fastened tight to face of studs to eliminate screw pops.
   7. Acoustic sealant consistently applied to all openings and perimeters.
   8. All screws that do not engage framing removed.
   9. Taped joints full bedded in taping compound and free of air pockets.
   10. Butt joints finished with minimal thickness and tapered out for flat appearance.
   11. Taped joints smooth and flat so as to disappear after painting.
   12. Paper face not roughened by sanding.
   13. Bottom of GWB behind rubber base and coved base properly finish smooth and free of roughness.

B. Gypsum wallboard installed and finished with improper or poor workmanship shall be removed and replaced at Contractor's expense.

3.12 FIELD QUALITY CONTROL

A. Contractor Quality Control: Employ/assign quality control personnel to monitor the work of this section for conformance to the requirements of this section and to good construction practices.
   1. Contractor is solely responsible for managing and controlling the quality of the work and conformance with the requirements of this Section.

B. Schedule of Required Inspections by Contractor; confirm installation and workmanship are as shown/specified:
   1. Inspect framing for conformance to specified surface tolerances.
   2. Confirm that batt insulation and sound insulation are installed in the proper locations and conform to specification requirements.
   3. Inspect GWB installation.
   4. Inspect trim installation.
   5. Inspect taping and finish application.
   6. Inspect finish on bottom of walls with rubber base and coved base.
   7. Inspect finished GWB surfaces after primer is applied with painter and GWB finisher to identify any finishing defects requiring correction prior to painting.

END OF SECTION

SECTION 09 65 00

RESILIENT FLOORING AND BASE

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Resilient Base (VRB)
B. Luxury Vinyl Tile (LVT)

1.02 REFERENCES

A. Standard Specifications as per Manufacturer noted in documents

1.03 SUBMITTALS

A. Product Data: Submit manufacturer's product data sheet for each of the following (subject to Owner approval during submittal review):
   1. Resilient Base and Luxury Vinyl Tile
   2. Adhesives for each product
   3. Cleaning Products

B. Samples: Submit 2 color samples of each color selected for each item specified.

1.04 DELIVERY, STORAGE AND PROTECTION

A. Protect roll materials from damage. Store materials in accordance with manufacturer's instructions.

1.05 ENVIRONMENTAL REQUIREMENTS

A. Maintain temperature in storage area between 55 degrees F and 90 degrees F.

B. Maintain building temperature at 65 degrees F for 2 weeks minimum prior to installation.

C. Store materials for not less than 48 hours prior to installation in area of installation at a temperature above 65 degrees F to achieve temperature stability. After flooring has been installed, maintain conditions above 60 degrees F.

1.06 EXTRA MATERIALS

A. For each color/pattern of floor material, provide one box of floor tile for Owner's maintenance use.

PART 2 - PRODUCTS

2.01 RESILIENT FLOOR AND BASE

A. See drawings for selections of resilient floor, base and colors.

2.02 ACCESSORIES

A. Subfloor Filler: Cementitious latex type not adversely affected by moisture or alkali as recommended by flooring and adhesive materials manufacturer for application to concrete slab on grade; the following manufacturers/products are acceptable:
1. Ardex *V1200*
2. Mapei *PRP110*

B. Adhesives and Sealants: Use ONLY premium (best) quality low VOC adhesives and sealants approved by flooring/base/accessory manufacturer and Owner for each different type of flooring and substrate.

C. Primers: Low VOC primer recommended by flooring manufacturer for each different floor substrate and condition.

D. Transition/Reducer Strips: Rubber in color matching rubber base, profile required to accommodate flooring and condition, Johnsonite or approved.

PART 3 - EXECUTION

3.01 COORDINATION

A. Review, coordinate and accommodate work of other trades that interface with, affect or are affected by the work of this Section so as to facilitate the execution of the overall Work of this project in a coordinated and efficient manner.

B. Schedule flooring installation to follow drying of floor leveling compound and completion of interior painting.

3.02 EXAMINATION

A. Verify that sub-floor surfaces are ready for resilient flooring installation and within the limits recommended by resilient flooring manufacturer and adhesive materials manufacturer by testing the moisture emission rate, alkalinity and any other tests in manner recommended by manufacturers.

B. Verify that sub-floor surfaces are flat within tolerances using a 10 foot long straight edge.

C. Examine sub-floors prior to installation to determine that surfaces are smooth and free from cracks, holes, ridges, and other defects that might prevent adhesive bond or impair durability or appearance of the flooring material.

D. Verify that wall surfaces are smooth and flat within tolerances specified in Section 09 29 00; are free of voids, openings or gaps; are dust-free, and are ready to receive resilient base.

E. Inspect sub-floors prior to installation to determine that surfaces are free from curing, sealing, parting and hardening compounds; residual adhesives; adhesive removers; oil, grease and other foreign materials that might prevent adhesive bond.
   1. Visually inspect for evidence of moisture, alkaline salts, carbonation, dusting, mold, or mildew.

F. Verify that sub-floor surfaces are free of all construction dirt, gypsum dust, taping mud, paint, sand, etc.

G. Verify that required floor-mounted utilities (drains, electrical outlets, etc.) are in correct location and installed to proper height to flush out with flooring material.

H. Report conditions contrary to contract requirements that would prevent a proper installation. Do not start installation until substrate/sub-floor meets requirements of material and adhesive manufacturers.

I. Failure to call attention to defects or imperfections will be construed as acceptance and approval of the sub-floor. Beginning of installation indicates acceptance of substrate/sub-floor and conditions as conforming to all requirements.

3.03 PREPARATION

A. Sub-floor surface shall be smooth and free of waviness, ridges, bumps, depression or other irregularities that will be visible after resilient flooring is laid.
   1. Remove sub-floor ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with sub-floor filler to achieve smooth, flat, hard surface.

B. Prohibit traffic until filler is cured.

C. Vacuum clean substrate thoroughly; sand and dirt particles trapped under floor tile will require replacement of flooring.

D. Apply primer if recommended by flooring material or adhesive manufacturers for product or substrate/subfloor conditions.

3.05 INSTALLATION – RESILIENT BASE

A. Install base in accordance with manufacturer’s installation instructions to properly prepared substrate.

B. Install base in continuous, unbroken lengths with joints at inside corners only.

C. Miter or cope internal corners for tight, hairline joint; at external corners, 'V' cut back of base strip to 2/3 of its thickness and fold.

D. Tightly bond base to vertical substrate with continuous contact at horizontal and vertical surfaces
   1. Top of base shall fit tight to wall, free of open crack or lack of adhesion.

E. Scribe and fit to door frames and other interruptions.

F. Install base on casework toe spaces and exposed ends.

G. Install base behind removable casework, equipment or any other non-permanent item.

3.06 PROTECTION OF FINISHED WORK

H. Prohibit traffic on resilient flooring for 48 hours after installation.

I. Protect flooring from any marring or damage resulting from construction operations.

3.07 CLEANING AND SEALING

A. Remove excess adhesive from floor, base, and wall surfaces without damage.

B. Luxury Vinyl Tile Flooring: Clean, and prep flooring products in accordance with manufacturer's instructions.

C. Cleaned and prepped flooring shall have consistent appearance and sheen, and be free of trapped dirt, stains, scuff marks, scratches or discoloration.

END OF SECTION

SECTION 09 68 00

CARPET TILE

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Modular Carpet Tile

1.02 REFERENCES

A. All reference shall be the latest adopted edition.

B. CRI 104 - Standard for Installation of Commercial Textile Floorcovering Materials; Carpet and Rug Institute.

1.03 SUBMITTALS

A. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.

B. Shop Drawings: Indicate seaming plan, method of joining seams, direction of carpet pile and pattern, location of edge moldings.

C. Samples: Submit two samples actual size illustrating color and pattern for each carpet material and color specified.

1.04 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in installing carpet with minimum five years experience and approved by carpet manufacturer.

1.05 ENVIRONMENTAL REQUIREMENTS

A. Store materials in area of installation for minimum period of 24 hours prior to installation or as required by manufacturer.

B. Maintain minimum 70 degrees F ambient temperature 72 hours prior to, during and 24 hours after installation.

1.06 EXTRA MATERIALS

A. Provide 1 carton of carpet tile of each carpet type matching selected color.

PART 2 - PRODUCTS

2.01 CARPET

A. Modular Carpet Tile: See Drawings for manufacturer of Modular Carpet Tile, size, color and pattern.

2.02 ACCESSORIES

A. Subfloor Filler: Cementitious latex type not adversely affected by moisture or alkali as recommended by flooring and adhesive materials manufacturer for application to existing subfloor; gypsum based fillers are not acceptable. The following manufacturers/products are acceptable:
   1. Ardex *V1200*
   2. Mapei *PRP110*

B. Transition/Edge Strips: Rubber in color matching rubber base, profile required to accommodate flooring and condition, Johnsonite or approved.

C. Primer and Adhesives: Lok-Dots as manufactured by Shaw Contract Group.

D. Seam Sealer: Type recommended by manufacturer for each specific carpet and application to provide warranty.

PART 3 - EXECUTION

3.01 COORDINATION

A. Review, coordinate and accommodate work of other trades that interface with, affect or are affected by the work of this Section so as to facilitate the execution of the overall Work of this project in a coordinated and efficient manner.

B. Schedule flooring installation to follow drying of floor leveling compound and completion of interior painting.

3.02 EXAMINATION

A. Verify that sub-floor surfaces are smooth and flat within industry wide tolerances and are ready to receive carpet.

B. Verify that sub-floor surfaces are ready for carpeting installation and within the limits recommended by carpet manufacturer and adhesive materials manufacturer by testing the moisture emission rate and alkalinity and any other tests in manner recommended by manufacturers.

C. Inspect sub-floors prior to installation to determine that surfaces are free from curing, sealing, parting and hardening compounds; residual adhesives; adhesive removers; oil, grease and other foreign materials that might prevent adhesive bond.
   1. Visually inspect for evidence of moisture, alkaline salts, carbonation, dusting, mold, or mildew.

D. Verify that required floor-mounted utilities are in correct location and installed to proper height to receive carpeting.

E. Verify that sub-floor surfaces are free of all dirt, gypsum dust, taping mud, paint, sand, etc.

F. Do not start installation until substrate/subfloor meets requirements of material and adhesive manufacturers.

G. Beginning of installation indicates acceptance of subfloor and conditions and full responsibility for the completed installation.

3.03 PREPARATION

A. Remove sub-floor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with sub-floor filler.

B. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Prohibit traffic until filler is cured.

C. Clean subfloor thoroughly.
D. Take measures to protect walls, door frames and finish surfaces from damage during movement of carpet rolls and installation.

3.04 INSTALLATION - GENERAL

A. Install carpet in strict accordance with manufacturer's installation instructions and CRI 104.

B. Lay out carpet tile with pile running as directed by the Owner.
1. Align run of pile in same direction as anticipated traffic and in same direction on adjacent pieces.
2. Locate change of color or pattern between rooms under door centerline.
3. Provide monolithic color, pattern, and texture match within any one area.

C. Cut and fit carpet around interruptions; extend carpet beneath all moveable casework and removable casework (in adaptable units), equipment or non-permanent items.

D. Fit carpet tight to vertical interruptions leaving no gaps.

E. Install carpet tight and flat on subfloor, well fastened at edges, with a uniform appearance.

3.05 INSTALLATION – MODULAR CARPET TILE

A. Prime subfloor surface in accordance with manufacturer’s installation instructions.

B. Lay out and install carpet in accordance with manufacturer’s installation instructions.

C. Double cut carpet seams. Make cuts straight, true, and unfrayed.

D. Roll with appropriate roller for complete contact of adhesive to substrate, check for proper adhesive contact.

E. Trim carpet neatly at walls and around interruptions.

F. Complete installation of edge strips, concealing exposed edges.

3.06 CLEANING AND PROTECTION

A. Trim any loose fibers at seams flush.

B. Clean and vacuum carpet surfaces.

C. Prevent construction traffic and work from taking place directly on carpet, provide protection where construction activity is required after carpet installation.

END OF SECTION

SECTION 09 90 00

PAINTS AND COATINGS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Surface preparation and field painting

1.02 REFERENCES

A. All references shall be the latest adopted edition.

B. MPI – Architectural Painting Specification Manual, as published by the Master Painters and Decorators Association.

C. SSPC – Steel Structures Painting Council, Steel Structures Painting Manual.

1.03 SUBMITTALS

A. Refer to Section 01 33 00 for submittal procedures.

B. Product Data: Provide product data on each different paint finishing product.

C. Paint Schedule: Provide schedule of all proposed paint products for the items to be painted in format matching the Schedule found in Part 3 of this Section.

D. Paint Draw Down Samples: Submit two painted samples, illustrating selected colors for each color and system selected. Submit on heavy paper card stock, 8 x 10 inch in size.
   1. Sheen Samples: Submit samples of different sheens for each color as directed by Architect for selection.

1.04 QUALITY ASSURANCE

A. Single Source Responsibility: All paint products used for painting a given material/surface shall be manufactured by the same company.

B. Applicator Qualifications: Company specializing in performing the work of this section with minimum five years successful experience.

1.05 REGULATORY REQUIREMENTS

A. Conform to applicable code for flame and smoke rating requirements for products and finishes.

1.06 DELIVERY, STORAGE, AND PROTECTION

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and or as required by manufacturer's instructions and/or MPI MANUAL.

1.07 ENVIRONMENTAL REQUIREMENTS

A. Provide environmental conditions as required by paint manufacturer, MPI Manual and as follows:
   1. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer’s written literature.
   2. Do not apply exterior coatings during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer’s written literature.
   3. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 - PRODUCTS

2.01 PAINTS AND COATINGS - GENERAL

A. Paints and Coatings: Ready mixed, select products complying with MPI standards from the following acceptable Manufacturers:
   1. Paints:
      a. Benjamin Moore & Company
      b. Sherwin Williams
      c. Parker Paint
      d. Kelly Moore
      e. No Substitutions.
   2. Stain/Oils/Waterborne Urethanes:
      a. Proluxe or PPG Paints
      b. Benjamin Moore & Company
      c. Cabots
      d. Dalys
      e. Duckback
      f. No Substitutions.
   3. Paints/stains must be products which installer has used on other projects and are known to provide excellent performance including:
      - A soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating.
      - Good hiding characteristics.

- Good flow and brushing properties.
- Good mildew-resistance.
- Capable of drying or curing free of streaks or sags.

B. Certain manufacturer's products may not provide adequate hiding ability with the number of coats specified. Contractor may be required to provide additional coats at no additional cost if products are selected that do not provide adequate hiding ability.

2.02 ACCESSORY MATERIALS

A. Putty: Conform to FS TT-P-791A(3), colored to match paint and stain finishes, as applicable.

B. Cementitious Filler: Nonshrink formulation, white Portland cement with fine silicate aggregate, zinc- oxide pigment, and reinforcing chemical binder as approved.

C. Spackling Compound: Standard gypsum board compound.

D. Unspecified materials such as turpentine, linseed oil, or mineral spirits shall be products of reputable manufacturers and as recommended by paint manufacturers.

E. Materials for Undercoats and Finish Coats: Ready mixed, and shall not be changed, except thinning of undercoats (when required), reinforcing, or coloring, all of which shall be performed in accordance with manufacturers' recommendations.

PART 3 - EXECUTION

3.01 COORDINATION

A. Review, coordinate and accommodate work of other trades that interface with, affect or are affected by the work of this Section so as to facilitate the execution of the overall Work of this project in a coordinated and efficient manner.

B. Coordinate selection of paint products to be applied over prime coats applied by others for compatibility and good adhesion.

C. Coordinate inspection of finish GWB surfaces with Section 09 29 00 prior to start of any painting work; identify and mark any defective areas for correction.

D. Schedule work to follow completion of all dust/dirt producing work.

3.02 EXAMINATION

A. Verify that surfaces are clean and ready to receive paint as required by the product manufacturer.

B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application or performance.

C. Start of installation indicates acceptance of substrate, finish and conditions and responsibility for proper finish and appearance.

3.03 SURFACE PREPARATION

A. Conform to MPI Manual surface preparation recommendations, paint manufacturer's recommendations and the following for preparation of each different surface scheduled to be painted:

B. Substrate: Clean substrate surfaces thoroughly before applying any primer or paint following paint manufacturer's cleaning recommendations; allow substrate to dry thoroughly before starting paint application.

C. Surface Appurtenances: Remove electrical plates, hardware, light fixture trim, escutcheons, and fittings prior to preparing surfaces or finishing.

D. Marks: Seal with shellac those which may bleed through surface finishes.

E. Mildew: Remove mildew by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

F. Factory Primed/Painted Items to be Painted: Hand sand factory finished surfaces to provide proper tooth for good adhesion of finish coats.

3.04 PROTECTION

A. Protect all finish surfaces, and elements surrounding the work of this Section from overspray, damage or disfiguration.

B. Maintain subfloor surfaces free from paint and spills using heavy paper or other method.

3.05 APPLICATION

A. Apply products in accordance with manufacturer's instructions and MPI Manual.

B. Apply sufficient wet film thickness to provide good hiding, do not thin product.

C. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.

D. Do not apply finishes to surfaces that are not dry.

E. Allow applied coats to dry completely before next coat is applied.

F. Apply each coat to uniform appearance. Apply each coat of paint slightly darker than preceding coat unless otherwise approved.

G. Vacuum clean surfaces of loose particles. Remove dust and particles just prior to applying next coat.

H. Gypsum Board & CMU Surfaces: After paint has been spray or roller applied to uniform wet film thickness, backroll entire surface in same direction to provide uniform texture, reflective value and appearance, free of roller marks or lines.

3.06 FINISHING MECHANICAL AND ELECTRICAL EQUIPMENT

A. Remove louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

B. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.07 CLEANING

A. Collect waste material which may constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.08 SURFACES THAT REQUIRE PAINT FINISH

A. Paint all new and existing materials/surfaces as shown in the drawings or otherwise required for complete and finished project.

B. Firestopping/smoke seal exposed to view.

C. Factory-finished items that require painting:
   1. Access panels/doors

D. Mechanical and Electrical: Use paint systems defined for the substrates to be finished.
   1. Mechanical grilles and louvers
   2. Paint exposed to view insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, and hangers, brackets, collars, supports, and related similar items to match background surfaces
   3. Paint shop-primed items.
   4. Paint interior surfaces of air ducts that are visible through grilles and louvers with one coat of flat black paint to visible surfaces

E Interior:
   1. Gypsum board, typical: Waterborne, 4 coats.
      (1) One coat latex PVA primer sealer (apply before application of texture coat).
      (1) One coat latex primer (apply after application of texture coat).
      (2) Two coats acrylic enamel. (Finish eggshell)

2. Wood Doors/Frames/Trim: Waterborne Polyurethane, 3 coats (satin).

END OF SECTION

SECTION 10 44 00

FIRE EXTINGUISHERS AND CABINETS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Fire Extinguisher Cabinets

B. Fire Extinguishers

1.02 REFERENCES

A. All references shall be the latest adopted edition.

B. NFPA 10 - Standard for Portable Fire Extinguishers; National Fire Protection Association.

C. UL (FPED) - Fire Protection Equipment Directory; Underwriters Laboratories Inc.; current edition.

1.03 SUBMITTALS

A. Product Data: Manufacturer's descriptive literature for specified products; indicate compliance to specified requirements.

PART 2 - PRODUCTS

2.02 MANUFACTURERS

A. Available Manufacturers: Subject to conformance with the requirements of this Section, manufacturers offering products that may be provided for this project include, but are not limited to, the following:
1. J.L. Industries, Inc. (Basis of design)
2. Larsen's Manufacturing Company
3. Potter-Roemer
4. Substitutions: Submit requested product to Owner for approval.

2.03 FIRE EXTINGUISHER CABINETS

A. Cabinets style Fire Extinguisher Cabinets: Basis of Design J.L. Industries, Inc. "*Academy" Series 1027* sized to accommodate 2A10BC Fire Extinguisher, semi-recessed maximum amount allowed by wall framing. Locations as per drawings.

B. Cabinet: 10-1/2" x 24" x 6"
   a. Provide maximum recessment allowed by depth of wall framing. Fully recessed is desired.

b. Where Fire Extinguisher Cabinets can be mounted within wall framing this shall be the chosen method. Surface mounted must be approved by Owner.

C. Bracket: Plated steel bracket for mounting on wall in cabinet, with quick release metal retaining strap to hold extinguisher securely to bracket. Provide for all extinguishers.

D. Door & Frame: Clear anodized aluminum; tub to clear anodized aluminum
   a. Projection: semi recessed
   b. Configuration: Full door glazing w/ polished chrome pull handle
   c. Glazing: Clear Acrylic
   d. Trim style: 2-1/2” rolled edge

E. Door hardware:
   a. Continuous hinge, allowing 180-degree door swing.
   b. Polished chrome handle

F. Lettering: Die cut vinyl letters.
   a. Lettering Color: LDCVRFE Red, ¾” x 18” "FIRE EXTINGUISHER".
   b. Placement: Vertical, on hinge side of door glazing, place on interior side of glazing to be read from exterior side; comply with all requirements of authorities having jurisdiction.

2.04 FIRE EXTINGUISHERS

A. Fire Extinguishers: 2A10BC capacity.

PART 3 - EXECUTION

3.01 COORDINATION

A. Review, coordinate and accommodate work of other trades that interface with, affect or are affected by the work of this Section so as to facilitate the execution of the overall Work of this project in a coordinated and efficient manner.

B. Coordinate size and location of recessed openings in framed walls.

3.02 EXAMINATION

A. Verify that wall openings are correct size and in correct locations.

3.03 INSTALLATION

A. Install cabinets securely to wall framing in accordance with manufacturer's instructions and as required by local Code Authority.
   1. Install Extinguisher Mounting Bracket centered in cabinet.

3.04 ADJUSTING

A. Immediately prior to project completion, ensure extinguishers (provided by others) are fully charged and bear tag recording date of charging and signature of verifying entity.

3.05 PROTECTION

A. Protect exposed finishes of cabinets from damage by subsequent construction activities

B. Repair minor damage to finishes in accordance with manufacturer's recommendations; replace components which cannot be repaired to Owner's satisfaction.

END OF SECTION

SECTION 12 32 00

PRE-MANUFACTURED CASEWORK

PART 1 - GENERAL

The work of this section is limited to the 4 rolling file cabinets as indicated on the drawings. The primary built in casework is specified in Section 06-20-00 Finish Carpentry.

1.01 REFERENCES

A. All references shall be the latest adopted edition.

B. AHA A135.4 - Basic Hardboard; American Hardboard Association

C. ANSI A208.1 - Wood Particleboard

D. PS 1 - Construction and Industrial Plywood

E. PS 20 - American Softwood Lumber Standard

1.02 SUBMITTALS

Shop Drawings: Provide plan and elevation view of all casework; indicate materials, component profiles and elevations, assembly methods, joint details, fastening methods, accessory listings, hardware location and schedule of finishes.

A. Samples:
   A. Hardwood plywood and solid hardwood trim: Submit samples of each

1.03 QUALITY ASSURANCE

A. Perform work in accordance with AWI Quality Standards, Custom Grade, except where noted otherwise for specific elements of the work.

B. Work in this Section shall comply with the specified Grade found in the Architectural Woodwork Institute Quality Standards (AWI).

C. Woodwork Manufacturer/Fabricator: Company specializing in fabricating the products specified in this section with minimum five years of successful experience.

1.04 DELIVERY, STORAGE & PROTECTION

A. Protect units from moisture damage.

1.05 ENVIRONMENTAL REQUIREMENTS

A. During and after installation of work of this section, maintain the same temperature and humidity conditions in building spaces as will occur after occupancy.

PART 2 - PRODUCTS

2.01 FABRICATION STANDARD

A. Fabrication Standard: AWI Section 1600 Modular Cabinets Custom Grade.

2.02 WOOD MATERIALS

A. Softwood Lumber (for use in concealed locations only): NIST PS 20; Graded in accordance with AWI P-200 Economy average moisture content of 11 percent.

2.03 PANEL MATERIALS

A. Oak Veneer Plywood. Boxes and all panels are to be hardwood veneer plywood with matching edge banding on drawers, no particle board allowed. Drawing details take precedence.

2.04 HARDWARE & ACCESSORIES

A. Pulls: 4” solid stainless-steel wire pulls. Standard Unless noted otherwise.

B. Drawer Slides: Blum Tandem plus Blumotion

1. All Drawer Slides: full extension, soft close with lock min 100-pound capacity

C. Locks: If noted on cabinet elevations; National Lock, type appropriate for application, US26D satin chrome finish, keyed as directed.

D. Casters: 4 per cabinet, size indicated on drawings.

2.05 MANUFACTURERS

A. The following are approved manufacturers. Substitutions allowed by request only.
1. Westmark Products
2. Custom Source Woodworking, Inc. - (360) 491-9365 7745 Arab Dr SE, Unit D, Olympia, WA 98501
3. Higher Plane – 360-733-4322, contact: Dave Rossman, 905 Division Street, Bellingham, WA 98226
4. Interior Wood Products - 360-352-7273, contact: Brian Ritter,9705 Lathrop Industrial Dr. SW Olympia, WA 98512
5. RS Manufacturing – Mountlake Terrace, WA 425-774-1211

6. Skagit Architectural Millwork – 800 N. 1st Street Mount Vernon, WA 360-336-9587.
7. All Spaces, LLC – 360-873-8048, contact: Stuart Harr, 360-661-6117 mobile, 725 N. First Street Mount Vernon, WA 98273
8. Valley Cabinets & More, Inc. Mount Vernon, WA. 360-542-1276 contact: Marc Roberson shop@valleycabinets.com
9. Visser Cabinetworks, Inc. – 360-671-7270, 3965 Hammer Dr. Bellingham, WA 98226
10. WW Wells Millwork – Everett, WA 425-259-9155
11. Woodwork Unlimited – 425-334-5702, contact John Holdaway 425-343-2375 mobile, 2608 Harford Drive Lake Stevens, WA 98258
12. Wollin Woodworking – 360-240-8403 Contact: Tyler Wollin 639 Industrial Ave., Unit C Oak Harbor, WA 98277
13. Display Manufacturing L.L.C.
14. NW Custom Cabinets - (360) 757-8788 Contact: Derek Slotemaker Peterson Road Burlington, WA 98233
15. Cascade
16. Pacific Cabinets
17. Genothen

B. Manufacturer Requirements.
1. Must have minimum 5 years' experience in casework fabrication and installation under one single business license of operation.
2. Must have minimum 10 projects of municipal or government work.
3. Demonstration of work meeting all references in 1.03.
4. Manufacture of casework is to assume complete responsibility for final assemble unit for owner acceptance.
5. Provide single source manufacture of parts in units.

PART 3 - EXECUTION

3.01 COORDINATION

A. Review, coordinate and accommodate work of other trades that interface with, affect or are affected by the work of this Section so as to facilitate the execution of the overall Work of this project in a coordinated and efficient manner.

END OF SECTION

PART 1 - GENERAL

1.01. APPLICABLE PROVISIONS

A. The General, Supplementary and other Conditions of the Contract, modifications to the General Conditions, the Drawings, and the applicable provisions of the other Divisions are hereby made a part of this Division and all its sections.

1.02. SUMMARY

A. The requirements of this Section and the other Division 26, 27 & 28 sections apply to all the electrical work.

B. Coordinate electrical work with related work shown and specified elsewhere.

C. Work Included: The Contractor shall perform all the Work required (including the furnishing of all supervision, labor, services, tools, materials and equipment and the performance of all operations and incidentals necessary) for a complete, safe and reliable electrical installation, adjusted, tested and ready for operation. The electrical work is generally described as follows:

1. Coordination and scheduling.
2. Demolition.
3. Recycling of fluorescent ballasts and light tubes removed during demolition.
4. Grounding.
5. Wiring devices and special purpose receptacles.
6. Ancillary systems raceways, cable trays, boxes, etc.
7. Lighting fixtures.
8. Lighting controls.
9. Branch circuit wiring system for lighting, outlets, equipment, etc.
10. Line voltage (120 volt or higher) control stations, devices, conduit, boxes, wiring, etc. (installation only if furnished with mechanical equipment).
11. Modifications to the existing Fire detection and alarm system.
12. Modification and expansion of the existing Telecommunications wiring infrastructure.
13. Audio video systems.
14. Ancillary systems terminal boards.

15. Supports.

16. Pull strings and ropes.

17. Cutting and patching, core drilling, etc.

18. Moisture, fire and dust stopping and sealing.

19. Temporary construction power & lighting.

20. Testing and completing.

21. Commissioning of electrical systems.

22. Final cleaning.

23. Obtaining and paying for all required licenses, permits, inspections and fees.

D. Work not included: The following electrical system related work will be provided by the Owner, General Contractor, other Subcontractors, or Systems Contractors working directly with the Owner:

1. Mechanical Contractor: Mechanical equipment and systems low voltage control wiring, conduits, devices, etc. See mechanical specification sections and schedule on drawings.

2. Mechanical Contractor: Mechanical equipment and systems line voltage control devices, etc (except, installation by Contractor). See mechanical specification sections and schedule on drawings.

3. General Contractor: Appliances.

4. Owner: Payment of utility service charges.

1.03. EXISTING CONDITIONS

A. Before submitting bid, examine existing site (and building or equipment) conditions to determine effect on execution of the electrical work and include costs in bid.

B. Existing circuits indicated on the plan are based on what was shown on the original building construction drawings and may not be exactly how the actual construction was done. The contractor shall expect that an extensive amount of circuit tracing to determine how the actual circuits are installed will be required.

C. Damaged electrical and telecommunications (telephone, computer/data, television, fiber, copper, etc.) cables shall be replaced in their entirety. Splicing will not be allowed.

D. Restore exposed finishes of patched areas and extend finish restoration into adjoining construction to remain in a manner that eliminates evidence of patching and refinishing.

1.04. PLAN REVIEW AND PERMITS

A. The Contractor shall submit complete sets of fire alarm system submittals as required to the City of Mount Vernon Fire Marshal for approval and pay the plan review fees.

B. The Contractor shall arrange for inspections and pay for all required licenses, permits, inspections, plan review fees and any other fees.

1.05. DEFINITIONS

A. The term "Contractor" used throughout Division 26, 27 and 28 of these specifications and on the electrical drawings shall be understood to mean the Electrical Contractor. All other work shall be called out by name.

B. “Approved” means approved by the Owner. “For approval” means for the Owner's approval.

C. “Furnish” means to supply and deliver to the Project, ready for installation and in operable condition.

D. “Install” means to incorporate in the work in final position, complete, anchored, connected, and in operable condition.

E. “Provide” means furnish and install.

F. "Remove" means to remove the existing item indicated and all associated conduit, boxes, cables, etc. to their point of origin and/or destination; except, concealed conduits and flush boxes may be abandoned in place and/or re-used in the new installation. Cables shall be removed and/or replaced.

G. "Replace" means to remove the existing and add in lieu the new as indicated.

H. “As directed” means as directed by the Owner.

I. “Concealed” means hidden from sight in trenches, walls, chases, ceilings, etc.

J. “Exposed” means within sight; that is, not concealed as defined above, and installed on the surface of walls, ceilings, etc.

K. “Residential” areas mean within the apartment units. “Non-residential” areas mean all others.

L. “C.O.” means conduit only; that is, without cable (except, provide pull string or rope).

M. “F.O.I.C.” means Furnished by Others (e.g. general contractor, other subcontractors, equipment suppliers, Owner, systems contractors working directly with the Owner, etc.), Installed by Contractor.

N. “N.I.C.” means Not in Contract.

O. See telecommunications sections for additional definitions.

P. Definitions of all other terms, etc. are in accordance with AIA, ANSI, IEEE, IES, NEMA, etc. standard definitions.

1.06. DRAWINGS & SPECIFICATIONS

A. The electrical plan drawings are general in form and do not attempt to show complete details or list every item of the electrical systems, the building construction or the various equipment (new or existing); however, the routing of raceways and circuits, and the locations of equipment, devices, fixtures, etc. Represent the desired finished arrangement; except, as governed by structural or mechanical conditions or obstructions.

B. Existing circuits indicated on the plan are based on what was shown on the original building construction drawings and may not be exactly how the actual construction was done. The contractor shall expect that an extensive amount of circuit tracing to determine how the actual circuits are installed will be required.

C. Specifications are, in some cases, written in an abbreviated form. Words such as shall, shall be, the Contractor shall, and similar mandatory phrases are supplied by inference.

D. Investigate the structural and finish conditions affecting the work. Refer to the architectural, structural and mechanical drawings, supplier shop drawings and submittals, etc. for additional details, equipment ratings, dimensions, location and swing of doors, location and size of partitions, cabinets, etc. and similar features. Verify all dimensions, equipment ratings, etc. with the actual before installation. Arrange the work accordingly.

E. The intent of the drawings and specifications is to include all items necessary for the proper execution and completion of the Work; however, any item or detail not specifically mentioned in the specifications or shown on the drawings, but which is necessary to produce the intended results shall be included.

F. The Contractor shall bring to the Engineer's attention any discrepancies, inconsistencies, conflicts, errors, or omissions within the Contract Documents, between the Contract Documents and field conditions, and any design and layout changes required due to specific equipment selection, etc. prior to equipment and material purchasing and installation. If Contractor purchases any equipment or materials and performs any construction activity, and it knows or reasonably should have known that the documents contain a discrepancy, inconsistency, conflict, error or omissions, corrective work shall be at the Contractor's expense.

G. In the event that there are discrepancies between requirements shown on different sheets of the drawings or between the drawings and the specifications, the more restrictive of the requirements shall apply.

H. Verify all equipment and device locations with the Owner prior to rough-in.

I. Verify exposed raceway routing with the Owner prior to rough-in.

1.07. SUBMITTALS

A. Direct to the Owner.

B. Submittals from the electrical contractor and each sub-contractor shall include a cover page indicating the company name, project manager name, and contact information for the contractor.

C. Forward all submittals to the Owner, together in a complete package, at one time, in electronic format as single .pdf files for each specification section. Submittals for individual products or incomplete submittals are not acceptable and will be returned without review.

D. Submittals shall be grouped by specification section and shall be arranged in the same order in which they are found in the specifications to facilitate the review process.

E. Re-submittals, when requested, shall be provided as complete and comprehensive for each specification section. Re-submittals for individual products or incomplete re-submittals are not acceptable and will be returned without review.

F. Provide submittals for the equipment, boxes, devices, fixtures, special raceways, systems and their components, etc. as directed in the various sections of the specifications.

G. Prepare detail layout drawings to a larger scale than the contract drawings in areas where the work is of sufficient complexity to warrant additional detailing.

H. Submittal drawings shall be on standard size sheets no larger than the contract drawings.

I. Submit M.S.D.S. (Manufacturer's Safety Data Sheets) for all chemicals or hazardous materials. All chemicals and hazardous materials to meet NIOSH Permissible Exposure Levels (P.E.L.) and OSHA Time Weighted Average (T.W.A.) requirements before commencing work.

J. If requested by the Owner, provide samples of materials for evaluation.

K. Submittals shall provide sufficient detail so compliance with the drawings and specifications can be ascertained. Clearly identify each item by manufacturer, brand, trade name, number, size, rating, or whatever other data is necessary to properly identify and review materials and equipment.

L. Catalog pages containing more than one product shall be marked with arrows to indicate the proposed product.

M. Obtain approval before purchasing any products. Items not in accordance with the drawings and specifications will be rejected.

N. The Contractor shall establish quantities, check drawings and data, verify space requirements, dimensions, and possible interferences prior to submittal. Submittals which indicate quantities will not be reviewed by the Engineer for accuracy of quantity.

O. The Owner will review each submittal, mark to indicate action taken, and return. Compliance with specified characteristics is the Contractor's responsibility.

P. Approval of submittals does not release the Contractor from a proper installation, compliance with the drawings, specifications, codes, standards, etc. or coordination of the work.

Q. Allow two weeks turnaround time for each submittal from the time of receipt at the engineer's office, except the engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until the related submittals are received.

1.08. SUBSTITUTE PRODUCTS APPROVAL

A.

B. During Bidding:

1. Substitutions for equipment and materials other than that specified will be considered if equal (or better and/or higher) in quality, ratings and function; and similar in type, style, size and appearance.

2. Submit written requests to Owner.

a. If received no later than 7 work days prior to Bid opening, requests will be considered, but not thereafter.

b. Bidders will be informed by Addendum of any approved items.

c. No responses will be provided for rejected items.

3. Requests shall be accompanied by complete specifications, samples, record or performance, certified tests by impartial, recognized laboratories, and other such information as required to clearly represent the proposed substitution.

4. Lighting fixture substitution requests shall include photometric data.

5. Final decisions as to quality and suitability of proposed substitutions rest solely with the Owner, and will be based on proof submitted.

6. The cost of changes required in order to incorporate the proposed substitution, such as revisions to controls, raceways, wiring, openings, appurtenances, etc., shall be included in the bid. Any cost reduction resulting from substitutions shall benefit the Owner through a reduced bid.

7. When Owner approves a proposed substitution, it is with the understanding that Bidder certifies that substitute articles or materials are equal to or better than those specified and that no exception is taken with any of the performance objectives, service or warranty requirements or features herein specified.

C. After Bidding:

1. Substitute products requests will not be considered.

1.09. RECORD DOCUMENTS

A. Submit record documents at completion of the project in accordance with the specific submittal requirements listed elsewhere in these documents.

B. Provide “as-built” drawings in both full size reproducible form and in software form as AutoCAD .dwg type files.

C. All record documents in software form shall be transmitted in electronic format. Include the necessary program(s) to read test results. Separate submittals for the various disciplines will not be accepted.

1.10. "AS BUILT" DRAWINGS

A. The Contractor shall continuously maintain a marked job set of as-built drawings as the work progresses, to indicate deviations from the original design, including change orders. Maintain records of all concealed wiring and of actual equipment, device, etc. locations. Provide dimensions from accepted reference lines as needed. The as-built drawings shall be kept on-site and available for inspection by the Owner.

B. Include any detailed equipment, raceway, wiring, etc. diagrams and layouts prepared by Contractor or his subcontractors, suppliers, etc.

C. At substantial completion, Contractor shall modify one complete set of reproducible copies, with all "as built" information and submit these drawings to the Owner for approval. Each sheet shall be marked "CORRECTED TO AS BUILT"; or, if there are no changes, drawings shall be marked "NO CHANGES, INSTALLATION PER PLAN".

D. After approval, Contractor shall transfer all "as built" information from the marked job set and other information as appropriate to AutoCAD .dwg type files. (Consultant/Engineer will provide construction drawings AutoCAD files to contractor.) Utilize the layering scheme, font types, line types, title block, etc. provided in the AutoCAD drawing files. All drawings shall be noted as “As-Built” with a stamp and date. After adding the “as-built” information, return the AutoCAD files to the Consultant/Engineer for inclusion into the final project record set.

E. “As-built” drawings for all portions of the work shall be combined into a single set matching the contract documents. Separate submittals for the various disciplines will not be accepted.

1.11. OPERATION AND MAINTENANCE MANUALS

A.

B. Following installation of the electrical systems, but prior to acceptance of the work, Contractor shall submit to the Owner a preliminary O&M Manual in pdf format, with information systematically bookmarked and indexed for easy reference to be reviewed by the Owner.

C. Final copy of the manuals shall be compiled into a single .pdf file for the entire project, or a single .pdf file for each specification Division.

D. Manuals shall include:

1. Record documents (see above); except, full size reproducible bond paper copy of drawings to be provided separately.

2. Product submittals, updated to "as built" conditions.

3. Test results.

4. Description of systems configuration and operation including component identification and interrelations, including diagrams and supplementary drawings where necessary.

5. Installation, operation, maintenance and programming manuals covering the installed systems, equipment and materials.

6. Maintenance instructions (frequency of service, type of service, etc.).

7. Parts lists for all equipment; including recording information, recommended spares and anticipated useful life.

8. Supplier's names, addresses, telephone and reference order numbers for all equipment and materials.

9. Warranties and Bonds.

10. Copies of final inspection certificates from the authorities having jurisdiction.

E. Manuals shall not include:

1. Non-applicable product data.

2. Extraneous information that is not necessary for operation and maintenance.

3. Foreign language product pages.

1.12. WARRANTY

A. The complete installation shall be guaranteed for a period of one (1) year after date of project completion. For warranty purposes, the date of project completion shall be considered the date of final acceptance of the installation by the Owner certified in writing, and after Owner has received all project close-out requirements. All corrective work, if needed and requested by the Owner, shall be provided without cost to the Owner during the guarantee period.

B. All corrective work performed by the Contractor in remedying defective work during the guarantee period following the Owner's acceptance of the project shall be subject to the same guarantee requirements of the original work for a period as specified from the date of completion of the corrective work.

C. Corrective work shall include on-site service by the Contractor, subcontractor or supplier (e.g. fire alarm and telecommunications systems), and/or nearest technical service representative of the equipment manufacturer. Service shall be provided within 24 hours from the time of request for warranty service by the Owner.

1.13. TRAINING/INSTRUCTION AND ASSISTANCE

A. After the installation is complete and operating, and prior to acceptance of the work, conduct a minimum of a one (1) hour training/instruction period at the site for each type of system to point out locations of service and maintenance and instruct the Owner's in the operation of all systems and equipment.

B. The person(s) who conduct these instructions and demonstrations shall be a qualified representative(s) of the manufacturer with substantial training and operating experience on this equipment and project, and shall be versed in the operating theory as well as practical operation and maintenance work. Instructor(s) shall have the necessary educational and interpersonal skills, as well as proven ability to effectively perform the training. Their qualifications shall be submitted to the Owner before conducting the instruction period.

C. Each period shall include preliminary discussion and presentation of information using the actual maintenance manuals required for this project. Contractor shall notify Owner and Engineer at least 48 hours in advance of readiness to conduct the instruction period. The actual time and date of instruction period shall be acceptable to the Owner and Engineer.

D. All training material shall be furnished and supplied by the Contractor.

1.14. QUALITY ASSURANCE

A. The Contractor and Contractor's personnel shall be experienced, thoroughly trained and completely familiar with the systems, equipment, devices, fixtures, materials, etc. and the required methods of installation.

B. The Contractor shall provide, upon request, after bid opening and prior to notice to proceed, a company resume including a list of project personnel with years of experience and qualifications/certifications, a list of similar projects completed within the past 5 years with

contact information for the Owners and Engineers for each project and any other information which may be pertinent to the project. If requested, the Contractor shall provide a similar resume for sub-contractors.

C. The Contractor shall provide proof, upon request, that all personnel are licensed according to Washington State RCW19.28.161.

D. All materials, equipment and workmanship shall be properly inspected by the Contractor and shall at all times be subject to inspection by the Owner. Contractor shall provide all samples, data and documents necessary for such inspection. Owner shall be afforded full and free access at the jobsite and the shops and places of business of the Contractor for such inspection and to determine the status of the work. If Contractor covers all or any part of the work prior to any inspection or test specifically requested by Owner, the cost of any necessary uncovering and replacing shall be borne by the Contractor.

E. Neither the failure to make inspections or tests, nor to discover defective workmanship, materials or equipment, shall prejudice the rights of the Owner thereafter to reject the work and/ or require its correction.

F. The completed installation shall comply with the more stringent of the requirements of the drawings and specifications, the authorities having jurisdiction, and all laws, ordinances, rules, regulations and requirements in effect at the site, including current editions of the following:

1. NEC - National Electrical Code.
2. National Electrical Safety Code.
3. OSHA - Occupational Safety and Health Act (and its Washington State equivalent).
4. ADA - Americans with Disabilities Act (and its Washington State equivalent).
5. International Fire Code (and its Washington State equivalent).
6. International Building Code (and its Washington State equivalent).
7. Washington State Rules and Regulations for Installing Electrical Wires and Equipment (WAC 296-46).
8. Washington State Safety Standards for Electrical Workers (WAC 296-45).
9. Washington State Energy Code (WSEC).

G. The following standards establish the minimum requirements for the equipment and installation, unless exceeded by the requirements of the drawings or specifications:

1. ANSI - American National Standards Institute.
2. BICSI – Building Industry Consulting Service International
3. ICEA - Insulated Cable Engineers Association.
4. IEEE - Institute of Electrical and Electronics Engineers.
5. NEMA - National Electrical Manufacturers Association.
6. NEIS – National Electrical Installation Standards
7. NFPA - National Fire Protection Association.
8. NECA – National Electrical Contractors Association
9. EIA - Electronic Industries Association.
10. TIA - Telecommunications Industry Association.

H. In addition, telephone/voice & computer/data pathways & wiring shall be in accordance with the current edition of the following:

1. ANSI/NECA/BICSI 568 – Installing Commercial Building Telecommunications Cabling.
2. ANSI/TIA/EIA 568 – Generic Telecommunications Cabling for Customer Premises.
3. ANSI/TIA/EIA 568 – Commercial Building Telecommunications Cabling Standard.
4. ANSI/TIA/EIA 568 – Balanced Twisted Pair Telecommunications Cabling System Standard.
5. ANSI/TIA/EIA 569 – Telecommunications Pathways and Spaces.
6. ANSI/TIA/EIA 606 – Administration Standard for Commercial Telecommunications Infrastructure.
7. ANSI/TIA/EIA 607 – Commercial Building Grounding and Bonding Requirements for Telecommunications.
8. IEEE 802.3-2002 – IEEE Standard for Information Technology, Part 3: CSMA/CD.

I. Nothing in the drawings or specifications shall be construed to direct or permit work not conforming to applicable laws, ordinances, rules, regulations, requirements or standards. Discrepancies or conflicts shall be brought to the attention of the Owner and Engineer promptly for resolution.

J. The Owner and Engineer shall be advised prior to any inspection being requested. The Owner and Engineer shall be provided the opportunity to inspect the installation prior to wallboard, ceiling or finish installation. Any materials, equipment or workmanship that is not (in the opinion of the Owner, Engineer or Inspector) as it should be, shall be taken out and replaced without cost to the Owner.

PART 2 - PRODUCTS

2.01. GENERAL

A. Coordinate the features of materials and equipment so they form an integrated system.

B. Contractor shall make certain that all materials selected by him, his subcontractors or by his suppliers, conform exactly to requirements of the drawings and specifications. Transmittal of such specifications and drawing information to subcontractors, person manufacturing and/or supplying materials to the project, and rigid adherence thereto, is the Contractor's responsibility.

C. All equipment, devices, luminaires, materials, etc. shall be UL (Underwriter's Laboratories, Inc.) listed, labeled and approved for the service intended where UL standards have been established. If no UL label is available, the label of a testing agency or conformance to national standards recognized and approved by the electrical inspector having jurisdiction is required.

D. All equipment, devices, fixtures, materials, etc. shall be new and installed only if in first class condition.

1. Unless specifically designated as existing.

2. Existing raceways, boxes, etc. may be re-used if in "like new condition" and appropriate for the new installation.

E. All equipment, devices, etc. and their components shall be designed for continuous duty without degradation of function or performance.

F. In the event that any item is not available exactly as specified, the Contractor shall so notify the Owner and Engineer in writing prior to bidding as early as possible to allow ample time for an alternate item to be selected without delay to the project.

2.02. EQUIPMENT MANUFACTURERS

A. Unless specifically noted otherwise, all references to manufacturer’s or supplier's model numbers and other pertinent information herein is intended to establish minimum standards of performance, function and quality.

B. All equipment, devices, materials, etc. shall be of a type manufactured by reputable recognized vendors. Each type or groups of items, system components, etc. having the same or similar function shall be the same manufacturer, make and quality throughout the facility.

C. Approval of a manufacturer's name and/or type does not release the Contractor of the responsibility for providing materials which comply in all details with requirements in the contract documents.

2.03. SPARE CAPACITY

A. Unless sizes and/or quantities are specifically indicated, provide at least 20% spare wiring capacity in all cabinets, panels, cable trays and raceways.

2.04. ENCLOSURES

A. Equipment, devices, luminaires, boxes, etc. located indoors shall have general purpose (NEMA 1) enclosures.

B. Equipment, devices, luminaires, boxes, etc. located outdoors shall be provided with weatherproof (NEMA 3R) enclosures. Surface finish shall be a rust inhibiting primer followed by an epoxy or polyurethane polyester top coat.

C. Provide gaskets, seals, etc. as required to prevent the entrance of moisture, debris, insects, etc.

D. Enclosures and boxes shall be fabricated from code gauge, or heavier, galvanized steel. Surface preparation and finish shall be manufacturer's standard unless noted otherwise.

E. Include all necessary mounting, etc. accessories.

2.05. SUPPORTS AND CHANNEL

A. Channel, framing members, etc. shall be 12 gauge steel, galvanized, $1^{5}/_{8}$ inch channel width with all necessary accessories.

B. Beam clamps shall be steel, minimum 500 lb load rated.

C. Threaded rod shall be steel, minimum $^{3}/_{8}$ inch diameter.

D. Support posts for rooftop mounted equipment shall be 2 inch rigid metal conduit or 2 inch 12 gauge galvanized metal fence tubing. Provide with metal cap to prevent entrance of moisture into the building.

2.06. ANCHORS AND FASTENERS

A. Anchors and fasteners used shall be of a type designed for use in the base material to which the item is to be attached. Attach to wood with wood or lag screws, to metal with machine screws or bolts and to concrete with carbon steel wedge or sleeve type expansion anchors or self-drilling metal anchors and machine screws or bolts.

B. Pad and floor mounted equipment shall be secured with suitable hot dipped galvanized steel anchor bolts, washers, hex nuts, etc.

C. Powder actuated fasteners, plastic expansion type anchors, nails and toggle bolts are not permitted.

D. Anchors shall be non-corrosive or have suitable corrosion resistant coatings or treatment.

E. Bolts, nuts, screws and other threaded devices shall have standard threads and heads, unless required for tamper-proof installation.

2.07. IDENTIFICATION

A. Provide nameplates for all equipment (e.g. switchboards, panels, disconnecting means, control panels, control stations, etc.) and other devices used for the control of circuits, equipment, etc. Nameplates shall adequately describe the function or operation of the identified equipment, devices, etc. and include the panel and circuit number(s) from which it is fed. Nameplate designations shall be consistent with the project documents. Submit proposed inscriptions for approval.

B. Provide nameplates for switchboards and panelboards to identify the system color coding scheme for phase and neutral conductors as required.

C. Definite purpose devices shall be labeled with a description of the device's function, rating and include the panel and circuit number(s) from which it is fed.

D. All equipment and outlets shall be labeled with the panel and circuit number(s) from which it is fed.

E. Spare, C.O., etc. conduits shall be labeled with their destination.

F. All non-underground medium voltage cables and conduits containing medium voltage cable shall be provided with suitable labels every 10 feet identifying the voltage of the cables and/or the cables within the conduits.

G. Nameplates shall be laminated plastic, with lettering etched through the outer covering. Character size as appropriate for the application, approved by Engineer; ¼ inch except minimum $^1/_8$ inch. Nameplates shall be securely fastened with suitable adhesive or self tapping screws. Character and background colors shall conform to the following system color code:

Background.	Char.	System
Black	White	Power & Lighting
Red	White	Fire Alarm

H. Identification tags shall be plastic, flexible type with a label. Identification tags shall be securely fastened with cable ties. Tags shall be mounted so as to be clearly visible.

I. Labels shall be heavy duty adhesive type, clear background with black letters on light colored devices and clear background with white letters on dark colored devices; except, labels on devices connected to the emergency power system shall have red letters. Lettering shall be appropriately sized for the application, ¼ inch except minimum $^1/_8$ inch. Labels on ceiling mounted devices shall be large enough to read from the floor. Labels shall be as manufactured by Kroy, Brothers, or approved equal. Self-adhesive circuit numbers, masking tape, plastic punch type "Dymo" labels, etc. are not acceptable.

PART 3 - EXECUTION

3.01. CONSTRUCTION/WIRING METHODS

A. Wiring methods shall be as follows:

1. Service - PVC conduit below grade (with GRS conduit risers) and GRS conduit above grade.

2. Feeders - PVC conduit below grade (with GRS conduit risers) and EMT above grade.

3. Branch circuits - PVC conduit below grade (with GRS conduit risers) and EMT above grade.

4. Telecommunications - PVC conduit below grade and EMT above grade; except, suitable cables run "open" in accessible locations above t-bar ceilings or within attic space.

5. Fire alarm, class 2 control, etc. - PVC conduit below grade and EMT above grade; except, suitable cables run "open" in accessible locations above t-bar ceilings or within attic space.

B. All wire and cable shall be enclosed within the raceway system; except, "open cable wiring" will be permitted for Class 2 signal and control, fire alarm, security, telecommunications, etc. cables approved for the purpose when run concealed in an accessible location above the ceilings or in the attic.

C. Conduit and cable shall be run concealed in the walls (including within CMU and similar construction), above the ceiling, or below the floor with all devices, etc. flush mounted; except, in the Mechanical and Electrical Rooms, conduit drops to panels, equipment, etc. may be run exposed.

D. Raceways and cables shall be run concealed in the walls (including within CMU and similar construction), soffits (new and existing), above the ceiling or below the floor unless indicated otherwise; except, exposed within utility rooms and other similar type spaces. Raceways may be run exposed within public spaces, classrooms, offices, and the like only where indicated and with prior approval of the Owner. Exposed raceways shall be run as neatly and unobtrusively as possible, to the approval of the Owner.

E. Equipment shall be surface mounted unless noted otherwise.

F. Devices, etc. shall be flush mounted unless noted otherwise.

3.02. CONTRACTOR CONTROL AND SUPERVISION

A. Contractor shall supervise and direct the Work, using its best skill and attention, and shall perform the work in a skillful manner. 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, unless the Contract Documents give other specific instructions concerning these matters. Contractor shall disclose its means and methods of construction when requested by Owner.

B. Performance of the work shall be directly supervised by a competent superintendent (and/or foreman) who is satisfactory to Owner and has authority to act for Contractor. The superintendent (and/or foreman) shall constantly supervise the work and check all materials prior to installation for conformance with the Contract Documents. The superintendent (and/or foreman) shall not be changed without the prior written consent of Owner.

C. Contractor shall enforce strict discipline and good order among Contractor's employees and other persons performing the Work. Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them. Contractor's employees shall at all times conduct business in a manner which assures fair, equal, and nondiscriminatory treatment of all persons.

D. Inappropriate activity or comments by Contractor, Contractor's employees and other persons performing the work will result in immediate removal from the site.

3.03. GENERAL

A. The installation shall be done in a neat and workmanlike manner and shall be suitable for the location. Conduit stub-ups, sleeves and ends left open for future connection, unused hubs in fittings and unused holes in boxes shall be plugged or capped to prevent the entrance of moisture and debris.

B. For the actual fabrication, installation and testing use only persons thoroughly trained, experienced and completely familiar with the items required and with the manufacturers' recommended methods of installation. In acceptance or rejection of the work, no allowance will be made for lack of skill or experience.

C. Circuits shall be run from equipment to equipment, outlet to outlet, luminaire to luminaire, device to device, etc. and all homeruns shall be run as shown on the drawings unless permission is obtained from the Engineer to alter the arrangement.

D. Changes in location (e.g. equipment and devices up to 10 feet, trench and raceway routing, cable tray locations, etc.) made before installation and deviations to avoid interferences shall be made without increase in Contract Sum.

E. The Contractor shall conduct operations in a manner to avoid the risk of bodily harm to persons or damage to any property. Construction equipment and tools shall be in good operating condition and be designed to perform the work required. The Contractor shall continuously inspect all work to discover any unsafe conditions and be solely responsible for their correction.

F. Use all means necessary to protect the equipment and materials and the work, materials, etc. of the other trades before, during and after installation. Do all cutting carefully to prevent damage to the work. Correct lifting, jacking and/or moving methods shall be used. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Owner and Engineer without increase in Contract Sum.

G. The Contractor shall provide all cutting, patching, core drilling, etc. as required for the work. Use only journeymen skilled in the necessary cutting or patching operation. Patching shall match adjacent work. Structural members shall not be cut without approval of the Owner. Where penetrations in structural members for conduits, cables, etc. are allowed, the holes shall be no larger than absolutely necessary.

H. Contractor shall x-ray or otherwise determine the exact location of existing structural components, conduits, piping, wiring, ducts and the like prior to making any new penetrations or openings (or expanding existing openings) in any floor, wall or ceiling.

I. The premises shall be kept free from the accumulation of rubbish and debris caused by the work. Dust, fibers, debris, etc. caused by the work shall be cleaned up immediately (prior to the worker leaving the area, room or space) and not tracked to other areas, rooms, spaces, etc. Cleanup shall be with a vacuum cleaner or similar provided with a proper HEPA filter.

J. The Contractor shall provide all backboards, hangers, supports, chases, anchor bolts, inserts, sleeves and other openings in the construction required for the electrical work.

K. The Contractor shall move existing equipment, furniture, bookcases, boxes, miscellaneous (office, storage, maintenance, etc.) objects and materials, and other building furnishings, attached or unattached, as required to perform the work, including returning the items to their original location in their original condition.

L. The Contractor shall remove and re-install suspended ceilings, both T-bar and Z-spline types, as required for installation of new raceways and cables. Damaged ceiling tiles shall be replaced by the contractor.

M. Wall, ceiling and floor penetrations by raceways (both inside and outside the raceway), cables, etc. shall be sealed to maintain the original moisture, dust and fire resistance to the approval of the Owner. Flash and counter-flash all roof penetrations.

3.04. PROTECTION OF PERSONS, FACILITIES & UTILITIES

A. Provide devices and methods and proceed with sufficient caution to preclude damaging any facilities, utilities (e.g. power, water, sewer, natural gas, telecommunications, etc.) or similar, above ground or underground, concealed or exposed, known or unknown, located or not located. In the event unidentified utilities are encountered, notify the utility, Owner and Engineer.

B. Unless otherwise provided by the drawings or specifications, do not cut or alter any existing utility or similar without authorization of the Owner and Engineer. The Contractor shall pay all costs, as determined by the Engineer, of remedial work necessitated by unauthorized or accidental cutting, patching, trenching, excavating, backfilling, etc. which damages and/or impairs the performance of existing utilities or similar (e.g. power, water, sewer, natural gas, telecommunications, etc.), above ground or underground, concealed or exposed, known or unknown, located or not located.

C. All such work shall be verified with Owner and Engineer before execution of replacement, re-routing, relocation, repair or termination commences.

D. Proceed with sufficient caution to preclude damaging any utilities or similar (e.g. power, water, sewer, natural gas, telecommunications, etc.), above ground or underground, concealed or exposed, known or unknown, located or not located. In the event unidentified utilities are encountered, notify the utility, Owner and Engineer.

E. Cooperate with Owner and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of Owner and utility, without increase in Contract Sum.

F. Damaged electrical and telecommunications (telephone, computer/data, television, fiber, copper, etc.) cables shall be replaced in their entirety. Splicing will not be allowed.

3.05. COORDINATION AND SCHEDULING

A. The Contractor shall coordinate the work and cooperate with the Owner, other trades and System Contractors to have the work completed to the best advantage, insure there are no interferences, provide reasonable opportunity for the other trades and Contractors to complete their work and to not delay the work.

B. Work under this project will be undertaken with the facility in full operation.

C. Contractor shall coordinate work to avoid disturbance to building operations and personnel, and to allow access for both persons to and within all portions of the facility and vehicles to the facility. Access to office spaces, classrooms, etc. will not be allowed when they are occupied. (Note that the offices, classrooms, etc. in areas other than the remodeled area will be occupied and in full operation.)

D. Contractor shall coordinate and schedule with Owner's representative, department heads and the occupants of the individual space a minimum of fourteen (14) days in advance and re-confirmed a minimum of 48 hours in advance, or as mutually agreed upon with Owner, to determine dates and times that access to the Contractor will be allowed.

E. Work in private offices, computer rooms, classrooms and the like shall only be done with the occupant's approval and at his or her convenience.

F. Contractor shall schedule all equipment, utility, electrical, telecommunications, fire alarm, fire protection, etc. interruptions with the Owner. Interruptions and closures shall not be extended overnight.

G. Contractor shall schedule building closures, complete or partial, with the Owner (e.g. for x-raying).

H. Any and all costs incurred for non-standard hours, double-shifts, overtime, etc. or any other costs associated with completing the project within the completion times required shall be included without increase in contract sum.

3.06. DELIVERY, STORAGE AND HANDLING

A. All equipment and materials shall be stored neatly and out of the way. Conduit, fittings, cable, etc. shall be stored off the ground, protected from the weather in racks or bins or on shelves. Equipment, panelboards, fixtures, devices, etc. shall be stored indoors in a dry, warm area, free of dust and one in which condensation will not occur.

B. Ship equipment in its original package to prevent damage or entrance of foreign matter. Perform all handling and shipping in accordance with manufacturer's recommendations and packing label instructions. Provide protective coverings during construction.

C. Following installation, protect materials and equipment from corrosion, condensation, physical damage, and the effects of moisture. Keep openings in boxes or equipment closed when work is not being done in them during construction.

D. Identify materials and equipment delivered to the site and storage organized to permit checking against approved material lists and submittals.

3.07. TEMPORARY POWER

A. The Contractor shall provide all temporary power services, facilities, equipment, devices, material, etc. required for the construction; including adequate lighting, outlets, balancing, testing, etc. as may be necessary for the proper performance and inspection of the work.

B. Electrical power at 120 volts, 1 phase for operation of lighting, small power construction tools and light-duty equipment may be obtained from the existing buildings, free of utility costs. During power interruptions, and if Contractor's equipment will not operate on the available power, the contractor shall supply all equipment needed, such as transformer(s), generator(s), etc. and pay all costs involved.

C. The temporary power system shall be provided in a neat and safe manner, in compliance with governing codes and good working practice.

D. The temporary power system shall be removed when no longer required.

E. Any permanent 120V receptacles in the building which are used for temporary power during construction shall be replaced with new receptacles at the completion of the project.

3.08. DEMOLITION

A. Where existing walls and ceilings are to remain, Contractor shall remove all items indicated to be removed, and all associated equipment, devices, raceways, boxes, cables, etc. back to their point of origin and/or destination; except, concealed conduits & boxes may be abandoned in place and/or existing conduits and boxes may be re-used if in good condition and appropriate for the new installation, at the option of the Contractor.

B. Where existing walls and ceilings are to be removed, Contractor shall remove all items, whether indicated or not, and all associated equipment, devices, raceways, boxes, cables, etc. back to their point of origin and/or destination; except, concealed conduits & boxes may be abandoned in place and/or existing conduits and boxes may be re-used if in good condition and appropriate for the new installation, at the option of the Contractor.

C. Existing cables shall be removed or replaced. Provide pull strings in existing conduits being abandoned in place. Existing below grade conduits shall be cut off and capped flush with the floor. Existing concealed boxes shall be provided with suitable blank covers and/or wallplates.

D. Label the ends of conduits abandoned in place with origin and destination description, and note locations on the as-built drawings.

E. Where existing equipment, fixtures, devices, etc. are indicated to be replaced, remove and dispose of the existing and provide new in its place.

F. Contractor shall coordinate demolition with hazardous materials abatement work. Where electrical devices and wiring are contaminated with hazardous material, or where new raceways penetrate through hazardous materials, demolition shall be performed in accordance with Division 02 Section 02 80 80 Asbestos Abatement and Asbestos and Lead Hazard Control.

G. All existing telecommunications, fire alarm, class 2 low voltage, etc. cabling abandoned in the ceiling space, either as part of the work, or as a result of previous work, shall be removed from point of origin to destination.

H. For all items indicated as to be removed or re-wired, Contractor shall remove all associated conduit, boxes, cables, etc. back to their point of origin &/or destination; except, concealed conduits & boxes may be abandoned in place &/or existing conduits & boxes may be re-used if in good condition & appropriate for the new installation, at the option of the Contractor. Existing cables shall be removed or replaced.

I. Existing equipment, fixtures, devices, etc. to remain shall be protected as required during demolition and construction. In the event of damage, immediately make all repairs and/or replacements necessary to the approval of the Owner and Engineer without increase in Contract Sum.

J. Existing equipment, fixtures, devices, etc. to be re-used in the new work shall be removed carefully, and protected as required during demolition and construction. In the event of damage, immediately make all repairs and/or replacements necessary to the approval of the Owner without increase in Contract Sum.

K. Items not indicated shall remain "as is"; except, shall be re-connected as required if its circuit is interrupted during the demolition.

L. Holes, openings, etc. where existing raceways, cables, boxes, outlets, etc. are removed and not replaced shall be patched to match adjacent surface.

M. All surplus materials removed during the demolition shall be inspected by the Owner and those items selected shall remain the property of the Owner. All remaining surplus materials shall be removed from the site and disposed of by the Contractor without increase in Contract Sum.

3.09. INTERRUPTIONS

A. Power, fire alarm, telecommunications and other systems interruptions, whether to individual equipment or to the entire system, shall not be done without prior approval and scheduling with the Owner. Power, fire alarm and/or telecommunications interruptions required to facilitate construction work and that affect operation of the existing facility shall not be done during normal working hours. Some working of non-standard or longer than standard hours will be required, without increase in Contract Sum.

B. Power interruptions to panels and/or circuits feeding the existing telecommunications equipment, devices, etc. shall not exceed 1 hour, and then only during the lowest usage hours (typically between 11:00 p.m. and 6:00 a.m.).

C. Telecommunications services shall be maintained to each outlet in the entire facility whenever the space is occupied (e.g. the entire facility during normal operating hours, except the areas being remodeled). Therefore during non-operating hours, new cables shall be provided, new outlets connected and/or existing outlets re-connected from the existing cabling system to the new cabling system, cables terminated at the backboard, testing completed, cross-connects and migration completed, etc. and the systems returned to service before the space is occupied again.

D. In order to minimize the interruptions to the individual systems and equipment, and to keep maximum power available to the facility; the new service and power distribution system shall be completed and energized before the existing service is de-energized and removed.

E. Shutdowns will not be allowed to extend beyond the time Contractors personnel are present.

3.10. LOCATIONS

A. Locations and mounting heights of equipment, devices, etc. shall be consistent, and in accordance with the requirements of NFPA, ADA and the authority having jurisdiction.

B. Devices and associated wallplates shall be located so as to not span different types of building finishes.

C. In general, surface raceways, cable trays, cable racks, etc. shall be mounted as unobtrusively as possible, tight against whiteboard trim, chair rails, in room corners, against ceilings, against chases, etc. and other breaks in the construction.

D. Prior to rough-in, the Contractor shall mark or otherwise show the location of all equipment and devices, and the proposed routing of raceways. Obtain specific approval for the location of each from the Owner before rough-in.

E. Changes in location (e.g. equipment and devices up to 10 feet, trench and conduit routing, etc.) made before installation and deviations to avoid interferences shall be made without increase in Contract Sum.

3.11. EQUIPMENT, LUMINAIRES AND DEVICES

A. Equipment, luminaires, devices, etc. shall be installed plumb and true, and shall be square with the adjacent walls, ceilings, structural members and other equipment; in a horizontal or vertical position as intended. The location of similar items shall be consistent.

B. Light standards (poles), luminaires, etc. shall be set to stand plumb and true and shall be square with the adjacent buildings, property lines, sidewalks, roadway, etc.

C. Equipment, cabinets, boxes, fixtures, devices, etc. shall be accurately mounted and leveled and be firmly supported either directly or indirectly by a sound and safe structural member of the building in accordance with manufacturer's instructions, or as directed. Supports shall be neatly placed and properly fastened. In addition to the weight of the equipment or material, allowance shall be made for vibration (e.g. motors and fans) and variable and/or shock loading from internal or external forces (e.g. operation of disconnect switches or circuit breakers).

D. The correct lifting, jacking and/or moving gear which will prevent damage shall be used.

E. All bolts, nuts, screws and other fastenings shall be tightened in accordance with manufacturers or listing instructions and all covers replaced on equipment and boxes. All electrical connections, particularly those on bus work in panelboards, etc. shall be checked to ensure tightness and electrical conductivity.

F. Follow manufacturer's installation details wherever available. Provide supports, boxes, mountings, wiring, fittings, etc. as required, standard or special. Wherever any conflict arises between manufacturer's instructions, codes and regulations, and these Contract Documents, follow Owner’s decision.

G. Following installation, protect materials and equipment from corrosion, condensation, physical damage, and the effects of moisture. Keep openings in boxes or equipment closed when work is not being done in them during construction.

H. Provide gaskets, seals, etc. as required to prevent the entrance of moisture, debris, insects, etc. Check for proper fit.

3.12. SUPPORTS

A. Provide all necessary supports, anchors, fasteners, and backing for all raceways, cable trays, cable racks, boxes, enclosures, fixtures and equipment.

B. Hangers and supports shall be made from standard structural shapes and hardware or systems of shapes, fittings and hardware designed for the purpose.

C. Support cable trays with trapeze style hangers/systems, minimum 8 foot on center.

D. Hangers and supports shall be adequately and safely attached to the building structure. Equipment or materials to be supported shall be securely fastened to the supporting means. Use size and number of attachments as required for a safety factor of at least four. In addition to the weight of the material, consideration shall be given to the weight of the support itself, the weight of materials within, vibration, external operational forces, shock load, etc.

E. Brace all equipment, cable tray, cable racks, etc. as required to meet the requirements of Seismic Design Category D.

F. Attach to wood with wood or lag screws, to metal with machine screws or bolts and to concrete with carbon steel wedge or sleeve type expansion anchors or self-drilling metal anchors and machine screws or bolts.

G. Pad and floor mounted equipment shall be secured with suitable hot dipped galvanized steel anchor bolts, washers, hex nuts, etc.

3.13. CORROSION PROTECTION

A. All material and equipment shall have corrosion protection suitable for the atmosphere in which they are installed.

B. Maintain the integrity of factory provided corrosion protection. Repair damaged corrosion protection and touch-up paint all scratched, marred or damaged factory finish on equipment, devices, luminaires, enclosures, etc.; per manufacturer's instructions where available.

C. Paint field cuts with a suitable cold galvanizing compound.

3.14. APPROVALS

A. Prior to rough-in, the Contractor shall mark or otherwise show the location of all equipment and devices, and the proposed routing of raceways, cables, etc. Obtain specific approval for the location of each from the Owner before rough-in.

B. Prior to beginning installation of cables, obtain approval of concealed raceway installation from the Owner.

C. Prior to beginning installation of cables, obtain approval of the raceway installation from the Owner.

3.15. CLEANING

A. Remove trash, combustible material, and other debris from electrical rooms and areas around equipment.

B. Remove shipping materials, supports, spacers, etc. from equipment, devices, etc.

C. Remove all debris from equipment, devices, etc. including all scraps of wire, metal shavings, plaster, dust, and other foreign material.

D. The top sides and interiors of all equipment and enclosures shall be vacuumed clean.

E. The exterior of all equipment and enclosures shall be wiped down with a clean, dry, lint-free cloth or soft bristled brush.

F. Clean screens, louvers, baffles, etc. covering ventilation openings to ensure they are clear.

G. Remove paint splatters and other spots, dirt, and debris.

H. Touch up scratches to match original finish.

I. Remove all traces of soil, dirt, dust, smudges, fingerprints and other foreign matter from visible surfaces of equipment, devices, luminaires, etc. Pay close attention to highly finished surfaces such as glass and polished metals. Wipe lamps clean.

J. Maintain adequate ventilation during cleaning.

K. Follow manufacturer's instructions. Failure to follow manufacturer's recommendations when cleaning equipment can result in damage from the use of improper cleaning methods or agents.

3.16. VISUAL AND MECHANICAL INSPECTION

A. Verify that all equipment and their components are sized properly for the load and the types, sizes, etc. are in accordance with the contract documents, approved submittals, etc.

B. Visually inspect equipment for physical damage. Repair physical damage, if practical and approved by the manufacturer. Consult Owner, Engineer and manufacturer for recommendations for suitable protective barriers to prevent future damage.

C. Inspect molded and formed equipment and components (e.g. circuit breaker cases, fuses, starters, relays, insulators, supports, etc.) for cracks or other defects.

D. Check all bolts, connections, cable terminations, etc. for tightness using a calibrated torque wrench or screwdriver. Refer to manufacturer's instructions and markings for proper torque values.

E. Visually check the equipment, its components and associated raceways, conductors, etc. for proper grounding and bonding. Ensure that grounding and bonding terminal bars, bus bars, straps, and conductors are properly connected.

F. Verify that cables do not contact live parts and that cables are properly secured to withstand the effects of fault currents.

G. Check equipment anchorage, mounting, clearances, alignment and fit of components.

H. Check that phase barriers are in place, if applicable.

I. Visually check disconnect switch blade alignment, blade penetration, travel stops, and mechanical operation.

J. Inspect each fuse holder to determine whether it seems to be adequately supporting the fuse and that the fuse holders are securely attached to the mounting base. Verify fuses are set tightly in the clips provided.

K. Operate equipment and components (e.g. disconnect switches, circuit breakers, etc.) to insure smooth operation.

L. Motor bearings shall be checked for proper lubrication and the shaft turned to ensure it is free to rotate.

M. Compare all circuits (internal and external) with wiring and/or control diagrams to verify they are installed correctly.

N. Confirm correct operation and sequencing of electrical and mechanical interlock systems, if so equipped. Attempt closure on locked-open devices. Attempt to open locked-closed devices.

O. Confirm that equipment nameplates and safety labels are provided.

3.17. TESTING

A. The Contractor shall perform all tests required in the various sections of the specifications and in accordance with manufacturer's recommendations. Record test results and include in operation and maintenance manuals.

B. The Owner and Engineer shall be notified one week prior to any testing so that the testing may be witnessed.

C. All testing shall be performed by personnel that are trained in the specific task to be performed

D. Do not proceed with tests until previously identified deficiencies are corrected.

E. Test equipment in accordance with manufacturer's recommendations. Maintain test results for future comparisons. Include in operation and maintenance manuals.

F. Upon completion, all equipment and systems shall be tested for functional operation, including all intended modes and sequences of operation.

G. Readings of the voltage and amperage shall be taken on each phase at each panelboard and at the end of the longest branch circuit at no load and full load conditions.

H. All systems shall test free from shorts and grounds and shall be without mechanical and electrical defects. If any test indicates a failure, in the opinion of the Engineer; the item shall be replaced or suitably repaired to the approval of the Owner, and the test repeated without additional cost to the Owner.

3.18. ENERGIZING

A. Verify proper conductor phasing prior to energizing.

B. Energize equipment in accordance with manufacturer's recommendations.

C. The Owner, Engineer and other affected personal shall be notified one week prior to energizing so that the energizing may be witnessed.

D. Energize equipment, feeders, circuits, etc. from the source end and working to the load. Close main devices, feeder devices, motor/branch circuit devices, etc. in sequence.

E. Verify all temporary grounding, etc. connections are removed prior to energizing.

F. Verify that all load disconnecting, etc. devices are open, padlocked and tagged prior to energizing.

G. After energization, equipment shall be observed for unusual conditions such as vibration, noise, excessive temperature rise, etc.

3.19. CONTRACT CLOSE-OUT

A. As a requirement for substantial completion of the Work, the Contractor shall thoroughly check the installation. Checking shall consist of visual inspection and manual adjustment to confirm correct installation and arrangement and to assure the intended function, response and operability. Checking shall include, as a minimum, the following:

1. Check that equipment, devices, etc. are of the correct type and rating.

2. Check that all raceways, fittings, devices, boxes, enclosures, etc. are secure and that all conduit connections are tight.

3. Check that all electrical connections are correctly tightened.

4. Check that equipment, devices, panelboard circuit directories, etc. are correctly labeled.

5. Check that equipment, fixtures, devices, etc. are clean with all unnecessary labels removed.

B. As a requirement for substantial completion of the Work, the Contractor shall:

1. Obtain final inspections from the authorities having jurisdiction.

2. Perform final cleaning.

3. Submit approved "As Built" Drawings, Record Documents, Test Records, Manuals, etc.

4. Submit written warranty statements for equipment, materials and installation.

5. Conduct system tests.

C. After the requirements for substantial completion have been met, the contractor shall notify the Engineer in writing that the Work is substantially complete. The Engineer will then perform a final inspection of the installation and issue a “punchlist” for final completion.

D. The Contractor shall complete the work on the punchlist or provide written explanation for not completing the work. The punchlist shall be signed by the contractor and returned to the Engineer when complete.

E. The Engineer will re-inspect the Work to verify that all the items have been completed.

F. The above process shall be completed a single time for the project. If additional punchlist and inspection cycles are required to be completed due to the contractors failure to complete items on the punchlist, the contractor will be backcharged for the Engineer's additional services on time and material basis through the construction contract.

G. Subsequent to final completion and testing operations, instruct Owner's authorized representatives as required in operation, adjustment and maintenance of equipment and systems.

End of Section 26 00 10

PART 1 - GENERAL

1.01. APPLICABLE PROVISIONS

A. The General, Supplementary and other Conditions of the Contract, modifications to the General Conditions, the Drawings, and the applicable provisions of the other Divisions are hereby made a part of this Division and all its sections.

1.02. SUMMARY

A. The requirements of this Section and the other Division 26, 27 and 28 Sections apply to all the electrical work.

B. Coordinate electrical work with related work shown and specified elsewhere.

C. Provide all materials necessary for the proper execution and completion of the work as herein specified or called for on the drawings. Required items not specifically mentioned in the specifications or indicated on the drawings shall be provided as necessary to produce the intended results.

D. In the event that any item is not available exactly as specified, the Contractor shall so notify the Engineer in writing as early as possible to allow ample time for an alternate item to be selected without delay to the project.

1.03. SUBMITTALS

A. Provide submittals for the following:

1. Overfloor raceway.
2. Surface metal raceway.
3. Surface device boxes.
4. Low voltage cables.

PART 2 - PRODUCTS

2.01. RACEWAYS

A. Raceways, where required, shall be of the types listed below, unless noted otherwise:

1. Electrical Metallic Tubing (EMT) – above grade, except as noted below.

2. Electrical Metallic Tubing (EMT) – Concealed above grade and exposed in Utility Rooms and other Non-Public Areas not readily visible to building occupants, except as noted below.

3. Surface Metal Raceway System (SMR) – Exposed in Public Areas, Offices, Rooms, Corridors and the like where readily visible to building occupants.

4. Overfloor Combination Raceway – exposed in Public Areas on the surface of the floor where indicated.

5. Flexible Metal Conduit (FLEX):

   a. Final connections to vibrating equipment.

   b. Fixture whips.

   c. Substituted for EMT for branch circuits between wiring devices and boxes concealed inside frame walls and ceilings.

   d. Remodel work where circuit is fished into an existing wall.

   e. FLEX shall not be used for any homeruns, conduit stub-ups into accessible ceiling spaces, nor for any exposed or surface conduit runs except as final connections to vibrating equipment.

B. Raceways shall be sized so that the cable fill does not exceed 40%; except, minimum conduit sizes shall be as follows:

1. $^{1}/_{2}$ inch - runs with 3 or fewer #12, or smaller; except flex shall be minimum $^{3}/_{4}$ inch.

2. $^{3}/_{4}$ inch – above grade branch circuits, ancillary systems circuits or similar, except as noted below.

3. 1 inch – branch circuit homeruns.

4. 1 inch – telecommunications circuits terminating in a single outlet.

5. $1^{1}/_{4}$ inch - telecommunications circuits terminating in two devices.

6. $1^{1}/_{4}$ inch – audio/video system conduit stubs.

7. $^{3}/_{8}$ inch - fixture whips furnished by the manufacturer with the fixtures.

C. Electrical metallic tubing shall be electro-galvanized steel.

D. Flexible metal conduit shall be helically wound galvanized steel, type FMC; except outdoors, liquidtight flexible metal conduit shall have a liquidtight, non-metallic, sunlight-resistant jacket over a flexible galvanized steel metal core, type LFMC. Flexible conduit connections shall be a minimum of 18 inches long.

E. Surface metal raceways shall be heavy-gauge zinc plated or galvanized steel; Wiremold or Mono-Systems series 500, 700, 2000 or larger as required or approved equal. Color shall be manufacturer's standard color closest to matching surface color as possible.

F. Surface metal raceway boxes and raceway to be added to the existing shall match the existing and be specifically designed for use with the existing raceway system.

G. Surface metal raceways for Telecommunications wiring shall be heavy-gauge zinc plated or galvanized steel; Wiremold series 4000, or approved equal; except Wiremold series 2400 surface metal raceways may, at the option of the Contractor, be used for drops to a single outlet. Color shall be manufacturer's standard color closest to matching surface color as possible.

(Note: Mono-Systems Snapmold and Thomas & Betts surface metal raceways are approved as equal to Wiremold surface metal raceways, if provided with 2 inch bend radius fittings not reducing the cable fill capacity. Inserts into the raceway providing the 2 inch bend radius will not be allowed.)

H. Overfloor Combination Raceway shall be heavy duty, extruded aluminum, 3 compartment, slate gray color, 6" x .5" in cross section with snap-in edge profile suitable for use with carpet floors. Provide wall in-feed fittings, devices boxes, elbows, etc. as required. Raceway shall be FSR Smart-Way Raceway System, or approved equal.

I. Wiring duct shall be lead-free PVC, wide slot type, with base and snap-on cover, size as required or as indicated. Panduit type G, or equivalent.

J. Telecommunications (with or without cables), spare, c.o., etc. conduits shall be provided with pull rope below grade and pull string above grade.

K. Below grade telephone, computer/data, communications, spare, c.o., etc. conduits shall be plugged at both ends and their location properly marked.

2.02. RACEWAY FITTINGS

A. Fittings for steel conduit shall be steel, galvanized or cadmium plated, threaded type. Couplings shall be galvanized steel. Locknuts and bushings shall be galvanized steel.

B. Connectors, couplings, etc. for EMT shall be steel set-screw type; except, steel raintight compression type in potentially wet or damp locations (e.g. outdoors).

C. Conduit bodies (i.e., type T, LB, LR, LL) shall be cast metal bodies with threaded connectors and screw covers. Increase size or bodies if required for fill and bending radius.

D. CONDUIT BODIES SHALL NOT BE USED IN TELECOMMUNICATIONS SYSTEM RACEWAYS.

E. Fittings, mounting brackets, etc. for surface metal raceways shall be grounding type, of the same manufacturer and specifically designed for the purpose and use with the particular type of raceway.

F. Telecommunications surface metal raceway system fittings (and power surface metal raceway fittings when installed adjacent to the telecommunications raceway) shall have rounded corners

to allow telecommunications cables a minimum 2 inch bending radius without reducing the raceway cable fill capacity. Fittings for non-standard angles less than 90º shall be field bent/fabricated as required. Angles, bends, etc. in raceways greater than 90º and inserts into the raceways providing the 2 inch bend radius will not be allowed. Color shall match raceways.

G. Fittings for flexible metal conduit shall be of a type specifically designed for the purpose.

H. Fittings for nonmetallic conduits shall be of same manufacturer and material as the conduit.

I. End bells and/or insulated bushings shall be used on all underground conduit system terminations at vaults, junction boxes, padmounted equipment, etc.

J. “Open” ends of spare conduits terminating in vaults and in telecommunications rooms shall be sealed with expandable plugs to prevent movement of air and water between spaces. Plugs shall be water and gas tight, with high-impact plastic components, elastic expandable gaskets and pull rope eyelet.

K. Conduit terminations at equipment, etc. shall be suitably sealed and/or plugged at both ends to prevent the entrance of moisture. Spare, c.o., etc. conduits shall be provided with removable gasketed covers at the high end to prevent the flow of moisture from one box to another.

L. “Open” end of ancillary, telecommunications, spare, c.o., etc. conduits shall be provided with insulated bushings.

M. “Open” ends of telecommunications conduits entering the telecommunications room shall be provided with bonding bushings & bonded to the ground bar.

N. Telecommunications conduits entering the telecommunications room floors shall extend up from the floor between 1” and 3”.

O. Telecommunications conduits entering the telecommunications room walls and ceilings shall extend a maximum of 2” into the room.

P. Connectors at sheet metal enclosures shall have insulated throats.

Q. Openings in surface metal raceways, etc. through which cables are intended to pass shall be provided with suitable nonmetallic grommets before installing cable.

R. Provide approved properly bonded expansion fittings (capable of expansion and contraction as required), deflection couplings, etc. wherever conduits pass over or through joints or other locations where raceways may be affected by dissimilar movements of the supporting structure.

2.03. BOXES

A. The use of exposed boxes in areas readily visible to building occupants shall be kept to a minimum. Except in telecommunications raceways, use conduit outlet bodies (e.g. T, LB, LR, etc.) at conduit intersections unless specifically noted or approved otherwise.

B. Boxes shall accommodate any devices to be installed and shall be sized as required by the applicable codes for number and size of conduits and cables entering and leaving; except minimum as noted below.

C. Indoor boxes above grade in dry locations shall be standard stamped galvanized steel type, suitable for embedment in concrete and/or masonry where required.

D. Unless noted otherwise, boxes installed in wet or damp locations and outdoors shall be threaded rigid body type, cast aluminum or galvanized iron.

E. Surface metal raceway system boxes shall be of the same manufacturer and specifically designed for the purpose and use with the particular type of raceway and/or device to be mounted onto the box. Color shall match raceways.

F. Unless noted otherwise, larger size pull and junction boxes shall be fabricated from code gauge galvanized steel.

G. Unless noted otherwise, larger size pull, splice and terminal boxes shall be fabricated from code gauge galvanized steel, with full access screw type cover unless noted otherwise. Sizes shall be as required, except minimum as indicated. Terminal boxes shall be provided with power distribution type terminal blocks, with main and branch lugs sizes and quantities as required.

H. Switch, power outlet, device, etc. boxes shall be single or ganged to accommodate the required number of devices; except, flush mounted boxes shall be minimum 4 inches square for conduits 1 inch or less and $4^{11}/_{16}$ inches square for larger conduits. Boxes containing a single device shall be minimum $1^{1}/_{2}$ inches deep. Boxes containing multiple devices shall be minimum $2^{1}/_{8}$ inches deep. Flush mounted boxes shall be equipped with plaster rings and suitable wallplates. Surface mounted boxes shall have raised surface type covers.

I. A/V Input/Output Station boxes shall be 5” square by $2^{7}/_{8}$” deep stamped steel box, equipped with 2-gang plaster ring. Provide blank wallplate unless directed otherwise.

J. Telecommunications, etc. outlet boxes shall be minimum 4 $^{11}/_{16}$ inch square by $2^{1}/_{8}$ inches deep, equipped with single-gang plaster rings and proper wallplates. Provide a 1 inch EMT conduit up to an accessible location above the ceiling or to the telephone terminal board from each outlet box unless noted otherwise.

K. Individual telecommunications outlets in existing non-fire rated frame walls where cables are “fished”, screw on type low voltage cut-in type mounts (Caddy type MPLS or MPLS2 as required, or equal) without boxes may be used. Surface mounted boxes shall be surface metal raceway style to match the surface metal raceways. Flush mounted boxes shall be cut-in style where required.

L. Junction and pull boxes shall be sized as required by the NEC except the minimum size shall be 4 inch, square or octagonal as required, by $1^{1}/_{2}$ inches deep. Junction and pull boxes shall have full-access screw covers.

M. Ancillary systems (e.g. fire alarm, security, etc.) outlet, device, junction, etc. boxes shall be in accordance with the requirements of the respective supplier; except, minimum as specified above.

N. Boxes shall be equipped with mud rings where required and proper wallplates and/or covers.

O. Unused flush mounted boxes, including existing abandoned in place, shall have blank wallplates or ceiling box type covers. Color shall match existing surface paint color as close as possible with manufacturer's standard colors.

P. Openings in boxes, etc. through which cables are intended to pass shall be provided with suitable nonmetallic grommets.

Q. Color coding for device, junction, etc. boxes (other than surface raceway type) shall be as follows:

1. Fire alarm systems shall be substantially red in color, both inside and outside.

2.04. WIRE AND CABLE

A. Wire and cable sizes indicated and/or specified are minimums only and shall be increased as required due to NEC, system, load, voltage drop, etc. requirements.

B. All wire and cable (power, control, ancillary systems, etc.) shall be suitable for wet or dry locations, in conduit, above ground and underground.

C. Ground electrode conductors shall be copper, bare below grade.

D. Branch circuit cable, above grade feeder cable and equipment ground cable, where run in raceways, shall be single conductor copper with 600 volt type XHHW or THWN/THHN insulation. The minimum conductor size shall be #12 AWG; except, fixture whips provided as an assembly by the fixture manufacturer with the fixtures may be #14 AWG. Conductors shall be stranded, except #12 AWG lighting and general purpose receptacle branch circuit conductors may be solid.

E. Line voltage (Class 1) control cable shall be single conductor stranded copper with 600 volt type XHHW or THWN/THHN insulation. The minimum conductor size shall be #14 AWG.

F. Low voltage (Class 2) control cable shall be single conductor copper with 600 volt type XHHW or THWN/THHN insulation if installed in conduit. Low voltage (Class 2) control cable run "open" shall be multi-conductor copper with 300 volt insulation and an overall jacket, type CL2, listed as being resistant to the spread of fire; except in air handling plenums, cable shall be plenum rated, be listed as being resistant to the spread of fire and bear flammability testing ratings as cable type CL2P. The minimum conductor size shall be #16 AWG.

G. Cords shall be multi-conductor stranded copper with a green insulated grounding conductor, 600 volt type SO insulation and an overall neoprene jacket. The minimum conductor size shall be #14 AWG.

H. Fixture cable, where supplied by the Contractor, shall be stranded copper with 600 volt type PF insulation.

I. Instrument cable, unless otherwise required by the particular instrument, shall be multi-conductor solid copper with 300 volt PVC insulation, 100% aluminum polyester shield, stranded copper drain wire, and an overall PVC jacket. The minimum conductor size shall be #16 AWG.

J. Instrument cable, unless otherwise required by the particular instrument, shall be 2 conductor (twisted pair) solid copper with 300 volt PVC insulation, 100% aluminum polyester shield, stranded copper drain wire, and an overall PVC jacket. The minimum conductor size shall be #18 AWG.

K. See section 27 05 00 for Communications Systems cables.

L. See Section 28 31 00 for Fire Detection & Alarm System cables.

M. Color coding for power cable shall be as follows:

1. 120/240 volt, 1 phase, 3 wire:
   Phase A = black, B = red, N = white;

2. 120/208 volt, 3 phase, 4 wire:
   Phase A = black, B = red, C = blue, N = white;

3. Equipment ground cables shall be green.

4. Switch legs shall be the same color as the phase conductors. Switch travelers shall be purple.

N. Cable pulling lubricants shall be gel type, of the best quality and shall not have any damaging effect on the insulation. (Ideal Yellow 77 is not approved.)

2.05. CABLE SUPPORTS

A. Supports for cables run “open” above ceilings and the like shall be wide base type J-hook assemblies capable of supporting up to 50 category 5 UTP cables, Erico CablCat series or equal. Support spacing shall not exceed 5 feet.

B. Cable ties shall be utilized in panelboards, etc. to group and support conductors. Multi-wire branch circuits shall be grouped together as required. All cable shall be fanned-out to terminals and identified by labels; or, if terminated on circuit breakers or control devices, by typewritten indexes or nameplates.

2.06. CONNECTIONS AND TERMINATIONS

A. Taps and splices shall be kept to a minimum.

B. Taps and splices in #8 AWG, and smaller, branch and fire alarm circuit cable shall be made with twist-on spring type wire nuts. Taps and splices in telecommunications cables, ancillary systems cables, larger branch circuit cables, feeder cables, control cables, etc. or below grade will not be allowed without specific approval from the Engineer.

2.07. WARNING TAPE

A. Yellow 3" wide polyethylene metalized warning tape shall be direct buried 12 inches above the topmost underground conduits. For multi-use excavations and trenches, provide multiple tapes.

B. Tape shall be printed with the words:

1. "Caution, Buried Power Line Below" or similar above electrical conduits.

2. "Caution, Buried Lighting Line Below" or similar above lighting conduits.

3. "Caution, Buried Data Line Below" or similar above telecommunications conduits.

2.08. PULL STRING AND ROPE

A. Telecommunications (with or without cables), spare, c.o., etc. conduits shall be provided with pull rope below grade and pull string above grade.

B. Pull string shall be resistant to rot and mildew and shall not deteriorate when exposed to oil, grease, etc.

C. Pull rope shall be twisted polypropylene treated with ultraviolet stabilizers, minimum $^1/_4$ inch diameter. Rope shall be resistant to rot and mildew and shall not deteriorate when exposed to oil, grease, etc.

D. Pull rope shall be flat, woven polyester tape, minimum 1800 tensile strength. Rope shall be pre-lubricated to reduce pulling tension and shall be durably printed with sequential footage markings. Rope shall be resistant to rot and mildew and shall not deteriorate when exposed to oil, grease, lubricants, etc. Where installed in underground conduits, the pull rope shall have a # 22AWG detectable tracer wire woven into the tape. Pull rope shall be Neptco Muletape, or equivalent.

PART 3 - EXECUTION

3.01. RACEWAYS

A. Raceways shall be run concealed in the walls (including within CMU and similar construction), soffits (new and existing), above the ceiling or below the floor unless indicated otherwise; except, exposed within utility rooms and other similar type spaces. Raceways may be run exposed within public spaces, classrooms, offices, and the like only where indicated and with prior approval of the Owner and Architect. Exposed raceways shall be run as neatly and unobtrusively as possible, to the approval of the Owner, Architect and Engineer.

B. Raceways shall be installed straight, plumb and true and shall be without kinks or sags.

C. Exposed raceway runs shall be either parallel or at right angles to walls and structural members, as neatly and unobtrusively as possible (e.g. adjacent to window and door trims and base, at wall/wall or wall/ceiling intersections, etc.). Exposed parallel or banked raceways shall be run together.

D. Verify location, mounting heights, etc. of surface metal raceways from the Owner and Engineer prior to installation. In general, surface raceways shall be mounted as unobtrusively as possible, tight against whiteboard trim, chair rails, in room corners, against chases, etc. & other breaks in the in the wall or ceiling.

E. Junction boxes mounted above accessible ceilings shall be within 42 inches of the ceiling and shall have a minimum 12 inch clearance in front of the box.

F. Raceways shall be located to not interfere with the removal of pipes or equipment for maintenance or repair. All raceways shall be kept a minimum of 6 inches away from items producing heat.

G. Above grade raceways, fittings, etc. shall be securely supported from permanent structural members of building, either directly or indirectly. Raceways shall be fastened at intervals of 8 feet, nominally, and within 36 inches of each outlet, fitting, panel, etc. Raceway shall be supported using straps, hangers, clips or clamps specifically intended for use as raceway support. Single runs of exposed conduit shall be supported with steel pipe straps.

H. Bends in raceways shall be made without flattening, kinking or reducing the cross-sectional area of the raceway. Bends in parallel or banked runs shall be made from the same center line so that the bends are parallel.

I. All raceway cuts shall be made square with a proper cutting tool. The inside and outside of all raceway ends shall be reamed after cutting and/or threading to eliminate burrs and rough edges, then wiped clean. Joints shall be cut square and shall butt solidly into couplings. Running threads will not be permitted.

J. Surface metal raceways shall be cut with a factory manufactured and/or approved cutting tool designed/made specifically for the purpose.

K. Raceways shall be closely and tightly fitted in couplings, connectors, boxes, etc. to provide an electrically continuous low resistance ground fault return path. Threaded joints shall be made up with at least 5 threads fully engaged.

L. The raceway systems shall be complete (including the installation of bushings, grommets, etc.), snaked and cleaned, and approval of the installation is obtained from the Owner and Engineer, before installation of any wallboard where the raceway is concealed in walls and above ceilings.

M. The raceway systems shall be complete (including the installation of bushings, grommets, etc.), snaked and cleaned, and approval of the installation is obtained from the Owner and Engineer, before or pulling any cable.

N. Exposed raceways shall be painted.

O. Below grade telecommunications, spare, c.o., etc. conduits shall have their location properly marked.

3.02. LABELING & IDENTIFICATION

A. Junction boxes concealed in ceiling spaces and exposed in electrical, mechanical, utility rooms, and the like shall be marked with the panel and circuit numbers contained within. Marking shall be legibly hand-written with black indelible ink marker.

B. In each junction and pull box, neutral conductors shall be grouped with associated phase conductors by taping the conductors together.

C. Interior spare, C.O., etc. conduits shall be labeled with their destination. Labeling shall be made by neatly hand writing on the conduits or enclosures with indelible marker.

D. Exterior below grade conduits entering electrical rooms, communications rooms, enclosures, vaults, etc. shall be labeled with their destination. Labeling shall be made by neatly hand writing on the conduits or enclosures with indelible marker.

E. Color coding for power cable shall be as follows:

1. 120/240 volt, 1 phase, 3 wire:
Phase A = black, B = red, N = white;

2. 120/208 volt, 3 phase, 4 wire:
Phase A = black, B = red, C = blue, N = white;

3. Equipment ground cables shall be green.

4. Switch legs shall be the same color as the phase conductors. Switch travelers shall be purple.

3.03. BOXES

A. Boxes shall be installed plumb and true and be firmly supported either directly or indirectly by a sound and safe structural member of the building with approved anchors and fasteners, and shall be readily accessible for maintenance.

B. Pull boxes or fittings shall be provided in conduit runs as required to prevent excessive stress on the cables during pulling and to allow the minimum required bending radius.

C. Where an accessible ceiling space exists, locate above the ceiling; otherwise locate in an unobtrusive location to the approval of the Architect, Engineer and Owner.

D. Pull boxes shall be provided at the transition between the surface metal raceway system and conduit or “open” cabling system. Where an accessible ceiling space exists, locate above the ceiling; otherwise locate in an unobtrusive location against the ceiling.

E. Flush mounted switch, outlet, etc. boxes in common non-fire rated walls and facing into different rooms shall be offset a minimum of 6 inches to minimize sound transmission between rooms. Flush mounted switch, outlet, etc. boxes in common rated fire resistive walls and facing into different rooms shall be offset a minimum of 24 inches. Boxes mounted back-to-back will not be allowed. Raceways between boxes in adjoining rooms shall be filled as required to maintain the fire rating (where required) and minimize sound and dust transmission between rooms.

F. Low voltage cut-in type mounts in a common wall and facing into different rooms shall be offset a minimum of 12 inches and shall be separated by a stud. Area between low voltage cut-in type mounts without boxes shall be filled with insulation or other suitable material to minimize sound and dust transmission between rooms.

3.04. WIRE AND CABLE

A. All wire and cable shall be enclosed within the raceway system; except:

1. "Open cable wiring" approved for the purpose shall be permitted for Class 2 signal and control circuits, fire alarm system cable, telecommunications cable, etc. when run concealed in an accessible location above the ceilings.

2. Class 2 signal and control circuits, fire alarm system cable, telecommunications cable, etc. may be (or shall be where indicated) “fished” inside existing frame walls not being replaced or re-finished. Fished cables shall be provided with a suitable pull string, accessible at both ends.

B. Floor and ceiling penetrations by “open” cables will not be allowed. Provide conduit sleeves, minimum 2" EMT, as required plus a spare (with fire and dust stopping and sealing) where “open” cable passes through floors, walls, partitions, etc.

C. Inspect cable prior to installation to verify that it is identified properly on the reel or box identification label, that it is of proper gauge, containing correct number of pairs, etc. Note any buckling of the jacket which would indicate possible problems. Damaged cable or any other components failing to meet specification shall not be used in the installation.

D. Conductors of different voltages, systems, functions, etc. shall not be combined in the same raceway or cable unless specifically noted otherwise.

E. Wire and cable shall not be exposed to weather or mechanical damage longer than necessary. Cut ends of the cable shall be immediately sealed to protect from moisture. Duct tape is not an acceptable means of sealing.

F. The contractor shall not receive cable from the supplier if it arrives onsite with the cable ends unsealed.

G. Cable shall be unrolled from reels, or removed from cartons, and installed so as to not damage the insulation or cable sheath and in a manner which will prevent kinking, crushing or excessive tension on conductors and insulation. Use only guides, rollers, sheaves, etc. that are free-turning and clean. Cable shall not be dragged on the ground or over sharp edges or abrasive surfaces. Slack wire shall be provided at all pull points.

H. All cables to be installed in a raceway shall be pulled together. The pulling means (fish tape, cable, rope, etc.) shall be of a type that will not damage the raceway.

I. Telecommunications cables shall be installed without sharp bends (less than 2 inch radius) or pulling tension in excess of 20 pounds.

J. Cable shall be installed or drawn into the raceway system only after all work of any nature that might cause injury to the cable is completed. The raceway system shall be complete, snaked and cleaned before pulling any cable.

K. "Open" telecommunications cables, ancillary systems cables, low voltage control cables, etc. shall be bundled and be supported from permanent structural members of the building, either directly or indirectly, with suitable rings or hooks. Support spacing shall not exceed 5 feet. Cables shall not interfere with the removal of pipes or equipment for maintenance or repair. Support “open” cables a minimum of 6 inches above T-bar ceilings. All "open" cable shall be kept a minimum of 6 inches from pipes, ducts, and other items producing heat. Tape and cable ties are not approved methods of fastening cables.

L. Cord drops from ceilings or similar shall have suitable stainless steel basket weave support/strain relief grips, Kellems or approved equal. Cord connectors shall liquidtight type.

M. Provide conduits, boxes, etc. for all "open" cable wiring where penetrating from one floor to the next and through rated fire walls.

N. Provide conduits, boxes, etc. for telecommunications and other ancillary systems (where required by the ancillary system provider) "open" cable wiring within walls up to an accessible location above the ceiling.

O. Protect “open” cables during installation. Provide suitable covers on supports, structural members, etc. with sharp edges. Remove all added coverings, protection, etc. after installation of the cable.

P. All cables shall terminate in an approved enclosure or fitting. Type MC cable shall be terminated at boxes, enclosures, etc. with a non-metallic anti-short bushing and an approved connector, and insure a proper bond by firmly tightening connectors to both the box or enclosure and the cable. The continuity of circuits, grounding, etc. shall not be dependent device connections (e.g. receptacles), where the removal of such devices would interrupt the continuity.

Q. Provide wire/cable markers (Brady type or equivalent/better) identifying its circuit number and/or final destination on all cables/conductors (power, telephone/computer, and other ancillary systems) at panels, devices, junction points, etc.

R. Cable pulling lubricants shall be used to minimize pulling stresses on cable pulled into raceways.

S. All cable is subject to subtle damage that may degrade future performance, if abused during installation. In all cable installation, set reels and use sufficient pulleys and manpower so that cables are not pulled around corners or against material that might cause chafing.

OBSERVATION OF IMPROPER CABLING HANDLING TECHNIQUES MAY CAUSE THE CONSULTANT/ENGINEER AND/OR OWNER TO REQUIRE THE CONTRACTOR TO DISCARD AFFECTED CABLES, INCLUDING ANY OTHERS ALREADY INSTALLED BY THE PERSONNEL FOUND USING INCORRECT PROCEDURE.

T. Conductor connections shall be made with connectors of the proper size and type. Compression connections shall be made with the correct die and number of crimps, or the correct tightening torque in the case of mechanical connectors, according to manufacturer's instructions and recommendations. Use suitable oxide inhibiting joint compound on all aluminum terminations. Termination of insulated conductors shall be made so that the stripped length of bare conductor is not longer than required for the terminal or connector. Care shall be taken to not nick conductors during insulation removal.

U. At pulling points, the cables shall be neatly bundled by circuit.

V. Taps and splices shall be kept to a minimum; and are not allowed in cables larger than #8 AWG, control cable, ancillary systems cable, etc. and below grade without prior approval from the Engineer.

W. Field wiring shall not contact live parts.

X. Cables shall not be supported by their terminations. Suitable cable ties and/or supports shall be utilized in switchboards, panelboards, terminal boxes, junction boxes, vaults, etc. to group and support conductors. All cable shall be fanned-out to terminals and identified by labels; or, if terminated on circuit breakers or control devices, by typewritten indexes or nameplates.

Y. Insulated cable supports shall be provided to relieve any strain imposed by cable weight or movement, and to secure cable as required to withstand the effects of fault currents.

3.05. CABLE TESTING

A. Branch lighting and general purpose receptacle circuits do not require an insulation test, functional tests only are required; except, all receptacles shall be tested for correct connection using a suitable receptacle tester.

B. See specification section 27 05 00 Telecommunications for cable testing.

3.06. PENETRATIONS

A. Wall, ceiling and floor penetrations by raceways (both inside and outside the raceway), cables, etc. shall be sealed to maintain the original moisture, dust and fire resistance to the approval of the Architect.

B. Do not cut, notch or drill structural framing members for the installation of raceways without the Architect's approval in each case. Holes and penetrations where allowed in studs, joists and other structural members for raceways and cables shall be of a size to allow for a tight fit.

C. Provide conduit sleeves as required, plus a spare of the same size, where “open” cable passes through floors, walls, partitions, etc.

D. Contractor shall x-ray or otherwise determine the exact location of existing structural components, conduits, piping, wiring, ducts and the like prior to making any new penetrations or openings (or expanding existing openings) in any floor, wall or ceiling.

3.07. PULL STRINGS AND ROPES

A. Provide pull ropes in all below grade telecommunications (with and without cables), spare, etc. conduits.

B. Provide pull strings in all above grade telecommunications (with and without cables), spare, etc. conduits.

C. Provide pull string with all cables fished inside existing walls.

3.08. ANCILLARY SYSTEMS

A. The Contractor shall coordinate with ancillary systems suppliers and provide conduit, boxes, cables, etc. in accordance with their requirements; except, minimum as indicated and/or specified.

B. Provide a 1 inch EMT conduit from each telecommunications outlet box up to an accessible location above the ceiling.

C. Provide a 1 $^{1}/_{4}$ inch EMT conduit from each audio-video outlet box up to an accessible location above the ceiling, except speaker pull boxes may be $^{3}/_{4}$ inch.

D. Provide a ¾ inch (or as required) EMT conduit from each fire detection and alarm system device box up to an accessible location above the ceiling.

End of Section 26 05 00

PART 1 - GENERAL

1.01. APPLICABLE PROVISIONS

A. The General, Supplementary and other Conditions of the Contract, modifications to the General Conditions, the Drawings, and the applicable provisions of the other Divisions are hereby made a part of this Division and all its sections.

1.02. SUMMARY

A. The requirements of this Section and the other Division 26, 27 & 28 Sections apply to all the grounding work.

B. Coordinate grounding work with related work shown and specified elsewhere.

C. Provide all materials necessary for the proper execution and completion of the work as herein specified or called for on the drawings. Required items not specifically mentioned in the specifications or indicated on the drawings shall be provided as necessary to produce the intended results.

D. In the event that any item is not available exactly as specified, the Contractor shall so notify the Engineer in writing as early as possible to allow ample time for an alternate item to be selected without delay to the project.

PART 2 - PRODUCTS

2.01. GROUNDING

A. Feeder (high voltage and low voltage) circuits, branch circuits, control circuits, etc. shall include a separate equipment ground cable (sized the same as the largest circuit conductor, unless otherwise noted) run in the same raceway with the circuit conductors or bundled with the circuit conductors if run “open”. Equipment ground conductors for feeder (high voltage and low voltage) circuits, branch circuits, control circuits, etc. installed in metallic raceways shall be redundant, consisting of both an electrically continuous metal raceway system and the separate equipment ground cable run in the same raceway with the circuit conductors.

2.02. WIRE AND CABLE

A. Ground wire and cable sizes indicated and/or specified are minimums only and shall be increased as required due to NEC, system, load, voltage drop, etc. requirements.

B. Equipment ground cable shall be single conductor copper with 600 volt type XHHW or THWN/THHN insulation. Conductor size shall match feeder, branch circuit, etc. conductor size unless noted otherwise. Conductors shall be stranded, except #12 AWG lighting and general purpose receptacle branch circuit conductors may be solid.

PART 3 - EXECUTION

3.01. GROUNDING

A. All electrical equipment, enclosures, boxes, devices, etc. shall be provided with a ground fault return path by means of an insulated grounding conductor installed with the circuit conductors, and the integrity of the raceway system if applicable. Bond raceway system as required.

B. Ground terminals of all equipment, devices, etc. shall be grounded by the equipment ground conductor.

C. Raceways shall be closely and tightly fitted in couplings, connectors, boxes, etc. to provide an electrically continuous low resistance ground fault return path. Threaded joints shall be made up with at least 5 threads fully engaged.

D. Building steel and interior metal piping systems shall be suitably bonded.

E. Compression connections shall be made with the correct die and number of crimps, or the correct tightening torque in the case of mechanical connectors, according to manufacturer's instructions and recommendations.

F. Grounding conductors exposed to mechanical damage shall be protected with PVC conduit sleeves with bushings.

G. Before grounding connections are made, contact surfaces shall be thoroughly cleaned and anti-oxidant solution applied.

H. Connections shall be both mechanically and electrically secure. Torque connecting hardware in accordance with the manufacturer's instructions and recommendations.

I. Torque connecting bolts at telecommunications grounding busbars to 35 ft/lbs.

J. Tests shall be made to verify the continuity of the ground system and all ground fault return paths.

K. After completion of the grounding system, the resistance of the grounding network to earth shall be measured using a ground megger using a fall of potential test method. Driven ground rods shall be disconnected and tested separately from the grounding system. The minimum ground earth resistance shall be maximum 25 ohms.

End of Section 26 05 26

PART 1 – GENERAL

1.01. APPLICABLE PROVISIONS

A. The General, Supplementary and other Conditions of the Contract, modifications to the General Conditions, the Drawings, and the applicable provisions of the other Divisions are hereby made a part of this Division and all its sections.

1.02. SUMMARY

A. The requirements of this Section and the other Division 26, 27 & 28 Sections apply to all the thermal & moisture protection work.

B. Coordinate thermal & moisture protection work with related work shown and specified elsewhere.

C. Provide all materials necessary for the proper execution and completion of the Work as herein specified or called for on the drawings. Required items not specifically mentioned in the specifications or indicated on the drawings shall be provided as necessary to produce the intended results.

D. In the event that any item is not available exactly as specified, the Contractor shall so notify the Engineer in writing as early as possible to allow ample time for an alternate item to be selected without delay to the project.

1.03. SUBMITTALS

A. Provide submittals for all moisture, fire and dust stop materials, complete with a description of where each type is proposed to be used.

PART 2 - PRODUCTS

2.01. GENERAL

A. Coordinate the features of materials and equipment so they form an integrated system.

2.02. MOISTURE PROOFING

A. Moisture proofing systems shall be designed and installed to allow the passage of cable, conduit or pipe through exterior walls, etc. and vaults. They shall provide a barrier seal to prevent the penetration of water and gases into the structure to be penetrated.

2.03. FIRE STOPPING AND SEALING MATERIALS

A. Fire-stop systems shall be designed and installed to allow the passage of cable, conduit or pipe through fire rated walls or floors. They shall provide a barrier seal to prevent the penetration of fire, smoke, water, and gases, with a fire rating to match the rating of the architectural assembly or structure to be penetrated.

B. Fire-stop systems shall be resistant to direct hose spray.

C. Fire-stop systems shall consist of one or more of the following materials:

1. Ablative (typical of silicone-based technology).

2. Cementitious (Can be troweled like grout or mortar, but is specifically rated or the purpose. Grout shall not be permitted).

3. Elastomeric (Flexible substance which resembles rubber).

4. Endothermic (Absorbing heat energy.).

5. Intumescent (Swelling under the influence of heat, pillows, etc.).

6. Mechanical (Assemblies that allow additions or deletions).

D. Fire-stop systems shall be UL classified for the intended use.

E. Wall, ceiling and floor sleeves and the like shall be metallic raceways with intumescent bags or bricks; except, at the option of the Contractor, sleeves may be metallic wireways (sized to match the required raceways) which contain an intumescent insert material that adjusts automatically to cable additions or subtractions, Specified Technologies EZ Path, 3M Fire Barrier Pass-Through, or approved equal.

F. Fire-stop material around cable penetrations, within raceways (except wall and floor sleeves), etc. shall be intumescent bags, bricks, or soft, pliable, non-hardening intumescent putty, with high dielectric strength (insulator). Material shall allow removal of the material(s)/system(s) for future cable additions and/or removals.

G. Drywall joint compound, concrete, and mineral wool shall not be used as fire stopping materials.

H. Fire-stop products shall be as manufactured by 3M, Dow Corning, Hilti, Nelson, Specified Technologies, Unique Fire Stop Products, or approved equal.

2.04. DUST SEALING MATERIALS

A. Dust seal systems shall be designed and installed to allow the passage of cable, conduit or pipe through non-rated ceilings, walls, partitions or floors.

B. Dust sealant around raceways and the like shall be top grade paintable silicone based or poly-sulfite caulk, or expanding foam type sealant.

C. Dust sealant around cable penetrations, within raceways, etc. shall allow removal of the material for future cable additions and/or removals.

PART 3 - EXECUTION

3.01. INSTALLATION

A. Provide all fire-stop sealing for all penetrations through fire-resistance-rated floors, walls and partition construction; including empty openings and openings containing cables, raceways, cable trays, cable racks, sleeves, supports and other penetrating items as required, both new and existing where new cables, raceways and the like have been installed. Contractor is responsible for verifying the fire rating of the barrier to be penetrated.

1. Install fire-stop systems in accordance with manufacturer-tested methods and to manufacturer's instructions. If required, extend fire-stop system through the full thickness of the wall or floor and through the full length of the sleeve.

2. Seal openings with a removable fire-stop material after each shift. Do not leave unattended openings in building fire-resistance-rated walls, partitions and floors at any time during construction.

3. Fire-stopping at penetrations between tunnels and buildings shall include smoke isolation provisions to prohibit smoke migration from one space to the other.

B. Where existing sleeves or penetrations are re-entered for installation of new cables, Contractor shall modify/re-install or provide new fire stop material as required to maintain the original fire rating of the barrier.

3.02. MOISTURE PROOFING

A. Conduit terminations at equipment, etc. shall be suitably sealed and/or plugged at both ends to prevent the entrance of moisture.

B. Underground conduits extending into buildings and at transformers, switchgear, etc. shall be suitably sealed or plugged at both ends. Underground conduits between vaults shall be suitably sealed or plugged at the high end. Sealant shall be removable. Ductseal is not acceptable.

C. Conduit penetrations through retaining walls and building exterior walls shall be suitably sealed and/or grouted to prevent the entrance of moisture.

D. PVC conduit shall be solvent welded to prevent the entrance of moisture.

E. Comply with manufacturer's installation instructions and recommendations particular to each product for all roof penetrations. Repair existing roofing and flashing altered by work, including restoration of base, insulation, membranes, flashing, adhesives, sealants, and roofing accessories integrally related to roof installations. Clean all effected surfaces prior to roofing work. Flash and counter-flash all roof penetrations.

End of Section 26 07 00

PART 1 - GENERAL

1.01. APPLICABLE PROVISIONS

A. The General, Supplementary and other Conditions of the Contract, modifications to the General Conditions, the Drawings, and the applicable provisions of the other Divisions are hereby made a part of this Division and all its sections.

1.02. SUMMARY

A. The requirements of this Section and the other Division 26, 27 & 28 Sections apply to all the electrical work.

B. Coordinate electrical work with related work shown and specified elsewhere.

C. Provide all materials necessary for the proper execution and completion of the work as herein specified or called for on the drawings. Required items not specifically mentioned in the specifications or indicated on the drawings shall be provided as necessary to produce the intended results.

D. In the event that any item is not available exactly as specified, the Contractor shall so notify the Engineer in writing as early as possible to allow ample time for an alternate item to be selected without delay to the project.

1.03. SUBMITTALS

A. Provide submittals for the following:

1. Wiring devices & wallplates.

PART 2 - PRODUCTS

2.01. PANELS

A. Panels shall have a circuit directory frame and card with a transparent cover furnished on the door. Directory cards shall have a typewritten index clearly and accurately identifying the function and location (using the room name and numbering system shown on the Architectural plans) of the circuit. Provide new typewritten circuit directory cards for all existing panels that are modified in any way.

B. Circuit directory cards shall be arranged to match the physical arrangement of the breakers, with odd numbered circuits on the left side of the card and even numbered circuits on the right side of the card. Where required due to the size of the directory frame, the odd numbered circuits may be on a separate card from the even numbered circuits. Odd and even numbered circuits shall not be intermingled together.

2.02. WIRING DEVICES

A. Wiring devices shall be specification grade, all of the same manufacturer, ivory colored.

B. Lighting switches shall be toggle, AC quiet type rated 20 amps, 120-277 volt.

C. Refer to Section 26 50 00 Lighting for occupancy sensing wall switches and low voltage lighting control switches.

D. Equipment disconnect type switches shall be toggle, heavy duty manual motor controllers, horsepower rated, with the number of poles and ampere rating indicated and/or required.

E. General purpose receptacles shall be tamper resistant, 15 amp, 125 volt, AC, straight blade, 3-wire grounding type; except:

1. Receptacles within the telecommunications rooms shall be rated 20 amps.

2. Special purpose receptacles as noted for specific equipment.

3. Single receptacles on an individual 20 amp branch circuit shall be rated 20 amps.

F. Ground fault interrupter (GFI) type receptacles shall be tamper resistant duplex, Class A, 15 amp, 125 volt with end of life protection (either by rendering itself incapable of delivery power or by visual indication) and reverse line-load miswire protection. Provide individual ground fault interrupter type receptacles at each location indicated or as required. Feed-through type protection of multiple outlets will not be allowed.

G. Tamper-resistant receptacles shall be provided with a mechanism to prevent penetration of small objects into either outlet slot.

H. Special purpose receptacles shall be of the type, ratings and design for the use intended, NEMA configuration. Provide matching plugs where indicated.

I. Flush mounted devices shall have smooth specification grade high abuse nylon wallplates, color to match devices.

J. Surface mounted devices shall have raised surface type covers, galvanized steel.

K. Definite purpose devices shall be labeled with a description of the device's function, rating and circuit identification.

L. All outlets shall be labeled with the panel and circuit number(s) from which the device is fed. Labels shall be heavy duty adhesive type, clear with black letters on light colored devices and clear with white letters on dark colored devices. Lettering shall be appropriately sized for the application, except minimum $^1/_4$ inch. Labels on ceiling mounted devices shall be large enough to read from the floor. Labels shall be as manufactured by Kroy, Brothers, or approved equal. Self-adhesive circuit numbers, masking tape, plastic punch type "Dymo" labels, etc. are not acceptable.

2.03. EQUIPMENT IDENTIFICATION

A. All equipment and outlets shall be labeled with the panel and circuit number(s) from which it is fed.

B. Labels shall be heavy duty adhesive type, clear with black letters on light colored devices and clear with white letters on dark colored devices. Lettering shall be appropriately sized for the application, except minimum $^{1}/_{8}$ inch. Labels on ceiling mounted devices shall be large enough to read from the floor. Labels shall be as manufactured by Kroy, Brothers, or approved equal. Self-adhesive circuit numbers, masking tape, plastic punch type "Dymo" labels, etc. are not acceptable.

C. Nameplates shall adequately describe the function or operation of the identified equipment, devices, etc. and, where applicable, include the panel and circuit number(s) from which it is fed. Nameplate designations shall be consistent with the project documents. Submit proposed inscriptions for approval.

PART 3 - EXECUTION

3.01. TEMPORARY POWER

A. The Contractor shall provide all temporary power services, facilities, equipment, devices, material, etc. required for the construction; including adequate lighting, outlets, balancing, testing, etc. as may be necessary for the proper performance and inspection of the work.

B. During power interruptions, and if Contractor's equipment will not operate on the available power, the contractor shall supply all equipment needed, such as transformer(s), generator(s), etc. and pay all costs involved.

C. The temporary power system shall be provided in a neat and safe manner, in compliance with governing codes and good working practice.

D. Permanent receptacles which are used for temporary power during construction shall be replaced with new devices at the completion of construction.

E. The temporary power system shall be removed when no longer required.

3.02. LOCATIONS

A. The mounting heights and location of similar equipment and devices shall be consistent, in accordance with the requirements of the ADA where applicable. Special purpose items shall be located conveniently for the purpose intended.

B. Devices shall be located to not interfere with the removal of pipes or equipment for maintenance or repair. All devices shall be kept a minimum of 6 inches away from items producing heat.

C. Disconnect switches, circuit breakers, etc. shall, in no case, be installed so that the grip of the operating handle, when in its highest position, is more than $6^1/_2$ feet above the floor or working platform.

D. Outlets (power, telecommunications, etc.) shall be mounted 18 inches to centerline above finished floor unless noted otherwise; except, outlets above counters, etc. shall be mounted 6 inches to centerline above the counter or 3 inches to centerline above the splashboard, whichever is higher.

E. Locate light switches, etc. 6 inches from door casings (except on center in spaces less than 12 inches), 46 inches to centerline above finished floor. Where light switches are adjacent to countertops, install the switches at the same height as adjacent devices above the countertop.

F. Prior to rough-in, the Contractor shall mark or otherwise show the location of all equipment and devices, and obtain specific approval from the Owner and Architect for the location of each prior to installing enclosures, boxes, raceways, etc.

3.03. EQUIPMENT AND DEVICES

A. Equipment, devices, enclosures, etc. shall be installed plumb and true and shall be square with the adjacent walls, ceilings and structural members.

B. Equipment, cabinets, boxes, etc. shall be accurately mounted and leveled and be firmly supported either directly or indirectly by a sound and safe structural member of the building in accordance with manufacturer's instructions, or as directed. Supports shall be neatly placed and properly fastened.

C. The correct lifting, jacking and/or moving gear which will prevent damage to the equipment shall be used.

D. Bolts, nuts, screws and other fastenings shall be tightened and all covers replaced on equipment and boxes. Electrical connections, particularly those on bus work in panelboards, etc. shall be checked to ensure tightness and electrical conductivity. Gaskets, seals, etc. shall be checked for proper fit.

E. To minimize transformer noise, provide rubber sound isolation pads between the transformer enclosure and the floor. Back off nuts as directed at sound isolation pads, both internal and external, to float transformer on the isolation pads.

F. Follow manufacturer's installation details wherever available. Provide boxes, mountings, wiring or fittings required, standard or special.

G. The Contractor shall touch-up paint all scratched, marred or damaged factory finish on equipment, devices, enclosures, etc.

3.04. DEVICES

A. Flush mounted switch, outlet, etc. boxes in common non-fire rated walls and facing into different rooms shall be offset a minimum of 6 inches to minimize sound transmission between rooms. Flush mounted switch, outlet, etc. boxes in common rated fire resistive walls and facing into different rooms shall be offset a minimum of 24 inches. Boxes mounted back-to-back will not be allowed. Raceways between boxes in adjoining rooms shall be filled as required to maintain the fire rating (where required) and minimize sound and dust transmission between rooms.

B. Low voltage cut-in type mounts in a common wall and facing into different rooms shall be offset a minimum of 12 inches and shall be separated by a stud. Area between low voltage cut-in type mounts without boxes shall be filled with insulation or other suitable material to minimize sound and dust transmission between rooms.

End of Section 26 20 00

PART 1 - GENERAL

1.01. APPLICABLE PROVISIONS

A. The General, Supplementary and other Conditions of the Contract, modifications to the General Conditions, the Drawings, and the applicable provisions of the other Divisions are hereby made a part of this Division and all its sections.

1.02. SUMMARY

A. The requirements of this Section and the other Division 26, 27 & 28 Sections apply to all the lighting and lighting control work.

B. Coordinate lighting and lighting control work with related work shown and specified elsewhere.

C. Provide all materials necessary for the proper execution and completion of the work as herein specified or called for on the drawings. Required items not specifically mentioned in the specifications or indicated on the drawings shall be provided as necessary to produce the intended results.

D. Lighting control system work shall include all necessary set-up, programming, testing, commissioning, etc. for a complete and operational system, adjusted, tested and ready for operation.

E. In the event that any item is not available exactly as specified, the Contractor shall so notify the Engineer in writing as early as possible to allow ample time for an alternate item to be selected without delay to the project.

1.03. QUALITY ASSURANCE

A. The lighting systems and all controls shall be in accordance with the Washington State Energy Code (WSEC), ASHRAE 90.1 as well as LEED certification requirements.

1.04. SUBMITTALS

A. Provide submittals for the following:

1. Lighting fixtures.
2. Lighting control devices.

B. Provide complete manufacturer's schematic drawings for each system.

PART 2 - PRODUCTS

2.01. GENERAL

A. Fixtures, luminaires, poles, etc. shall include all necessary mounting and connecting accessories.

B. Contractor & lighting fixture supplier shall verify that the fixture description match the catalog numbers on the Lighting Fixture Schedule, and that mounting requirements are correct. Advise Engineer of any conflicts or discrepancies.

2.02. LIGHTING

A. Light Emitting Diode (LED) luminaires shall have a luminous efficacy of at least 100 lumens/W, a color temperature of 3500 K, a CRI of at least 80, an estimated life of at least 70,000 hours at 70% lumen maintenance, and shall include a minimum 5-year warranty on the entire luminaire including the driver. The luminaire and LEDs shall have been tested in accordance with LM-79 and LM-80.

2.03. EMERGENCY LIGHTING

A. Emergency lighting power units shall be self contained, designed to provide power to fixtures automatically upon interruption of normal electric power for a minimum of 90 minutes. Emergency power source shall be a rechargeable, maintenance free, sealed, spillproof pure lead or lead-calcium battery system. The units shall incorporate a regulated solid-state charger with filtered output and low voltage disconnect.

B. Controls shall include circuitry to provide continuous self-diagnostic monitoring of the units operation, programmed discharge cycles, charger mode indicator light, unit malfunction indicator lights, and a test switch.

2.04. LIGHTING CONTROLS

A. Occupancy sensors and photosensors shall be by the same manufacturer and shall form a single integrated system in each room.

B. Occupancy sensors:

1. Low voltage occupancy sensors shall be combination passive infrared and ultrasonic type, ceiling mounted, with adjustable time delay, adjustable sensitivity, and an LED indicator. Lenses shall be as required for the application (e.g. wide angle for open areas and the like and long range for corridors). The sensors shall be able to detect the difference between a human body and the background space. Occupancy sensors shall be Hubbell OMNIDT2000, Lutron LOS-CDT-2000, PLC Multipoint OCS-222-1, Sensorworx SWX-222-1-AR, Watt Stopper DT-300, or approved equal.

2. Relays/power packs for use with low voltage switching shall be remote mounted, 120 or 277 volt AC input (as required), 24 volt DC output, with single or multiple relays and contacts rated minimum 20 amps as required. Relays/ power packs shall be capable of controlling and/or being controlled by up to minimum 3 sensors and shall be capable of selection between automatic on mode and manual on mode. Power packs shall be capable of being connected to a momentary contact switch for manual switching of connected loads. Occupancy sensors relays/power packs shall be of the same manufacturer and specifically designed for use with the occupancy sensors, Hubbell UVPPM, Lutron PP-DV, PLC Multipoint PP900-AX, Sensorworx SWX-900-AX, Watt Stopper BZ-150, or approved equal.

3. Where required due to the quantity of occupancy sensors, provide additional remote power supplies. Power supplies shall be of the same manufacturer and specifically designed for use with the occupancy sensors.

4. Line voltage occupancy sensors shall have the same performance characteristics as low voltage, except with 120/277 relay. Line voltage occupancy sensors shall be Hubbell OMNIDT-BP, PLC Multipoint OCS-222-2, Sensorworx SWX-222-2, Watt Stopper DT-355, or approved equal.

C. Low voltage wall switches shall be suitable for use with the low voltage sensors and relay/power packs.

1. Wall switches for on-off applications (manual-on applications) shall be momentary contact type, shall have similar appearance as adjacent line voltage toggle type switches, Leviton model 1081, Greengate model GMT, Hubbell LVS1HD, Pass & Seymour 1250, or approved equal.

2. Dimmer switches for 0-10 volt dimming applications shall be LuxDrive F019, or approved equal.

3. Color and faceplates shall match other wall devices, switches, and outlets as specified.

D. Motion sensor switches shall be ultrasonic or passive infrared type, wall mounted, color to match the devices in the building, 120-277 volt, rated minimum 1200 watt, with built-in light level sensor, adjustable sensitivity, adjustable time delay, switch (2 switches if dual control) for manual control and vandal resistant hard lens. Buttons on the face of the switches shall operate in toggle mode to manually turn on/off connected lighting loads. Motion sensor switches shall be Watt-Stopper type PW-301, Hubbell type LHMTS1, Square D type PIR, Sensor Switch type WSX-PDT, or Greengate ONW-D-1001-MV for single switch/level applications and Watt-Stopper type PW-302, Hubbell type LHMTD2, Square D type PIR or Sensor Switch type WSX 2P-PDT for dual level/switch applications, or approved equal.

2.05. LIGHTING CONTROL SYSTEMS

A. Lighting control system shall be installed in the Courtroom area of the building.

B. System shall consist of multiple smart power pack/room controllers, combined into a single integrated control system

C. System shall be complete, functional, intelligent lighting control systems including lighting control relays, occupancy sensors, daylighting controls, control stations, etc. All system components shall connect and be controlled via low voltage cable providing real time two-way communication with each system component. The system shall support all of the energy saving features required of ASHRAE 90.1 as well as all state and local energy codes and LEED certification requirements.

D. Lighting control system shall include all software, with the ability to control each relay and each relay group. System shall provide local access to all programming functions at the master lighting control panel, and remote access to all programming functions via dial up modem and through any standard computer workstation running an industry standard internet browser. System software shall provide real time status of each relay, each zone and each group. All programs, schedules, time of day, etc, shall be held in non-volatile memory for a minimum of 10 years at power failure. At restoration of power, lighting control system shall implement programs required by current time and date.

E. Lighting control system shall have the ability of controlling a single relay from multiple occupancy sensor zones so that the relay can be activated from either zone or both zones, but will not be deactivated by a single zone when the other zone senses occupancy.

F. The system shall have the capability of controlling zones in daylight areas with both occupancy sensors and photosensors simultaneously in order to achieve daylight harvesting when adequate daylight is available.

G. Room Controller shall be stand-alone, local network, intelligent type room controller that mounts to a standard 4” square box located above an accessible ceiling space, contain three relay outputs and three dimming channels delivering 0-10V dimming output control with input from wall mounted dimmer switches, turn off lights with inputs from occupancy sensors, manual-on, automatic-off type, 120 or 277 volt AC input (as required), 24 volt DC output, with contacts rated minimum 20 amps. Dimmer Controllers shall be supplied with compatible devices for proper operation. Dimmer Controllers shall be ILC LightLEEDer-EVO, Watt Stopper LMRC-213, or approved equal.

H. Devices

1. Remote control devices shall be compatible with and integrate fully with the lighting control system.

2. Occupancy sensors shall be combination passive infrared and ultrasonic type, ceiling mounted, with adjustable time delay, adjustable sensitivity, and an LED indicator. Lenses shall be as required for the application (e.g. wide angle for open areas and the like and long range for corridors). The sensors shall be able to detect the difference between a human body and the background space. Occupancy sensors shall be Watt Stopper LMDC-100, or approved equal.

3. Photoelectric controls shall be capable of dimming any type of lighting in response to varying exterior daylight levels. Photocells used for interior lighting control shall have multiple settings such as start-point, mid-point, off-point, fade-up, fade-down, etc. as required to turn OFF all or part of the lights when available natural light meets occupants' lighting needs. Lights shall only come on during occupied periods when enough natural light is not available. All settings shall be remotely accessible and adjustable. Sensors shall be Wattstopper LMLS-500, or approved equal.

4. Control stations shall be 8-button pushbutton digital type with suitable mounting bracket, ivory colored. All switches shall be identified with clear adhesive backed labels printed with the function of the device. Switches shall be connected to the dimmer controllers via CAT6 data lines and use programming rather than hard wiring to link switches to associated relays. Stations shall be Wattstopper LMSW-108, or approved equal.

    a. Wall plates shall be smooth specification grade high abuse nylon.

2.06. WIRE AND CABLE

A. Fixture cable, where supplied by the Contractor, shall be stranded copper with 600 volt type PF insulation.

B. Lighting control system cable shall be as required by the lighting control system manufacturer. Cable shall be listed as being resistant to the spread of fire and bear flammability testing ratings as communications cable type CM or control cable type CL2; except in air handling plenums, cable shall be plenum rated, be listed as being resistant to the spread of fire and bear flammability testing ratings as cable types CMP or CL2P respectively.

2.07. NAMEPLATES AND LABELS

A. Provide nameplates for all lighting switches in classrooms as indicated on the drawings.

B. Provide label cards for lighting timeclock to identify the panel and circuit number and the load served by each channel.

C. Provide label cards for the lighting control panel to identify the panel and circuit number and the load service by each relay.

D. Nameplates shall adequately describe the function or operation of the identified equipment, devices, etc. Nameplate designations shall be consistent with the project documents. Submit a sample of nameplates for approval.

PART 3 - EXECUTION

3.01. LOCATIONS

A. The mounting heights and location of similar equipment and devices shall be consistent, in accordance with the requirements of the ADA where applicable. Special purpose items shall be located conveniently for the purpose intended.

B. Disconnect switches, circuit breakers, etc. shall, in no case, be installed so that the grip of the operating handle, when in its highest position, is more than $6^1/_2$ feet above the floor or working platform.

C. Prior to rough-in, the Contractor shall mark or otherwise show the location of all equipment and devices locations, and obtain specific approval from the Owner and Architect for the location of each prior to installing enclosures, boxes, raceways, etc.

D. Outlets shall be mounted 18 inches to centerline above finished floor unless noted otherwise.

E. Locate light switches, lighting control stations, etc. 6 inches from door frames (except on center in spaces less than 12 inches), 46 inches to centerline above finished floor. Where located at the hinge side of a door, locate 6 inches beyond the end of the door swing. Match the height of existing similar devices in the immediate vicinity.

3.02. EQUIPMENT, LUMINAIRES AND DEVICES

A. Equipment, luminaires, devices, etc. shall be installed plumb and true and shall be square with the adjacent walls, ceilings and structural members.

B. Unless noted or indicated otherwise, orientation of luminaires within a space shall be consistent.

C. Where multiple 3-way switches are ganged together, the switches shall be arranged so that all of the switches are in the same up or down position when all the fixtures in the space are on. The corresponding switches at the opposite end of the circuit shall also be all in the up or down position.

D. Recessed luminaires:

1. Maintain code and manufacturer required clearances from combustible materials around luminaires.

2. Maintain code and manufacturer required clearances from insulation around luminaires.

3. Recessed luminaires in rated ceilings shall be enclosed or otherwise provided with an approved pre-manufactured fire rated barrier as required to ensure the integrity of the fire rated assembly. Maintain code and manufacturer required clearances around luminaires.

4. Coordinate with general and insulation contractors, ceiling provider, etc.

E. Lighting poles and associated luminaires shall be set to stand plumb and true and shall be square with the adjacent buildings, property lines, sidewalks, roadway, etc.

F. Equipment, cabinets, boxes, luminaires, devices, etc. shall be accurately mounted and leveled and be firmly supported either directly or indirectly by a sound and safe structural member of the building in accordance with manufacturer's instructions, or as directed. Supports shall be neatly placed and properly fastened.

G. Occupancy sensors shall be mounted and aimed in accordance with manufacturer's recommendations. All necessary adjustments and settings shall be made in order to ensure the lights will operate when the room is occupied.

H. Photoelectric controls shall be mounted and aimed in accordance with manufacturer's recommendations. All necessary adjustments and settings shall be made in order to ensure the controls will operate properly.

I. The correct lifting, jacking and/or moving gear which will prevent damage to the equipment shall be used.

J. All bolts, nuts, screws and other fastenings shall be tightened and all covers replaced on equipment and boxes. All electrical connections shall be checked to ensure tightness and electrical conductivity. All gaskets, seals, etc. shall be checked for proper fit.

K. Follow manufacturer's installation details wherever available. Provide any special mountings, wiring or fittings required.

L. Provide complete manufacturer's schematic drawings for each system. Any deviations between schematic drawings and contract documents shall be outlined in a separate cover letter. Said deviations will be subject to approval by the Engineer.

M. Provide gaskets, seals, etc. as required to prevent the entrance of moisture, debris, insects, etc. Check for proper fit.

N. Repair damaged corrosion protection and touch-up paint all scratched, marred or damaged factory finish on equipment, devices, fixtures, enclosures, etc.

3.03. SUPPORTS

A. Provide all necessary supports and backing for all fixtures, boxes, enclosures, etc. Attach to wood with wood or lag screws, to metal with machine screws or bolts and to concrete with carbon steel wedge or sleeve type expansion anchors or self-drilling metal anchors and machine screws or bolts. Use size and number of attachments as required to support equipment, fixtures, etc. weight with a safety factor of at least four.

B. Powder actuated fasteners, plastic expansion type anchors, nails and toggle bolts are not permitted.

C. Brace all equipment, etc. as required to meet the requirements of seismic zone 3.

D. Fixtures, luminaires, etc. shall be accurately mounted and leveled and be firmly supported either directly or indirectly by a sound and safe structural member of the building in accordance with manufacturer's instructions, or as directed. Supports shall be neatly placed and properly fastened.

E. Ceiling mounted recessed light fixtures, etc. shall be connected both to the ceiling system with proper "earthquake" clips and to the building structural system with a minimum of 2 suitable earthquake chains or "tie wires" at diagonally opposite corners.

F. Forms shall not be used while placing light standard (pole) bases. Concrete shall bear against undisturbed earth.

G. Lighting poles shall be set to stand perpendicular on bases and in exact alignment, unless specifically noted otherwise. Bases shall be grouted to cover leveling nuts and to fill the void under the base plate with non-shrinking grout.

H. Follow manufacturer's installation details wherever available. Provide all supports, mountings, etc. required, standard or special.

3.04. WIRES AND CABLES

A. Inspect cable prior to installation to verify that it is identified properly on the reel or box identification label and that it is of proper gauge, containing correct number of pairs, etc. Note any buckling of the jacket which would indicate possible problems. Damaged cable or any other components failing to meet specification shall not be used in the installation.

B. Line voltage cable within poles shall be routed in electrical nonmetallic tubing as required to maintain separation of line and low voltage cabling.

C. All concealed power limited systems cable may be run “open” in accessible ceilings; except, where indicated otherwise and where penetrating through ceilings, floors, walls, draft-stops, etc.

D. "Open" cables shall be bundled and supported from permanent structural members of the building, either directly or indirectly, with suitable hooks. Support spacing shall not exceed 5 feet. Protect “open” cables during installation in ceiling spaces. Cables shall not interfere with the removal of pipes or equipment for maintenance or repair. All "open" cable shall be kept a minimum of 6 inches from pipes, ducts, and other items producing heat. Support “open” cables a minimum of 6 inches above T-bar ceilings. Tape and cable ties are not approved methods of fastening cables.

E. Floor and ceiling penetrations by “open” cables will not be allowed. Provide conduit sleeves, as required plus a spare (with fire and dust stopping and sealing) where “open” cable passes through floors, walls, partitions, etc.

F. Cable shall be unrolled from reels, or removed from cartons, and installed in a manner which will prevent kinking, crushing or excessive tension on conductors and insulation. Slack wire shall be provided at all pull points.

G. Cable shall be installed or drawn into the raceway system only after all work of any nature that might cause injury to the cable is completed. The raceway systems shall be complete (including the installation of bushings, grommets, etc.), snaked and cleaned, and approval of the installation is obtained from the Owner and Engineer, before pulling any cable.

H. Cable pulling lubricants shall be used to minimize pulling stresses on cable pulled into raceways.

I. Replace or rework cables showing evidence of improper handling including stretches, kinks, short radius bends, and over tightened bindings.

3.05. EQUIPMENT TESTING

A. Before testing, visually inspect equipment thoroughly, and perform mechanical operation tests in accordance with manufacturer's instructions.

B. Dimming System shall not be energized before being checked and installation approved by an authorized representative of the manufacturer.

C. Emergency Lighting Standby Power System:

1. The completed installation shall be initially started-up and checked-out for operational compliance by a factory-trained representative of the manufacturer.

2. Operating Load Tests:

a. Upon completion of initial start-up and system checkout, perform field tests (with the Owner and Engineer notified in advance) to demonstrate load carrying capability, and voltage and frequency stability. With the emergency load at normal operating level, a power failure shall be initiated by turning off the circuit breaker supplying normal power to the UPS.

b. Records shall be maintained throughout the tests of time-of-day, temperature, time required to come up to operating voltage and frequency, time required to achieve steady-state conditions, voltage, frequency, current, ambient air temperature, kilowatts, power factor, battery charge rate, etc.

c. Continue load tests for 90 minutes, observing and recording load changes and the resultant effect on voltage and frequency, then return normal power.

3. Tests shall be performed to demonstrate the operation of the unit and all monitoring and safety devices.

D. Lighting Control System:

1. Verify that conduit for line voltage wires enters panel in line voltage areas and conduit for low-voltage control wires enters panel on low-voltage areas.

2. Contractor to test all low voltage cable for integrity and proper operation prior to turn over. Verify with system manufacturer all wiring and testing requirements.

3. Before Substantial Completion, arrange and provide an Owner instruction period to designated Owner personnel. Set-up, commissioning of the lighting control system, and Owner instruction includes:

   a. Confirmation of entire system operation and communication to each device.

   b. Confirmation of operation of individual relays, switches, occupancy sensors and daylight sensors.

   c. Confirmation of system programming, photocell settings, override settings, etc.

   d. Provide training to cover installation, maintenance, troubleshooting, programming, and repair and operation of the lighting control system.

4. Comply with energy code lighting control system “Acceptance Requirements”. Acceptance tests are used to verify that lighting controls were installed and calibrated correctly. These tests may require that a responsible party certify that controls are installed and calibrated properly.

E. Lighting Control Devices:

1. Each individual room shall be configured in either a manual-on/auto-off or auto-on/auto-off configuration, as required by Washington State Energy Code.

2. Stand-alone occupancy sensors shall be individually tested and the test results documented. Verify that the occupancy sensors detect motion in the controlled space immediately when the room is entered. Record the amount of time that the lights stay on after the room is vacated. Delay times shall be programmed as follows:

   a. Offices: 20 minutes.
   b. Training Room: 20 minutes.
   c. Restrooms: 20 minutes.
   d. Corridors: 15 minutes.
   e. Storage Rooms: 5 minutes.
   f. Utility Rooms: 5 minutes.

3. Wall switch occupancy sensors shall be configured for the optimal setting for the space in which they are installed. Factory default settings are typically not acceptable. Verify settings with the Engineer prior to installation.

4. Daylight harvesting photosensors shall be individually tested and the test results documented. Verify that the photosensor controls light fixtures in a continuous dimming configuration with rising and falling ambient light levels. Record the foot-candle level on the work surface and the corresponding footcandle measurement of the photosensor. Maintained foot-candles at the work surface shall be as follows:

   a. Courtroom: 50 foot-candles.

5. Comply with energy code lighting control system “Acceptance Requirements”. Acceptance tests are used to verify that lighting controls were installed and calibrated correctly. These tests may require that a responsible party certify that controls are installed and calibrated properly.

3.06. DEMONSTRATION & TRAINING

A. Lighting Control Systems and Devices:

1. Before Substantial Completion, arrange and provide an Owner instruction period to designated Owner personnel. Set-up, commissioning of the lighting control system, and Owner instruction includes:

   a. Instruction in and confirmation of entire system operation and communication to each device.

   b. Confirmation of operation of individual relays, switches, occupancy sensors, daylight sensors, etc.

   c. Confirmation of system programming, photocell settings, override settings, etc.

   d. Provide training to cover installation, maintenance, troubleshooting, programming, and repair and operation of the lighting control system.

B. The person(s) who conduct these instructions and demonstrations shall be a qualified representative(s) of the manufacturer with substantial training and operating experience on this equipment and project, and shall be versed in the operating theory as well as practical operation and maintenance work. Instructor(s) shall have the necessary educational and interpersonal skills, as well as proven ability to effectively perform the training. Their qualifications shall be submitted to the Architect before conducting the instruction period.

C. Include a preliminary discussion and presentation of information using the actual Operation & Maintenance Manuals required for this project. Contractor shall notify Architect at least 14 days in advance of readiness to conduct the instruction period. The actual time and date of instruction period shall be acceptable to the Owner and Engineer.

D. All training material shall be furnished and supplied by the Contractor.

End of Section 26 50 00

PART 1 – GENERAL

1.01. APPLICABLE PROVISIONS

A. The General, Supplementary and other Conditions of the Contract, modifications to the General Conditions, the Drawings, and the applicable provisions of the other Divisions are hereby made a part of this Division and all its sections.

1.02. SUMMARY

A. The requirements of this Section and the other Division 26, 27 & 28 Sections apply to all the Audio-Video system work.

B. Coordinate Audio-Video systems work with related work shown and specified elsewhere.

C. Provide raceways, boxes, wall rack, etc. for an owner-installed Audio-Video system in the Courtroom.

D. Provide all materials necessary for the proper execution and completion of the Work. Required items not specifically mentioned in the specifications or indicated on the drawings shall be provided as necessary to produce the intended results.

E. The Contractor shall perform all the work required (including the furnishing of all supervision, labor, services, tools, wiring, cables, connectors, materials and equipment and the performance of all operations and incidentals necessary) for a complete, safe and reliable Audio-Video systems installation, adjusted, tested and ready for operation. The work is generally described as follows:

1. Mounting hardware.

2. Equipment rack.

F. Work not included: the following items will be provided by the owner, or other contractors working for the owner:

1. Owner shall provide display screens, cameras, system faceplates, switcher, cabling, speakers, etc.

1.03. DRAWINGS AND SPECIFICATIONS

A. The Audio-Video system plan drawings are general in form and do not attempt to show complete details or list every item of the system, the building construction or the various equipment; however, the routing of raceways and circuits, and the locations of equipment, devices, fixtures, etc. represent the desired finished arrangement; except, as governed by structural or mechanical conditions or obstructions.

B. Specifications are, in some cases, written in an abbreviated form. Words such as shall, shall be, the Contractor shall, and similar mandatory phrases are supplied by inference.

C. Investigate the structural and finish conditions affecting the work. Refer to the architectural, structural and mechanical drawings, supplier shop drawings and submittals, etc. for additional details, equipment ratings, dimensions, location and swing of doors, location and size of partitions, cabinets, etc. and similar features. Verify all dimensions, equipment ratings, etc. with the actual before installation. Arrange the work accordingly.

D. The intent of the drawings and specifications is to include all items necessary for the proper execution and completion of the Work; however, any item or detail not specifically mentioned in the specifications or shown on the drawings, but which is necessary to produce the intended results shall be included.

E. The Contractor shall bring to the Owner's attention any discrepancies within the Contract Documents, between the Contract Documents and field conditions, and any design and layout changes required due to specific equipment selection, etc. prior to equipment and material purchasing and installation. Corrective work necessitated by discrepancies after purchasing and installation shall be at the Contractor's expense.

F. Where specific model numbers are listed in this specification, and that manufacturer changes or discontinues the specified model, a similar model from the same manufacturer shall be provided, with identical functions and capabilities, at no increase in contract sum.

G. Verify all equipment and device locations with the Owner prior to rough-in.

1.04. SUBMITTALS

A. Submit complete documentation for the Audio-Video system equipment, devices, materials, etc. showing the model number, type, rating, size, style, manufacturer's names, and manufacturer's catalog data sheets for all items. Include data on features, rating, and performance.

B. Provide product submittals for the following:

1. Speaker backboxes.
2. Equipment rack.

1.05. RECORD DOCUMENTS

A. Submit "as-built" record drawings and operation and maintenance manuals at completion of the project in accordance with the specific submittal requirements listed elsewhere in these Specifications.

B. Provide as-built documentation consistent with the contract documents as required, with as-built notations for all sheets.

1.06. "AS BUILT" DRAWINGS

A. Include any detailed equipment, raceway, wiring, etc. diagrams and layouts prepared by Contractor or his subcontractors, suppliers, etc.

PART 2 - PRODUCTS

2.01. GENERAL

A. Coordinate the features of materials and equipment with the Owner's audio/video system installer so they form an integrated system.

2.02. AUDIO/VIDEO WALL RACK

A. Wall mounted equipment rack shall be fully enclosed type, black color, 36 inches high x 24 inches wide x 18 inches deep, wall mounted, with adjustable rack rails, universal mounting hole pattern, metal door and fan kit. Cabinet shall be Chatsworth Products Cube-IT, or approved equal.

2.03. SOUND REINFORCEMENT SYSTEMS

A. Speaker backboxes shall be recessed ceiling type, round steel, with hard baked semi-gloss white enamel finish, suitable for use with 8" permanent magnet cone-type speakers.

PART 3 - EXECUTION

3.01. INSTALLATION

A. All equipment shall be securely mounted in equipment racks or on mounting hardware as required.

3.02. PULL STRINGS

A. Provide pull string in all Audio-video systems conduits (with or without cables).

End of Section 27 41 00

SECTION 28 31 00

FIRE DETECTION & ALARM SYSTEM

PART 1 – GENERAL

1.01. APPLICABLE PROVISIONS

A. The General, Supplementary and other Conditions of the Contract, modifications to the General Conditions, the Drawings, and the applicable provisions of the other Divisions are hereby made a part of this Division and all its sections.

1.02. SUMMARY

A. The requirements of this Section and the other Division 26, 27 & 28 Sections apply to all the fire detection and alarm system work.

B. The existing system shall be maintained and modified for demolition, temporary and new work, and integrated into the new system, tested and fully operational. The contractor shall provide scheduling and coordination of all phases/sequences of the project, maintaining, modifying, and temporary work to accommodate all phases/sequences of the project.

C. Provide equipment, devices and all necessary accessories for a modification and expansion to the existing fire detection and alarm system. Provide all materials necessary for the proper execution and completion of the Work. Required items not specifically mentioned in the specifications or indicated on the drawings shall be provided as necessary to produce the intended results without increase in contract sum.

D. In the event that any item is not available exactly as specified, the Contractor shall so notify the Owner in writing as early as possible to allow ample time for an alternate item to be selected without delay to the project.

1.03. PLAN REVIEW AND PERMITS

A. The Contractor shall submit complete sets of fire alarm system submittals as required to the City of Mount Vernon Fire Marshal for approval and pay the plan review fees.

B. The Contractor shall arrange for inspections and pay for all required licenses, permits, inspections, plan review fees and any other fees.

C. All necessary permits and approvals shall be obtained prior to the start of construction.

1.04. APPROVED EQUIPMENT SUPPLIER

A. Unless specifically noted otherwise, fire detection and alarm systems and all components shall be non-proprietary, addressable type, Potter, or approved equal.

B. The Engineered System Distributor shall be an authorized factory representative of the specified equipment to ensure proper specification adherence for system programming, operation, final connection, test, turnover, warranty compliance, and after-market service.

C. The existing fire detection and alarm system is Potter, model AFC-1000 with addressable detectors and CHS series notification devices.

1.05. QUALITY ASSURANCE

A. Fire alarm system shall be installed by, or under the direct supervision of, a qualified representative of the manufacturer. Contractor and Contractor's personnel shall be experienced, thoroughly trained and completely familiar with fire alarm systems and the required methods of installation.

B. The Contractor shall have a minimum of 3 years experience installing fire alarm panels/systems.

C. Programming/re-programming, testing, etc. shall be by a qualified representative of the manufacturer.

D. System shall comply with all requirements of NFPA #72 (National Fire Alarm Code), International Fire Code, International Building Code and ADA.

E. Fire alarm system shall be in accordance with all applicable codes and standards and all requirements of the State of Washington and Skagit County.

1.06. SUBMITTALS

A. Submit complete documentation for the fire alarm system equipment, devices, materials, etc. showing the model number, type, rating, size, style, manufacturer's names, and manufacturer's catalog data sheets for all items. Include data on features, rating, and performance.

B. Provide voltage drop calculations for all modified alarm (horn/strobe) circuits. Increase cable sizes if required.

C. Submittals shall include complete fire alarm system riser and wiring diagrams, plan drawings, etc. Include dimensioned plan and elevation views, diagrams, and other details of components as appropriate.

D. If requested by the Owner, provide samples of materials for evaluation.

1.07. RECORD DOCUMENTS

A. Submit "as-built" record drawings and operation and maintenance manuals at completion of the project in accordance with the specific submittal requirements listed elsewhere in these Specifications.

B. Provide as-built documentation consistent with the contract documents as required, with as-built notations for all sheets.

C. As-built drawings shall include the identification numbers for each device on the plans.

PART 2 - PRODUCTS

2.01. GENERAL

A. Contractor shall make certain that all materials selected by him, his subcontractors or by his suppliers, conform exactly to requirements of the drawings and specifications. Transmittal of such specifications and drawing information to subcontractors, person manufacturing and/or supplying materials to the project, and rigid adherence thereto, is the Contractor's responsibility.

B. All equipment, devices, fixtures, materials, etc. shall be UL (Underwriter's Laboratories, Inc.) listed, labeled and approved for the service intended.

C. All equipment, devices, fixtures, materials, etc. shall be new and installed only if in first class condition.

2.01 EXISTING SYSTEM

A. The existing system was upgraded in 2024 with a new control panel and new devices throughout the building. Some of the original wiring was re-used when the system was replaced.

B. New work shall be an expansion of the existing fire alarm system.

C. The existing fire alarm panel is manufactured by Potter, Model AFC-1000. Modify and expand the existing panel as required for the new work.

D. Before submitting bid, examine existing site (and building or equipment) conditions to determine effect on execution of the work and include costs in bid.

2.02 SYSTEM DESCRIPTION

A. The existing fire detection and alarm system is automatic, microprocessor based, addressable technology, fully supervised, Class B; complete with all necessary hardware, software and memory specifically tailored for this installation.

B. The system shall provide audio/visual signal appliances for the safe and orderly evacuation of the building. System shall include the required number of alarm zones plus space for the addition of minimum 2 future alarm zones.

C. The existing radio alarm transmitter (RAT) shall remain as-is.

2.02. DEVICES & DETECTORS

A. Detectors shall be 2 piece, consisting of a base and separate plug-in head.

B. Smoke detectors:

1. Existing smoke detectors in the area of work shall be removed at the beginning of work, stored during construction and re-installed in the new ceiling.

2.03. SIGNALING DEVICES

A. Fire alarm horns shall be 24 volt DC, multi-tap and set as required to provide the minimum acceptable or code required sound level.

B. Fire alarm strobes shall be 24 volt DC, minimum as indicated (except as required by ADA or the authority having jurisdiction to provide the minimum required intensity level throughout the space) with clear polycarbonate lens and FIRE lettering. Strobes throughout a space shall be synchronized.

C. Fire alarm horn/strobes shall be as above; except, combined into a single assembly.

D. Provide white finish on mounting plates, and surface mounted boxes where required.

2.04. WIRE AND CABLE

A. All wire and cable shall be color coded as required or as indicated. Color coding shall be consistent throughout the building.

B. Detection circuits cable:

1. Detection circuit cable shall be two conductor copper, shielded if required by the system, type FPLR, listed as being resistant to the spread of fire, with 300 volt insulation and an overall jacket.

2. The minimum conductor size shall be #18 AWG.

C. Alarm circuits cable:

1. Alarm circuit cable shall be two conductor copper, type FPLR, listed as being resistant to the spread of fire, with 300 volt insulation and an overall jacket.

2. The minimum conductor size shall be #14 AWG.

D. Cable jacket color shall be red.

E. Increase cable sizes if/as required to compensate for voltage drop.

F. All concealed power limited systems cable may be run “open” in accessible ceilings; except, where indicated otherwise and where penetrating through ceilings, floors, walls, draft-stops, etc.

2.05. BOXES

A. Device, junction, etc. boxes for fire alarm systems other than the surface raceway type shall be substantially red in color, both inside and outside.

2.06. CONNECTIONS AND TERMINATIONS

A. Wiring shall be installed from device to device without splices or taps in fire alarm circuit cable. “T” taps will not be allowed without specific approval from the Owner.

B. Pull wiring through junction, pull, etc. boxes and conduit fittings to devices where possible. Multiple splices, connections, etc. from a single location shall be done in terminal boxes with suitable terminal blocks. Multiple splices, connections, etc. at a single location will not be allowed with “wire nuts”.

C. Cable ties shall be utilized in panels, etc. to group and support conductors. All cable shall be fanned-out to terminals and identified by labels.

D. Red electrical tape shall be utilized to identify the incoming wire pair for each device loop at each device. Outgoing wire pairs shall not be marked.

PART 3 - EXECUTION

3.01. INSTALLATION

A. Installation of the fire alarm system and its components shall be done by, or under the direct supervision of, a factory trained authorized representative of the manufacturer.

B. Install, connect and test smoke detector bases and initiating circuits prior to installation of smoke detector heads. Unless required by the authority having jurisdiction for protection during construction, do not install smoke detector heads until after construction clean-up by all trades has been completed. Detectors that have been installed prior to final clean-up shall be cleaned and/or replaced as required after final clean-up.

3.02. LOCATIONS

A. Locations and mounting heights of equipment, devices, etc. shall be consistent, and in accordance with the requirements of NFPA, ADA and the authority having jurisdiction.

B. Locate fire alarm devices (horns, strobes, etc.) 90 inches to centerline above finished floor or 6 inches below ceiling, whichever is lower, 6 inches from door casings, corners, etc.; except, on center in spaces narrower than 12 inches.

C. Unless noted or indicated otherwise, smoke and heat detectors shall be ceiling mounted. In sloped ceiling areas, detectors shall be located within 3 feet of the peak, measured horizontally.

D. Locate smoke detectors a minimum of 36” from air supply grills.

E. Prior to rough-in, the Contractor shall mark or otherwise show the location of all equipment and devices, and the proposed routing of raceways. Obtain specific approval for the location of each from the Owner before rough-in.

3.03. WIRES AND CABLES

A. Inspect cable prior to installation to verify that it is identified properly on the reel or box identification label and that it is of proper gauge, containing correct number of pairs, etc. Note any buckling of the jacket which would indicate possible problems. Damaged cable or any other components failing to meet specification shall not be used in the installation.

B. All concealed power limited systems cable may be run “open” in accessible ceilings; except, where indicated otherwise and where penetrating through ceilings, floors, walls, draft-stops, etc.

C. "Open" cables shall be bundled and supported from permanent structural members of the building, either directly or indirectly, with suitable hooks. Support spacing shall not exceed 5 feet. Protect “open” cables during installation in ceiling spaces. Cables shall not interfere with the removal of pipes or equipment for maintenance or repair. All "open" cable shall be kept a minimum of 6 inches from pipes, ducts, and other items producing heat. Support “open” cables a minimum of 6 inches above T-bar ceilings. Tape and cable ties are not approved methods of fastening cables.

D. Floor and ceiling penetrations by “open” cables will not be allowed. Provide conduit sleeves, minimum 1" EMT, as required plus a spare (with fire and dust stopping and sealing) where “open” cable passes through floors, walls, partitions, etc.

E. Cable shall be unrolled from reels, or removed from cartons, and installed in a manner which will prevent kinking, crushing or excessive tension on conductors and insulation. Slack wire shall be provided at all pull points.

3.04. TESTING

A. Testing of the fire detection and alarm system shall be done by a qualified representative of the manufacturer; who, after completion, shall submit a letter that he has tested the system and found it acceptable in all respects.

B. Testing of the systems and all components shall be in accordance with the requirements of NFPA 72 and/or the authority having jurisdiction.

C. Contractor shall notify Owner at least 48 hours in advance of readiness to conduct any tests. The actual time and date of tests shall be acceptable to the Owner and the Contractor.

D. For all tests not meeting criteria as determined by the Owner, Contractor shall determine problem(s) and make corrections as required (including replacement of the cable and/or other components if necessary) at Contractor's expense without increase in Contract Sum. After correction(s), Contractor shall repeat tests.

3.05. TRAINING, INSTRUCTION AND ASSISTANCE

A. After the installation is complete and operating, and prior to acceptance of the work, conduct instruction period(s) at the site, to point out locations of service and maintenance, and instruct the Owner's representatives in the operation of all systems and equipment.

B. The person(s) who conduct these instructions and demonstrations shall be a qualified representative of the manufacturer with substantial training and operating experience on this equipment and project. Their qualifications shall be submitted to the Owner before conducting the instruction period.

C. Each period shall include preliminary discussion and presentation of information using the actual maintenance manuals required for this project. Contractor shall notify Owner at least 48 hours in advance of readiness to conduct the instruction period. The actual time and date of instruction period shall be acceptable to the Owner and the Contractor.

End of Section 28 31 00