



Project Manual

Medina Healthcare System New Administration Building Renovation Hondo

3103 Avenue G
Hondo, Texas 78861

August 2, 2024
GRG ARCHITECTURE Project No.: 240224



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NEW ADMINISTRATION BUILDING RENOVATION - HONDO
MEDINA HEALTHCARE SYSTEM

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NEW ADMINISTRATION BUILDING RENOVATION - HONDO
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SECTION 001001 – COMCHECK – ENVELOPE COMPLIANCE

PART 1 - GENERAL

1.1 FORM REVIEW

- A. The documents demonstrating compliance with ComCheck – Envelope Compliance Certificate attached herein.

PART 2 - PRODUCTS (Not Applicable).

PART 3 – EXECUTION (Not Applicable)

END OF SECTION



COMcheck Software Version COMcheckWeb Envelope Compliance Certificate

Project Information

Energy Code: 2015 IECC
 Project Title: Medina Healthcare - Admin Renovation
 Location: Hondo, Texas
 Climate Zone: 2b
 Project Type: Alteration
 Vertical Glazing / Wall Area: 11%

Construction Site: 3103 Ave G
 Hondo, Texas 78861
 Owner/Agent: Medina Healthcare System
 3200 Ave E
 Hondo, Texas 78861
 Designer/Contractor: GRG Architecture
 118 Broadway, Suite 620
 San Antonio, Texas 78205
 (210) 447-7000

Building Area

Floor Area

1-Office : Nonresidential	4300
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Envelope Assemblies

Post-Alteration Assembly	R-Value		Proposed		Max. Allowed	
	Cavity	Cont.	U-Factor	SHGC	U-Factor	SHGC
Roof: Insulation Entirely Above Deck, [Bldg. Use 1 - Office]	---	25.0	0.039	---	0.039	---
North: Steel-Framed, 16in. o.c., [Bldg. Use 1 - Office]	13.0	5.0	0.077	---	0.077	---
Door: Insulated Metal, Swinging, [Bldg. Use 1 - Office]	---	---	0.610	---	0.610	---
Window: Metal Frame: Fixed, Clear, Fixed, Fixed, [Bldg. Use 1 - Office]	---	---	0.310	0.210	0.500	0.252
East: Steel-Framed, 16in. o.c., [Bldg. Use 1 - Office]	13.0	5.0	0.077	---	0.077	---
Window: Metal Frame: Fixed, Clear, Fixed, Fixed, [Bldg. Use 1 - Office]	---	---	0.310	0.210	0.500	0.252
South: Steel-Framed, 16in. o.c., [Bldg. Use 1 - Office]	13.0	5.0	0.077	---	0.077	---
Door: Uninsulated Double-Layer Metal, Swinging, [Bldg. Use 1 - Office]	---	---	0.610	---	0.610	---
Window: Metal Frame: Fixed, Clear, Fixed, Fixed, [Bldg. Use 1 - Office]	---	---	0.310	0.210	0.500	0.252
West: Steel-Framed, 16in. o.c., [Bldg. Use 1 - Office]	13.0	5.0	0.077	---	0.077	---
Door: Uninsulated Double-Layer Metal, Swinging, [Bldg. Use 1 - Office]	---	---	0.610	---	0.610	---
Window: Metal Frame: Fixed, Clear, Fixed, Fixed, [Bldg. Use 1 - Office]	---	---	0.310	0.210	0.500	0.252

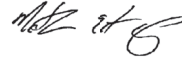
(a) Fenestration product performance must be certified in accordance with NFRC and requires supporting documentation.

(b) High albedo roof requirement options: 1) 3-year aged solar reflectance ≥ 0.55 thermal emittance ≥ 0.75 , 2) 3-year aged solar reflectance index ≥ 64.0 , 3) Initial year aged solar reflectance ≥ 0.70 thermal emittance ≥ 0.75 , 4) Initial year aged solar reflectance index ≥ 82.0 .

Envelope Compliance Statement

Compliance Statement: The proposed envelope alteration project represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed envelope systems have been designed to meet the 2015 IECC requirements in COMcheck Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

NATHAN ECHTENKAMP, P.E.



7/18/2024

Name - Title

Signature

Date



Inspection Checklist

Energy Code: 2015 IECC

Requirements: 0.0% were addressed directly in the COMcheck software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
C103.2 [PR1] ¹	Plans and/or specifications provide all information with which compliance can be determined for the building envelope and document where exceptions to the standard are claimed.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C402.4.1 [PR10] ¹	The vertical fenestration area <= 30 percent of the gross above-grade wall area.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C402.4.1 [PR11] ¹	The skylight area <= 3 percent of the gross roof area.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C402.4.2 [PR14] ¹	In enclosed spaces > 2,500 ft ² directly under a roof with ceiling heights >15 ft. and used as an office, lobby, atrium, concourse, corridor, storage, gymnasium/exercise center, convention center, automotive service, manufacturing, non-refrigerated warehouse, retail store, distribution/sorting area, transportation, or workshop, the following requirements apply: (a) the daylight zone under skylights is >= half the floor area; (b) the skylight area to daylight zone is >= 3 percent with a skylight VT >= 0.40; or a minimum skylight effective aperture >= 1 percent.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)
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Section # & Req.ID	Footing / Foundation Inspection	Complies?	Comments/Assumptions
C303.2.1 [FO6] ¹	Exterior insulation protected against damage, sunlight, moisture, wind, landscaping and equipment maintenance activities.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)
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Section # & Req.ID	Framing / Rough-In Inspection	Complies?	Comments/Assumptions
C303.1.3 [FR12] ²	Fenestration products rated in accordance with NFRC.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C303.1.3 [FR13] ¹	Fenestration products are certified as to performance labels or certificates provided.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C402.4.3 [FR10] ¹	Vertical fenestration SHGC value.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	<i>See the Envelope Assemblies table for values.</i>
C402.4.3, C402.4.3.4 [FR8] ¹	Vertical fenestration U-Factor.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	<i>See the Envelope Assemblies table for values.</i>
C402.4.4 [FR14] ²	U-factor of opaque doors associated with the building thermal envelope meets requirements.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	<i>See the Envelope Assemblies table for values.</i>
C402.5.2, C402.5.4 [FR18] ³	Factory-built fenestration and doors are labeled as meeting air leakage requirements.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)
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Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C402.5.5, C403.2.4.3 [ME3] ³	Stair and elevator shaft vents have motorized dampers that automatically close.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1)	2 Medium Impact (Tier 2)	3 Low Impact (Tier 3)
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Section # & Req.ID	Insulation Inspection	Complies?	Comments/Assumptions
C303.1 [IN3] ¹	Roof insulation installed per manufacturer's instructions. Blown or poured loose-fill insulation is installed only where the roof slope is ≤ 3 in 12.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C303.1 [IN10] ²	Building envelope insulation is labeled with R-value or insulation certificate providing R-value and other relevant data.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C303.2 [IN7] ¹	Above-grade wall insulation installed per manufacturer's instructions.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C303.2.1 [IN14] ²	Exterior insulation is protected from damage with a protective material. Verification for exposed foundation insulation may need to occur during Foundation Inspection.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C402.2.1 [IN17] ³	Insulation intended to meet the roof insulation requirements cannot be installed on top of a suspended ceiling. Mark this requirement compliant if insulation is installed accordingly.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C104 [IN6] ¹	Installed above-grade wall insulation type and R-value consistent with insulation specifications reported in plans and COMcheck reports.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	<i>See the Envelope Assemblies table for values.</i>
C402.2.6 [IN18] ³	Radiant panels and associated components, designed for heat transfer from the panel surfaces to the occupants or indoor space are insulated with a minimum of R-3.5.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C402.3 [IN5] ³	High-albedo roofs satisfy one of the following: 3-year-aged solar reflectance ≥ 0.55 and thermal emittance ≥ 0.75 or 3-year-aged solar reflectance index ≥ 64.0 .	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C104 [IN2] ¹	Installed roof insulation type and R-value consistent with insulation specifications reported in plans and COMcheck reports. For some ceiling systems, verification may need to occur during Framing Inspection.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	<i>See the Envelope Assemblies table for values.</i>
C402.5.1.1 [IN1] ¹	All sources of air leakage in the building thermal envelope are sealed, caulked, gasketed, weather stripped or wrapped with moisture vapor-permeable wrapping material to minimize air leakage.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)
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Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C402.5.6 [FI37] ¹	Weatherseals installed on all loading dock cargo doors.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1)	2 Medium Impact (Tier 2)	3 Low Impact (Tier 3)
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NEW ADMINISTRATION BUILDING RENOVATION - HONDO
MEDINA HEALTHCARE SYSTEM

SECTION 00 10 03 – COMCHECK – LIGHTING COMPLIANCE

PART 1 - GENERAL

1.1 FORM REVIEW

- A. The documents demonstrating compliance with ComCheck – Lighting Compliance Certificate attached herein.

PART 2 - PRODUCTS (Not Applicable).

PART 3 – EXECUTION (Not Applicable)

END OF SECTION



Interior Lighting Compliance Certificate

Project Information

Energy Code: 2015 IECC
 Project Title: Medina Regional Hospital New Administration Building Renovation
 Project Type: New Construction

Construction Site:
 3103 Ave. G.
 Hondo, TX 78861

Owner/Agent:

Designer/Contractor:
 Alberto Martinez
 AMZSA LLC
 amartinez@amz-sa.com

Additional Efficiency Package(s)

Credits: 1.0 Required 1.0 Proposed
 High Performance HVAC, 1.0 credit

Allowed Interior Lighting Power

A Area Category	B Floor Area (ft ²)	C Allowed Watts / ft ²	D Allowed Watts (B X C)
1-Office	4300	0.82	3526
Total Allowed Watts =			3526

Proposed Interior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixtures	D Fixture Watt.	E (C X D)
1-Office				
LED 1: A: 2X4 Recessed: LED Panel 33W:	1	29	33	957
LED 2: B: Recessed Downlight: LED Other Fixture Unit 25W:	1	31	25	775
LED 1 copy 1: C: 2X2 Recessed: LED Panel 33W:	1	24	33	792
Total Proposed Watts =				2524

Interior Lighting PASSES: Design 28% better than code

Interior Lighting Compliance Statement

Compliance Statement: The proposed interior lighting design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed interior lighting systems have been designed to meet the 2015 IECC requirements in COMcheck Version 4.1.5.5 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Alberto Martinez, P.E.

Name - Title


 Signature

7-25-24

Date



Inspection Checklist

Energy Code: 2015 IECC

Requirements: 0.0% were addressed directly in the COMcheck software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
C103.2 [PR4] ¹	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the interior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include interior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)
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Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.2.1 [EL15] ¹	Lighting controls installed to uniformly reduce the lighting load by at least 50%.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.2.1 [EL18] ¹	Occupancy sensors installed in required spaces.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.2.1, C405.2.2.3 [EL23] ²	Independent lighting controls installed per approved lighting plans and all manual controls readily accessible and visible to occupants.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.2.2.1 [EL22] ²	Automatic controls to shut off all building lighting installed in all buildings.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.2.3 [EL16] ²	Daylight zones provided with individual controls that control the lights independent of general area lighting.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.2.3, C405.2.3.1, C405.2.3.2 [EL20] ¹	Primary sidelighted areas are equipped with required lighting controls.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.2.3, C405.2.3.1, C405.2.3.3 [EL21] ¹	Enclosed spaces with daylight area under skylights and rooftop monitors are equipped with required lighting controls.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.2.4 [EL4] ¹	Separate lighting control devices for specific uses installed per approved lighting plans.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.2.4 [EL8] ¹	Additional interior lighting power allowed for special functions per the approved lighting plans and is automatically controlled and separated from general lighting.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.3 [EL6] ¹	Exit signs do not exceed 5 watts per face.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1)	2 Medium Impact (Tier 2)	3 Low Impact (Tier 3)
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Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C303.3, C408.2.5. 2 [FI17] ³	Furnished O&M instructions for systems and equipment to the building owner or designated representative.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.4.1 [FI18] ¹	Interior installed lamp and fixture lighting power is consistent with what is shown on the approved lighting plans, demonstrating proposed watts are less than or equal to allowed watts.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	<i>See the Interior Lighting fixture schedule for values.</i>
C408.2.5. 1 [FI16] ³	Furnished as-built drawings for electric power systems within 90 days of system acceptance.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C408.3 [FI33] ¹	Lighting systems have been tested to ensure proper calibration, adjustment, programming, and operation.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)
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NEW ADMINISTRATION BUILDING RENOVATION - HONDO
MEDINA HEALTHCARE SYSTEM

SECTION 00 10 05 – COMCHECK – MECHANICAL COMPLIANCE

PART 1 - GENERAL

1.1 FORM REVIEW

- A. The documents demonstrating compliance with ComCheck – Mechanical Compliance Certificate attached herein.

PART 2 - PRODUCTS (Not Applicable).

PART 3 – EXECUTION (Not Applicable)

END OF SECTION



Mechanical Compliance Certificate

Project Information

Energy Code: 2018 IECC
 Project Title: Medina Regional Hospital New Administration Building Renovation
 Location: Hondo, Texas
 Climate Zone: 2b
 Project Type: New Construction

Construction Site: 3103 Ave. G
 Hondo, TX 78861
 Owner/Agent:
 Designer/Contractor: Mark Stehney
 mark_stehney@yahoo.com

Additional Efficiency Package(s)

Credits: 1.0 Required 0.0 Proposed


Mechanical Systems List

Quantity System Type & Description

- 1 AHU-1 (Single Zone):
 Heating: 1 each - Central Furnace, Electric, Capacity = 37 kBtu/h
 No minimum efficiency requirement applies
 Cooling: 1 each - Split System, Capacity = 39 kBtu/h, Air-Cooled Condenser, No Economizer, Economizer exception: None
 Proposed Efficiency = 15.00 SEER, Required Efficiency: 13.00 SEER
 Fan System: FAN SYSTEM 1 -- Compliance (Motor nameplate HP method) : Passes
 Fans:
 FAN 1 Supply, Constant Volume, 1295 CFM, 0.5 motor nameplate hp, 0.0 fan efficiency grade
- 1 AHU-2 (Single Zone):
 Heating: 1 each - Central Furnace, Electric, Capacity = 19 kBtu/h
 No minimum efficiency requirement applies
 Cooling: 1 each - Split System, Capacity = 29 kBtu/h, Air-Cooled Condenser, No Economizer, Economizer exception: None
 Proposed Efficiency = 14.60 SEER, Required Efficiency: 13.00 SEER
 Fan System: FAN SYSTEM 2 -- Compliance (Motor nameplate HP method) : Passes
 Fans:
 FAN 2 Supply, Constant Volume, 875 CFM, 0.3 motor nameplate hp, 0.0 fan efficiency grade
- 1 AHU-3 (Single Zone):
 Heating: 1 each - Central Furnace, Electric, Capacity = 37 kBtu/h
 No minimum efficiency requirement applies
 Cooling: 1 each - Split System, Capacity = 33 kBtu/h, Air-Cooled Condenser, No Economizer, Economizer exception: None
 Proposed Efficiency = 15.00 SEER, Required Efficiency: 13.00 SEER
 Fan System: FAN SYSTEM 3 -- Compliance (Motor nameplate HP method) : Passes
 Fans:
 FAN 3 Supply, Constant Volume, 1075 CFM, 0.5 motor nameplate hp, 0.0 fan efficiency grade
- 1 EWH-1:
 Electric Storage Water Heater, Capacity: 30 gallons w/ Circulation Pump
 Proposed Efficiency: 1.20 SL, %/h (if > 12 kW), Required Efficiency: 1.20 SL, %/h (if > 12 kW)

Mechanical Compliance Statement

Compliance Statement: The proposed mechanical design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 2018 IECC requirements in COMcheck Version 4.1.5.5 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Mark Stehney, PE		07/25/2024
Name - Title	Signature	Date



Inspection Checklist

Energy Code: 2018 IECC

Requirements: 0.0% were addressed directly in the COMcheck software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
C103.2 [PR2] ¹	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the mechanical systems and equipment and document where exceptions to the standard are claimed. Load calculations per acceptable engineering standards and handbooks.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C103.2 [PR3] ¹	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the service water heating systems and equipment and document where exceptions to the standard are claimed. Hot water system sized per manufacturer's sizing guide.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)
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Section # & Req.ID	Footing / Foundation Inspection	Complies?	Comments/Assumptions
C403.12.2 , C403.12.3 [FO9] ³	Snow/ice melting system and freeze protection systems have sensors and controls configured to limit service for pavement temperature and outdoor temperature. future connection to controls.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1)	2 Medium Impact (Tier 2)	3 Low Impact (Tier 3)
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Section # & Req.ID	Plumbing Rough-In Inspection	Complies?	Comments/Assumptions
C404.5, C404.5.1, C404.5.2 [PL6] ³	Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C404.5, C404.5.1, C404.5.2 [PL6] ³	Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C404.5, C404.5.1, C404.5.2 [PL6] ³	Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C404.5, C404.5.1, C404.5.2 [PL6] ³	Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C404.6.1, C404.6.2 [PL3] ¹	Automatic time switches installed to automatically switch off the recirculating hot-water system or heat trace.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C404.6.3 [PL7] ³	Pumps that circulate water between a heater and storage tank have controls that limit operation from startup to <= 5 minutes after end of heating cycle.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C404.6.3 [PL7] ³	Pumps that circulate water between a heater and storage tank have controls that limit operation from startup to <= 5 minutes after end of heating cycle.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C404.6.3 [PL7] ³	Pumps that circulate water between a heater and storage tank have controls that limit operation from startup to <= 5 minutes after end of heating cycle.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C404.6.3 [PL7] ³	Pumps that circulate water between a heater and storage tank have controls that limit operation from startup to <= 5 minutes after end of heating cycle.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C404.7 [PL8] ³	Demand recirculation water systems have controls that start the pump upon receiving a signal from the action of a user of a fixture or appliance and limits the temperature of the water entering the cold-water piping to 104°F.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C404.7 [PL8] ³	Demand recirculation water systems have controls that start the pump upon receiving a signal from the action of a user of a fixture or appliance and limits the temperature of the water entering the cold-water piping to 104°F.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)
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Section # & Req.ID	Plumbing Rough-In Inspection	Complies?	Comments/Assumptions
C404.7 [PL8] ³	Demand recirculation water systems have controls that start the pump upon receiving a signal from the action of a user of a fixture or appliance and limits the temperature of the water entering the cold-water piping to 104°F.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C404.7 [PL8] ³	Demand recirculation water systems have controls that start the pump upon receiving a signal from the action of a user of a fixture or appliance and limits the temperature of the water entering the cold-water piping to 104°F.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1)	2 Medium Impact (Tier 2)	3 Low Impact (Tier 3)
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Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C402.2.6 [ME41] ³	Thermally ineffective panel surfaces of sensible heating panels have insulation \geq R-3.5.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.11.3 [ME61] ²	HVAC piping insulation insulated in accordance with Table C403.11.3. Insulation exposed to weather is protected from damage and is provided with shielding from solar radiation.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.11.3 [ME61] ²	HVAC piping insulation insulated in accordance with Table C403.11.3. Insulation exposed to weather is protected from damage and is provided with shielding from solar radiation.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.11.3 [ME61] ²	HVAC piping insulation insulated in accordance with Table C403.11.3. Insulation exposed to weather is protected from damage and is provided with shielding from solar radiation.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.8.4 [ME142] ²	Motors for fans that are not less than 1/12 hp and less than 1 hp are electronically commutated motors or have a minimum motor efficiency of 70 percent. These motors have the means to adjust motor speed.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.8.4 [ME142] ²	Motors for fans that are not less than 1/12 hp and less than 1 hp are electronically commutated motors or have a minimum motor efficiency of 70 percent. These motors have the means to adjust motor speed.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.8.4 [ME142] ²	Motors for fans that are not less than 1/12 hp and less than 1 hp are electronically commutated motors or have a minimum motor efficiency of 70 percent. These motors have the means to adjust motor speed.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.8.5 [ME143] ²	Each DX cooling system $>$ 65 kBtu and chiller water/evaporative cooling system with fans $>$ 1/4 hp are designed to vary the indoor fan airflow as a function of load and comply with detailed requirements of this section.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.8.5 [ME143] ²	Each DX cooling system $>$ 65 kBtu and chiller water/evaporative cooling system with fans $>$ 1/4 hp are designed to vary the indoor fan airflow as a function of load and comply with detailed requirements of this section.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.8.5 [ME143] ²	Each DX cooling system $>$ 65 kBtu and chiller water/evaporative cooling system with fans $>$ 1/4 hp are designed to vary the indoor fan airflow as a function of load and comply with detailed requirements of this section.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.12.1 [ME71] ²	Systems that heat outside the building envelope are radiant heat systems controlled by an occupancy sensing device or timer switch.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C403.2.3 [ME55] ²	HVAC equipment efficiency verified.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Mechanical Systems list for values.
C403.2.2 [ME59] ¹	Natural or mechanical ventilation is provided in accordance with International Mechanical Code Chapter 4. Mechanical ventilation has capability to reduce outdoor air supply to minimum per IMC Chapter 4.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.7.1 [ME59] ¹	Demand control ventilation provided for spaces >500 ft ² and >25 people/1000 ft ² occupant density and served by systems with air side economizer, auto modulating outside air damper control, or design airflow >3,000 cfm.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.7.2 [ME115] ³	Enclosed parking garage ventilation has automatic contaminant detection and capacity to stage or modulate fans to 50% or less of design capacity.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.7.6 [ME141] ³	HVAC systems serving guestrooms in Group R-1 buildings with > 50 guestrooms: Each guestroom is provided with controls that automatically manage temperature setpoint and ventilation (see sections C403.7.6.1 and C403.7.6.2).	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.7.4 [ME57] ¹	Exhaust air energy recovery on systems meeting Table C403.7.4(1) and C403.7.4(2).	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.7.5 [ME116] ³	Kitchen exhaust systems comply with replacement air and conditioned supply air limitations, and satisfy hood rating requirements and maximum exhaust rate criteria.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.11.1 , C403.11.2 [ME60] ²	HVAC ducts and plenums insulated in accordance with C403.11.1 and constructed in accordance with C403.11.2, verification may need to occur during Foundation Inspection.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.4.1. 4 [ME63] ²	Heating for vestibules and air curtains with integral heating include automatic controls that shut off the heating system when outdoor air temperatures > 45F. Vestibule heating and cooling systems controlled by a thermostat in the vestibule with heating setpoint <= 60F and cooling setpoint >= 80F.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.3.3 [ME35] ¹	Hot gas bypass limited to: <=240 kBtu/h - 50% >240 kBtu/h - 25%	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.3.3 [ME35] ¹	Hot gas bypass limited to: <=240 kBtu/h - 50% >240 kBtu/h - 25%	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C403.3.3 [ME35] ¹	Hot gas bypass limited to: <=240 kBtu/h - 50% >240 kBtu/h - 25%	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C408.2.2.1 [ME53] ³	Air outlets and zone terminal devices have means for air balancing.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.5, C403.5.1, C403.5.2 [ME123] ³	Refrigerated display cases, walk-in coolers or walk-in freezers served by remote compressors and remote condensers not located in a condensing unit, have fan-powered condensers that comply with Sections C403.5.1 and refrigeration compressor systems that comply with C403.5.2..	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1)	2 Medium Impact (Tier 2)	3 Low Impact (Tier 3)
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Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C303.3, C408.2.5.3 [FI8] ³	Furnished O&M manuals for HVAC systems within 90 days of system acceptance.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.2.2 [FI27] ³	HVAC systems and equipment capacity does not exceed calculated loads.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.2.4.1 [FI47] ³	Heating and cooling to each zone is controlled by a thermostat control. Minimum one humidity control device per installed humidification/dehumidification system.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.2.4.1 [FI47] ³	Heating and cooling to each zone is controlled by a thermostat control. Minimum one humidity control device per installed humidification/dehumidification system.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.2.4.1 [FI47] ³	Heating and cooling to each zone is controlled by a thermostat control. Minimum one humidity control device per installed humidification/dehumidification system.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.4.1.2 [FI38] ³	Thermostatic controls have a 5 °F deadband.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.2.4.1.3 [FI20] ³	Temperature controls have setpoint overlap restrictions.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.2.4.2 [FI39] ³	Each zone equipped with setback controls using automatic time clock or programmable control system.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.2.4.2.1, C403.2.4.2.2 [FI40] ³	Automatic Controls: Setback to 55°F (heat) and 85°F (cool); 7-day clock, 2-hour occupant override, 10-hour backup	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.2.4.2.3 [FI41] ³	Systems include optimum start controls.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.2.4.2.3 [FI41] ³	Systems include optimum start controls.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C403.2.4.2.3 [FI41] ³	Systems include optimum start controls.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)
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Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C404.3 [FI11] ³	Heat traps installed on supply and discharge piping of non-circulating systems.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C404.4 [FI25] ²	All piping insulated in accordance with section details and Table C403.11.3.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C404.6.1 [FI12] ³	Controls are installed that limit the operation of a recirculation pump installed to maintain temperature of a storage tank. System return pipe is a dedicated return pipe or a cold water supply pipe.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C408.2.1 [FI28] ¹	Commissioning plan developed by registered design professional or approved agency.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C408.2.3.1 [FI31] ¹	HVAC equipment has been tested to ensure proper operation.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C408.2.3.2 [FI10] ¹	HVAC control systems have been tested to ensure proper operation, calibration and adjustment of controls.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C408.2.4 [FI29] ¹	Preliminary commissioning report completed and certified by registered design professional or approved agency.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C408.2.5.1 [FI7] ³	Furnished HVAC as-built drawings submitted within 90 days of system acceptance.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C408.2.5.3 [FI43] ¹	An air and/or hydronic system balancing report is provided for HVAC systems.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C408.2.5.4 [FI30] ¹	Final commissioning report due to building owner within 90 days of receipt of certificate of occupancy.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1)	2 Medium Impact (Tier 2)	3 Low Impact (Tier 3)
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NEW ADMINISTRATION BUILDING RENOVATION - HONDO
MEDINA HEALTHCARE SYSTEM

SECTION 00 11 13 INVITATION TO BID

FROM:

1.01 THE OWNER (HEREINAFTER REFERRED TO AS "OWNER"):

- A. Medina Regional Hospital
3100 Ave. E
Hondo, Texas 78861

1.02 AND THE ARCHITECT (HEREINAFTER REFERRED TO AS "ARCHITECT"):

- A. GRG Architecture
118 Broadway, Suite 620
San Antonio, Texas 78205

1.03 DATE: August 2, 2024

1.04 TO: POTENTIAL BIDDERS

- A. Qualified bidders are invited to submit an offer to the Owner for the New Administration Building Renovation, Hondo, Texas:
- Renovation of an approximately 4,300 s.f. existing slab-on-grade building with cold-frame metal framing and walls.
 - Selective demolition and removal of all exterior masonry brick veneer. Other limited demolition of existing exterior walls and portions of existing interior walls. Removal of all existing windows and doors.
 - Limited removal of existing concrete at interior for new utilities and connections to existing drain lines to accommodate new plumbing layouts.
 - Replacement of entire electrical and mechanical systems.
 - Re-roofing of the existing TPO roofing system.
 - New exterior wall veneer using metal panel and natural stone veneer.
 - Removal and replacement of portions of the existing parking curbs and sidewalks.
 - Limited removal of parking asphalt with new replacement asphalt tie-in to existing.
 - New exterior painted steel structure front entry and walkway canopies with exposed/sealed wood deck and TPO roofing with lighting.
 - Interior finish-out for new office layout with toilet rooms
- B. Project site is adjacent to the existing Medina Regional Hospital in Hondo, Texas, as further described in the contract documents.

1.05 BID DOCUMENTS

- A. Bid documents will be available for download from the Medina Regional Hospital website at www.medinahospital.net.
- B. Refer to other bidding requirements described in Document 00 21 13 - Instructions to Bidders.

1.06 TIME OF COMPLETION

- A. Time of completion of this Contract is of importance to the Owner and may be considered in the award of the Contract. See Section 00 21 13, "Instructions to Bidders", the "General Conditions of the Contract", Section 00 72 00, and the "Supplementary Conditions", Section 00 73 00 for additional information.
- B. Liquidated damages: See Section 00 21 13 "Instructions to Bidders."

1.07 PRE-BID CONFERENCE

- A. A non-mandatory Pre-bid Conference is to be held at **10 am Central Time on Monday, August 19, 2024** at the jobsite; **3103 Ave. G, Hondo, Texas 78861**.

1.08 RECEIPT OF BIDS

- A. Location of Bid Receiver: Address Bids for the attention of **Billie Bell, CEO at Medina Regional Hospital located at 3100 Ave. E, Hondo, Texas 78861**.

NEW ADMINISTRATION BUILDING RENOVATION - HONDO
MEDINA HEALTHCARE SYSTEM

- B. Sealed Bid Acceptance:
 - 1. Formal Bid Acceptance: **Thursday, August 29th through September 2nd per deadline.**
 - 2. Formal Bid Delivery Location: Front desk of the Medina Regional Hospital, 3100 Ave. E., Hondo, Texas 78861.
 - 3. Formal Bid Copies: Original plus one.
- C. Sealed Bid Deadline:
 - 1. Formal Bid Deadline: **Bids are due no later than 5:00 p.m. Central Time on Monday, September 2, 2024.**
- D. Sealed Bid Opening:
 - 1. Formal Bid Opening: 10:00 a.m. Central Time on Tuesday, September 3, 2024.
 - 2. Formal Bid Opening Location: Publicly opened at the Board Room of the Medina Regional Hospital, 3100 Avenue E, Hondo, TX 78861.
- E. Submit your offer on the Bid Form provided. Bidders may supplement this form as appropriate.
- F. Your offer will be required to be submitted under a condition of irrevocability for a period of 30 days after submission.
- G. The Owner reserves the right to accept or reject any or all offers and to accept the offer that is in best interest of the Owner.
- H. Any addenda issued by the Architect will be provided at no cost to the Proposers, Material Suppliers, Subcontractors and plan rooms that may have secured documents.

END OF SECTION

SECTION 00 21 13 INSTRUCTIONS TO BIDDERS

PART 1 REFERENCE

1.01 RELATED REQUIREMENTS

- A. Section 00 11 13 – Invitation to Bid
- B. Section 00 41 00 – Bid Form
- C. Section 00 43 36 - Proposed Subcontractors Form
- D. Section 00 73 00 - Supplementary Conditions
- E. Section 01 60 00 - Product Requirements
- F. AIA Document A305 – Contractor’s Qualification Statement

PART 2 SUMMARY

2.01 BID SUBMISSION

- A. Bids signed, executed, and dated will be received at the designated Owner location **no later than 5:00 p.m. Central Time on Monday, September 2, 2024** per Section 00 11 13 Invitation to Bid.

2.02 WORK IDENTIFIED IN THE CONTRACT DOCUMENTS

- A. Work of this proposed Contract comprises renovation and demolition, including general construction, structural, mechanical, and electrical work and limited site work.

2.03 TIME OF COMPLETION – LIQUIDATED DAMAGES

- A. Time of completion of this Contract is of importance to the Owner and may be considered in the award of the Contract. Payments on the Contract shall be made as provided by the Contract. No payment shall be made on the Contract after 30 days prior to the completion date set by the Contractor, until final completion and acceptance by the Architect and Owner. Contractor must agree to begin work contemplated by this Contract within ten (10) days after the date specified in the Notice to Proceed as the starting date.
- B. The Contractor shall include in his proposal a time to complete the base proposal (stated in calendar days) that includes his best anticipation of the number of working days that construction may be unable to take place, due to inclement weather and muddy ground. This anticipated number of lost working days shall be included on the proposal form in the space designated for the total number of calendar days required to complete the base proposal. Extensions to the Completion Date shall be granted only if, in the opinion of the Architect, climatological conditions that impede the progress of construction significantly exceed average conditions for the local area. A guide for average climatological conditions shall be the "Record of Climatological Observations" for the official reporting station nearest the project site, available from the National Oceanographic and Atmospheric Administration (NOAA) National Climatic Data Center, Asheville, NC, (828) 271-4800 <http://lwf.ncdc.noaa.gov/oa/ncdc.html>. No request for an extension of time due to weather conditions shall be considered unless accompanied by National Climatic Data Center documentary evidence showing by comparison that such weather is abnormal to any of the past five (5) years.
- C. **Liquidated damages shall be assessed to the Contractor at the rate of \$500.00 per day, for each day that actual substantial completion exceeds the contract completion date for the project.**
- D. The successful offeror, upon his failure or refusal to execute and deliver the contract, insurance and bonds required within 10 days after he has received notice of the acceptance of his proposal, shall forfeit to the Owner, as liquidated damages for such failure or refusal, the security deposited with his proposal.
- E. Offerors shall submit a properly executed AIA Document A305, Contractor’s Qualification Statement, Exhibit A – General Information, with their proposal. Include any additional forms or documentation to supplement the A305 for substantiation of qualifications required for the Selection Criteria. Failure to submit such A305 and required additional exhibits, forms or documentation shall subject the proposal to be rejected as non-conforming.

PART 3 BID DOCUMENTS AND CONTRACT DOCUMENTS

NEW ADMINISTRATION BUILDING RENOVATION - HONDO
MEDINA HEALTHCARE SYSTEM

3.01 DEFINITIONS

- A. Bid Documents: Contract Documents supplemented with Invitation To Bid, Instructions to Bidders, Information Available to Bidders, Bid Form Supplements To Bid Forms and Appendices identified.
- B. Contract Documents: Defined in AIA A201 Article 1 including issued Addenda.
- C. Bid, Offer, or Bidding: Act of submitting an offer under seal.
- D. Bid Amount: Monetary sum identified by the Bidder in the Bid Form.

3.02 CONTRACT DOCUMENTS IDENTIFICATION

- A. The Contract Documents are identified as Project Number 18-1008, as prepared by GRG Architecture, and with contents as identified in the Table of Contents.

3.03 AVAILABILITY

- A. Bid documents may be obtained at the website of the Medina Regional Hospital; www.medinahospital.net.

3.04 INQUIRIES/ADDENDA

- A. Direct questions to Edward Garza with GRG Architecture, email: edward.garza@grgarchitecture.com.
- B. Addenda may be issued during the bidding period. All Addenda become part of the Contract Documents. Include resultant costs in the Bid Amount.
- C. Verbal answers are not binding on any party.
- D. Clarifications requested by bidders must be in writing not less than 7 days before the date set for receipt of bids. The reply will be in the form of an Addendum, a copy of which will be forwarded to known recipients.

3.05 PRODUCT/ASSEMBLY/SYSTEM SUBSTITUTIONS

- A. Where the Bid Documents stipulate a particular product, substitutions will be considered up to 7 days before receipt of bids.
- B. When a request to substitute a product is made, Architect may approve the substitution and will issue an Addendum to known bidders.
- C. The submission shall provide sufficient information to determine acceptability of such products.
- D. Provide complete information on required revisions to other work to accommodate each proposed substitution.
- E. Provide products as specified unless substitutions are submitted in this manner and accepted.
- F. See Section 01 60 00 - Product Requirements for additional requirements.

PART 4 QUALIFICATIONS

4.01 EVIDENCE OF QUALIFICATIONS

- A. To demonstrate qualification for performing the Work of this Contract, bidders may be required to submit Exhibit B – Financial and Performance Information of the AIA Document A305, Contractor’s Qualification Statement.

4.02 SUBCONTRACTORS/SUPPLIERS/OTHERS

- A. Owner reserves the right to reject a proposed subcontractor for reasonable cause.
- B. Refer to General Conditions.

PART 5 BID SUBMISSION

5.01 SUBMISSION PROCEDURE

- A. Bidders shall be solely responsible for the delivery of their bids in the manner and time prescribed.
- B. Submit two copies of the executed offer on the Bid Forms provided, signed in a closed opaque envelope, clearly identified with bidder's name, project name and Owner's name on the outside.

5.02 BID INELIGIBILITY

- A. Bids that are unsigned, improperly signed or sealed, conditional, illegible, obscure, contain arithmetical errors, erasures, alterations, or irregularities of any kind, may at the discretion of the Owner, be declared unacceptable.
- B. Bid Forms, Appendices, and enclosures that are improperly prepared may, at the discretion of Owner, be declared unacceptable.

PART 6 BID ENCLOSURES/REQUIREMENTS

6.01 PERFORMANCE ASSURANCE

- A. Accepted Bidder: Provide a Performance and Payment bond as described in Section 00 73 00 - Supplementary Conditions.
- B. Include the cost of Performance and Payment Bonds in the Bid Amount and identify the cost on the Bid Form.

6.02 BID FORM SIGNATURE

- A. The Bid Form shall be signed by the bidder, as follows:
 - 1. Sole Proprietorship: Signature of sole proprietor in the presence of a witness who will also sign. Insert the words "Sole Proprietor" under the signature.
 - 2. Partnership: Signature of all partners in the presence of a witness who will also sign. Insert the word "Partner" under each signature.
 - 3. Corporation: Signature of a duly authorized signing officer(s) in their normal signatures. Insert the officer's capacity in which the signing officer acts, under each signature. Affix the corporate seal. If the bid is signed by officials other than the president and secretary of the company, or the president/secretary/treasurer of the company, a copy of the by-law resolution of their board of directors authorizing them to do so, must also be submitted with the Bid Form in the bid envelope.
 - 4. Joint Venture: Each party of the joint venture shall execute the Bid Form under their respective seals in a manner appropriate to such party as described above, similar to the requirements of a Partnership.

6.03 ADDITIONAL BID INFORMATION

- A. Submit the following Supplements concurrent with bid submission:
 - 1. Document per Section 00 43 36 - Proposed Subcontractors Form: Include the names of all Subcontractors and the portions of the Work they will perform.

PART 7 OFFER ACCEPTANCE/REJECTION

7.01 DURATION OF OFFER

- A. Bids shall remain open to acceptance and shall be irrevocable for a period of thirty (30) days after the bid closing date.

7.02 ACCEPTANCE OF OFFER

- A. Owner reserves the right to accept or reject any or all offers.
- B. After acceptance by Owner, Architect on behalf of Owner, will issue to the successful bidder, a written letter of Contract Award.

END OF SECTION

SECTION 00 31 00
AVAILABLE PROJECT INFORMATION

PART 1 GENERAL

1.01 EXISTING CONDITIONS

- A. Certain information relating to existing surface and subsurface conditions and structures is available to bidders but will not be part of the Contract Documents, as follows:
- B. Geotechnical Report Reference Material: "Medina Regional Hospital (MRH) Specialty Clinic Renovations", 3202 Avenue G, Hondo, Texas, Terracon Project No. 90175068 (32 pgs.), prepared by Terracon Consultants, Inc., dated March 31, 2017 (copy attached).
- C. Hazardous Material Survey: "Asbestos-Containing Materials Survey Vacant Medical Office Building", 3103 Avenue G, Hondo, Medina County, Texas (19 pgs.), prepared by Marinez Asbestos and Environmental Consulting, LLC, dated April 19, 2023 (copy attached).

1.02 PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

Geotechnical Engineering Report

Medina Regional Hospital (MRH) Specialty Clinic Renovations

3202 Avenue G

Hondo, Texas

March 31, 2017

Terracon Project No. 90175068

Prepared for:

Medina Healthcare System

Hondo, Texas

Prepared by:

Terracon Consultants, Inc.

San Antonio, Texas

6911 Blanco Road (210)641-2112
San Antonio, TX 78216 terracon.com

Terracon

Environmental



Facilities



Geotechnical



Materials



March 31, 2017

Medina Healthcare System
3100 Avenue E
Hondo, Texas

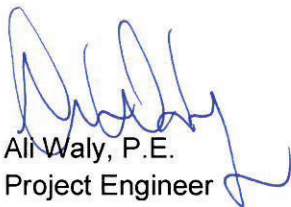
Attn: Mr. Norman Terrill
Office: 830-426-7908
Cell: 210-213-5625
Fax: 830-426-7955
Email: nterrill@medinahospital.net

Re: Geotechnical Engineering Report
Medina Regional Hospital (MRH) Specialty Clinic Renovations
3202 Avenue G
Hondo, Texas
Terracon Project No. 90175068

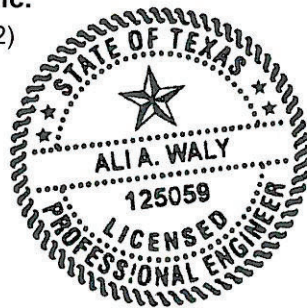
Dear Mr. Terrill:

Terracon Consultants, Inc. (Terracon) has completed the geotechnical engineering services for the above referenced project. We appreciate the opportunity to work with you on this project and look forward to contributing to the ongoing success of this project by providing Materials Testing services during construction. If you have any questions regarding our report, please do not hesitate to contact the undersigned.

Sincerely,
Terracon Consultants, Inc.
(Firm Registration: TX F3272)



Ali Waly, P.E.
Project Engineer




Gregory P. Stieben, P.E.
Senior Consultant

AW/GPS/mhb – 90175068

Enclosures
Copies To: Addressee: (PDF)

Terracon Consultants, Inc. 6911 Blanco Road, San Antonio, Texas 78216
P [210] 641-2112 F [210] 641-2124 terracon.com

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Geotechnical Engineering Report

Medina Regional Hospital (MRH) Specialty Clinic Renovations ■ Hondo, Texas
March 31, 2017 ■ Terracon Project No. 90175068

**EXECUTIVE SUMMARY**

This summary should be used in conjunction with the entire report for design purposes. It should be recognized that details were not included or fully developed in this section, and the report must be read in its entirety for a comprehensive understanding of the items contained herein. The section titled **GENERAL COMMENTS** should be read for an understanding of the report limitations.

This geotechnical exploration has been performed for Medina Regional Hospital (MRH) Specialty Clinic Renovations located at 3202 Avenue G in Hondo, Texas. Two borings were drilled to depths of about 15 feet below the existing grade for the proposed canopy. Based on the information obtained from our subsurface exploration, the site can be developed for the proposed project. Pertinent geotechnical considerations include the following:

- The subsurface soils at this site generally consist of Fat Clay (CH) and underlain by Lean Clay (CL).
- The estimated Potential Vertical Rise (PVR) at this site is about 2 inches in its present condition.
- Groundwater was not encountered during drilling.
- The new structure may be supported on slab on grade foundation. Alternatively, it may be supported on spread footings.
- The subsurface conditions at the site are consistent with the characteristics of the Seismic Site Class D as defined in International Building Code Site Classification (IBC) 2015.

**GEOTECHNICAL ENGINEERING REPORT
 MEDINA REGIONAL HOSPITAL (MRH) SPECIALTY CLINIC
 RENOVATIONS
 3202 AVENUE G
 HONDO, TEXAS
 Terracon Project No. 90175068
 March 31, 2017**

1.0 INTRODUCTION

Terracon Consultants, Inc. (Terracon) is pleased to submit our Geotechnical Engineering Report for the Medina Regional Hospital (MRH) Specialty Clinic Renovations to be located at 3202 Avenue G in Hondo, Texas. The project scope was performed in general accordance with Terracon Proposal No. P90175068 dated February 27, 2017. The project was authorized by Mr. Norman Terrill on March 6, 2017.

The purposes of this report are to describe the subsurface conditions observed at the borings drilled for this study, analyze and evaluate the test data, and provide recommendations with respect to:

- subsurface soil conditions
- earthwork
- seismic considerations
- groundwater conditions
- foundation design and construction

2.0 PROJECT INFORMATION

2.1 Site Location and Description

Item	Description
Location	This project site is located at 3202 Avenue G in Hondo, Texas. See Appendix A, Exhibit A-1: Site Location Plan.
Existing improvements	An existing building.
Current ground cover	Landscaping, concrete curb and asphalt pavement.

2.2 Project Description

Item	Description
Structure	Based on the provided information, the proposed renovation consists of constructing a canopy structure.

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Medina Regional Hospital (MRH) Specialty Clinic Renovations ■ Hondo, Texas
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Item	Description
Construction	We understands that the proposed canopy will be supported shallow foundations
Finished Floor Elevation (FFE)	Near the existing grade.

3.0 SUBSURFACE CONDITIONS

3.1 Typical Profile

Based on the results of the boring, subsurface conditions on the project site can be generalized as follows:

Stratum	Approximate Depth of Stratum (feet)	Material Description	Consistency/ Density
---	---	Asphalt: 2.75 inches thick	---
---	---	Base Material: 5.5 inches thick	---
I	0 to 4	FAT CLAY (CH) ¹ ; dark brown	Stiff to Hard
II	2 to 15	LEAN CLAY (CL) ² ; brown to tan	Very Stiff to Hard
1	The FAT CLAY (CH) materials could undergo high to very high volumetric changes (shrink/swell) should they experience changes in their in-place moisture content		
2	The LEAN CLAY (CL) materials could undergo moderate volumetric changes (shrink/swell) should they experience changes in their in-place moisture content.		

Stratification boundaries on the boring logs represent the approximate location of changes in soil types; in situ, the transition between materials may be gradual. Details of the borings can be found on the boring logs in Appendix A of this report.

3.2 Groundwater

Groundwater generally appears as either a permanent or temporary water source. Permanent groundwater is generally present year round, which may or may not be influenced by seasonal and climatic changes. Temporary groundwater water is also referred to as a “perched” water source, which generally develops as a result of seasonal and climatic conditions.

The borings were dry-augered to their full depths in an attempt to observe for the presence of subsurface water. Subsurface water was not observed in the borings. Groundwater levels are influenced by seasonal and climatic conditions which generally result in fluctuations in the elevation of the groundwater level over time. Therefore, the foundation contractor should check the groundwater conditions just before foundation excavation activities. The borings were backfilled with soil cuttings after the drilling operations and groundwater observations were completed.

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4.0 RECOMMENDATIONS FOR DESIGN AND CONSTRUCTION

The following recommendations are based upon the data obtained from our field and laboratory programs, project information provided to us and on our experience with similar subsurface and site conditions.

4.1 Geotechnical Considerations

The site appears suitable for the proposed construction based upon geotechnical conditions encountered in the boring and our current understanding of the proposed development as discussed herein. Based on the geotechnical engineering analysis and subsurface exploration results, the new structure can be supported on slab on grade or spread footing foundations systems.

The foundations being considered to provide support for the planned structure must satisfy two independent engineering criteria with respect to the subsurface conditions encountered at this site. One criterion is the foundation system must be designed with an appropriate factor of safety to reduce the possibility of a bearing capacity failure of the soils underlying the foundation when subjected to axial and lateral load conditions. The other criterion is movement of the foundation system due to compression (consolidation or shrinkage) or expansion (swell) of the underlying soils must be within tolerable limits for the structure.

4.1.1 Potential Vertical Rise (PVR)

Based on the information developed from our field and laboratory programs and on method TEX-124-E in the Texas Department of Transportation (TxDOT) Manual of Testing Procedures, we estimate that the soils at the site exhibit a Potential Vertical Rise (PVR) of approximately 2 inches in its present condition. The actual movements could be greater than the values presented in this report if inadequate drainage, ponded water, and/or other sources of moisture are allowed to infiltrate beneath the structure after construction. In order to reduce soil movement beneath the any slab construction, subgrade pad modifications will be required as discussed in this report.

4.2 Earthwork

The following presents recommendations for general site preparation, pad preparation and placement of engineered fills on the project. The recommendations presented for design and construction of earth supported elements including foundations, and slabs are contingent upon following the recommendations outlined in this section. Earthwork on the project should be observed and evaluated by Terracon. The evaluation of earthwork should include observation and testing of engineered fill, subgrade preparation, foundation bearing soils, and other geotechnical conditions exposed during the construction of the project.

Geotechnical Engineering Report

Medina Regional Hospital (MRH) Specialty Clinic Renovations ■ Hondo, Texas
March 31, 2017 ■ Terracon Project No. 90175068

**4.2.1 General Site Preparation**

Construction operations may encounter difficulties due to the wet or soft surface soils becoming a general hindrance to equipment due to rutting and pumping of the soil surface, especially during and soon after periods of wet weather. If the subgrade cannot be adequately compacted to minimum densities as described in the **Compaction Requirements** section of this report, one of the following measures may be required:

- removal and replacement with select fill;
- chemical treatment of the soil to dry and increase the stability of the subgrade; or
- drying by natural means if the schedule allows.

In our experience with similar soils in this area, chemical treatment (hydrated lime or cement) may be an effective method to increase the supporting value of wet and weak subgrade. Terracon should be contacted for additional recommendations if chemical treatment of the soils is needed.

Prior to construction, any vegetation, loose topsoil, pavement and any otherwise unsuitable materials should be removed from the construction area. The stripped materials consisting of vegetation and organic materials should be wasted from the site, or used to revegetate landscaped areas or exposed slopes after completion of grading operations. Wet or dry material should either be removed or moisture conditioned and recompacted. After stripping and grubbing, the subgrade should be proof-rolled where possible to aid in locating loose or soft areas. Proof-rolling can be performed with a 15-ton roller or fully loaded dump truck. Soils that are observed to rut or deflect excessively (typically greater than 1-inch) under the moving load should be undercut and replaced with properly compacted on-site soils. The proof-rolling and undercutting activities should be witnessed by a representative of the geotechnical engineer and should be performed during a period of dry weather.

4.2.2 Pad Preparation

The following pad preparation recommendations should be performed prior to foundation construction. As previously mentioned, the existing PVR within the canopy area is about 2 inches. This PVR is primarily due to the presence of Stratum I fat clay (CH). Therefore, we recommend that the pad to be prepared as follows:

- After removing vegetation, topsoil and other deleterious materials from the pad area, excavate the Stratum I soil, which appear to be about 4 feet thick, from the canopy area. The canopy area is defined as the area that extends at least 3 feet (horizontal) beyond the perimeter of the proposed canopy and movement sensitive flatwork.
- After removing (Stratum I) the 4 feet of on-site soil, proof-roll the exposed subgrade in the canopy area with at least a 15-ton roller, or fully loaded dump truck, to evidence any weak yielding zones. A Terracon geotechnical engineer or their representative should be present to observe proof-rolling operations.

Geotechnical Engineering Report

Medina Regional Hospital (MRH) Specialty Clinic Renovations ■ Hondo, Texas
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- Proofroll the exposed subgrade in the canopy area with at least a 15-ton roller, or equivalent, to evidence any weak yielding zones. A Terracon geotechnical engineer or his/her representative should be present to observe proofrolling operations.
- Over-excavate any confirmed weak yielding zones, both vertically and horizontally, and replace with competent soil. The exposed subgrade should be moisture conditioned between 0 and +4 percentage points of the optimum moisture content and then compact to at least 95 percent of the maximum dry density determined in accordance with ASTM D 698.
- After proofrolling and the replacement of weak yielding zones with competent soil, select fill should be used to raise grades to achieve Finished Pad Elevation (FPE). The select fill should be placed in loose lifts of no more than 8 inches, with compacted thickness of about exceed 6 inches, moisture conditioned to between -2 and +3 percentage points of the optimum moisture content, and compacted to at least 95 percent of the maximum dry density determined in accordance with ASTM D 698. To provide a more uniform slab support and create a more all-weather working surface, we recommend constructing the final 6 inches of the pad with granular select fill to provide a working surface.
- This method should result in at least 4 feet of select fill beneath the grade supported slab and should reduce the PVR to about 1 inch or less.

4.2.3 Fill Material Requirements

Select fill and on-site soils should meet the following criteria.

Fill Type ¹	USCS Classification	Acceptable Location for Placement
Granular select fill ³	Varies	Upper 6 inches of the building pad only.
Select fill ²	CL (7≤PI≤20)	All locations and elevations
On-site soils	CH, CL	CH soils are <u>NOT</u> suitable for select fill. Some of CL soils may be used as select fill <u>provided</u> they meet the select fill criteria.

¹ Prior to any filling operations, samples of the proposed borrow and on-site materials should be obtained for laboratory moisture-density testing. The tests will provide a basis for evaluation of fill compaction by in-place density testing. A qualified soil technician should perform sufficient in-place density tests during the filling operations to evaluate that proper levels of compaction, including dry unit weight and moisture content, are being attained. Granular and caliche select fill may also be used as select fill.

² Select fill should consist of low plasticity, sandy/silty soils with a Plasticity Index (PI) between 7 and 20 percent. Maximum aggregate size should be 3 inches.

³ Granular select fill should be cohesive crushed limestone base material with a maximum aggregate size of 3 inches. Plasticity Index should range from 5 to 20. Recommendations for pavement base material are provided elsewhere in this report.

Geotechnical Engineering Report

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**4.2.4 Compaction Requirements**

Subsequent to proofrolling, and just prior to placement of any fill, the exposed subgrade within the construction area should be evaluated for moisture and density. If the moisture, density, and/or the requirements do not meet the criteria described in the table below, the subgrade should be scarified to a depth of 6 inches; moisture adjusted and compacted to at least 95 percent of the Standard Effort (ASTM D 698) maximum dry density.

Item	Description
Fill Lift Thickness	All fill should be placed in thin, loose lifts not to exceed 8 inches, with compacted thickness of about exceed 6 inches.
Compaction of On-Site Soil, Select Fill and Granular Select Fill	95 percent of the material's Standard Proctor maximum dry density (ASTM D 698).
Moisture Content of On-Site Soil	The materials should be moisture conditioned between 0 and +4 percentage points of the optimum moisture content.
Moisture Content of Select Fill	The materials should be moisture conditioned between -2 and +3 percentage points of the optimum moisture content.
¹ Unless otherwise noted within this report all compaction requirements are provided above.	

4.2.5 Earthwork Construction Considerations

It is anticipated that excavations for the proposed construction can be accomplished with conventional earthmoving equipment. Based upon the subsurface conditions determined from the geotechnical exploration, subgrade soils exposed during construction are anticipated to be relatively stable. However, the stability of the subgrade may be affected by precipitation, repetitive construction traffic or other factors. If unstable conditions develop, workability may be improved by scarifying and drying. Over excavation of wet zones and replacement with granular materials may be necessary. Lightweight excavation equipment may be required to reduce subgrade pumping. The use of remotely operated equipment, such as a backhoe, would be beneficial to perform cuts and reduce subgrade disturbance.

All temporary excavations should be sloped or braced as required by Occupational Health and Safety Administration (OSHA) regulations to provide stability and safe working conditions. Temporary excavations will probably be required during grading operations. The grading contractor, by his contract, is usually responsible for designing and constructing stable, temporary excavations and should shore, slope or bench the sides of the excavations as required, to maintain stability of both the excavation sides and bottom. All excavations should comply with applicable local, state and federal safety regulations, including the current OSHA Excavation and Trench Safety Standards.

4.3 Foundation Design Recommendations

Also slab on grade foundation or spread footings may be considered to be constructed in the near future within the canopy area. Recommendations for slab on-grade foundation and spread footing foundation systems are provided in the following section.

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**4.3.1 Slab on Grade Design Recommendations**

A slab-on-grade foundation may be considered for the canopy structure. The subgrade for the slab should be prepared as recommend under section “**Pad Preparation**”. Parameters commonly used to design this type of foundation are provided on the table below. The slab foundation design parameters presented on the table below are based on the criteria published by the Building Research Advisory Board (BRAB) and Wire Reinforcing Institute (WRI). These are essentially empirical design methods and the recommended design parameters are based on our understanding of the proposed project, our interpretation of the information and data collected as a part of this study, our area experience, and the criteria published in the BRAB and WRI design manual.

Conventional Method	Prepared Subgrade ¹
Net Allowable Bearing Pressures ²	2,000 psf
Subgrade Modulus (k)	80 pci
Potential Vertical Rise (PVR) ¹	about 1 inch
BRAB / WRI Methods	
Design Plasticity Index (PI) ³	23
Climatic Rating (C _w)	17
Unconfined Compressive Strength	1.0 tsf
Soil Support Index (C)	0.90
Soil/Climate Rating Factor (1-C)	0.10
¹	Based on preparing the pad as discussed in this report.
²	The net allowable bearing pressure provided above includes a Factor of Safety (FS) of 3.
³	The BRAB / WRI effective PI is equal to the near surface PI if that PI is greater than all of the PI values in the upper 15 feet.

We recommend that the grade beams be at least 30 inches below final exterior grade. These recommendations are for proper development of bearing capacity for the continuous beam sections of the foundation system and to reduce the potential for water to migrate beneath the slab foundation. These recommendations are not based on structural considerations. Grade beam depths may need to be greater than recommended herein for structural considerations and should be properly evaluated and designed by the Structural Engineer. The grade beams or slab portions may be thickened and widened to serve as spread footings at concentrated load areas.

For a slab foundation system designed and constructed as recommended in this report, post construction settlements should be less than 1 inch. Settlement response of a select fill supported slab is influenced more by the quality of construction than by soil-structure interaction. Therefore, it is essential that the recommendations for foundation construction be strictly followed during the construction phases of the pad and foundation.

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The use of a vapor retarder should be considered beneath concrete slabs-on-grade that will be covered with wood, tile, carpet or other moisture sensitive or impervious coverings, or when the slabs will support equipment sensitive to moisture. When conditions warrant the use of a vapor retarder, the slab designer and slab contractor should refer to ACI 302 for procedures and cautions about the use and placement of a vapor retarder.

4.3.2 Spread Footing Design Recommendations

Spread footings may be considered in the design to support the proposed canopy. The spread footings can provide some uplift resistance for those structures subjected to wind or other induced structural loading. The uplift resistance of a spread footing may be computed using the effective weight of the soil above the spread footing along with the weight of the spread footing and structure. A soil unit weight of 120 pcf may be assumed for the on-site soils placed above the footing, provided the fill is properly compacted. Design values for the footings are presented below.

Description	Design Values
Net allowable bearing pressure¹	
Compacted structural fill or native soil	2,000 psf
Minimum dimensions	24 inches
Minimum embedment below finished grade for bearing	30 inches
Approximate total settlement from foundation loads²	< ¾ inch
Ultimate passive pressure³	
Compacted structural fill or native soil	250 pcf, equivalent fluid density
Ultimate coefficient of sliding friction⁴	0.4

1	The recommended net allowable bearing pressure is the pressure in excess of the minimum surrounding overburden pressure at the footing base elevation. Assumes any unsuitable existing fill or soft soils, if encountered, will be undercut and replaced with compacted structural fill. Based upon a minimum Factor of Safety of 3.
2	The above settlement estimates from foundation loads have assumed that the maximum footing size is 5.5 feet for column footings and 1.5 feet for continuous footings.
3	The spread footing foundation excavation sides must be nearly vertical and the concrete should be placed neat against these vertical faces for the passive earth pressure values to be valid. If the loaded side is sloped or benched, and then backfilled, the allowable passive pressure will be significantly reduced. Passive resistance in the upper 12 inches of the soil profile should be neglected.

4.3.3 Foundation Construction Considerations

The shallow foundations should preferably be neat excavated. Excavation should be accomplished with a smooth-mouthed bucket. If a toothed bucket is used, excavation with this bucket should be stopped 6 inches above the final bearing surface and the excavation completed

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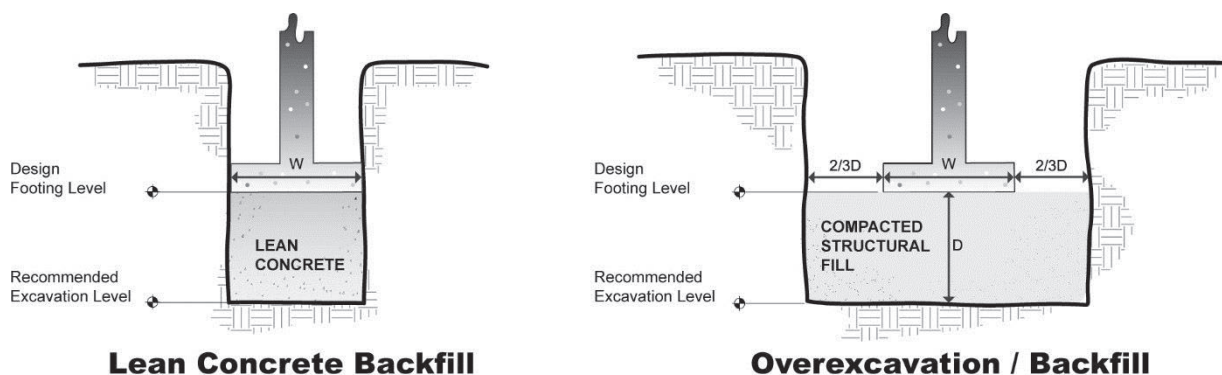


with a smooth-mouthed bucket or by hand labor. If neat excavation is not possible then the foundation should be overexcavated and formed. All loose materials should be removed from the overexcavated areas and filled with lean concrete or compacted cement stabilized sand (two sacks cement to one cubic yard of sand) or flowable fill.

Steel should be placed and the foundation poured within 36 hours of excavation. If not, a seal slab consisting of lean concrete should be poured to protect the exposed foundation soils. The bearing surface should be excavated with a slight slope to create an internal sump for runoff water collection and removal. If surface runoff water in excess of 1 inch accumulates at the bottom of the excavation, it should be pumped out prior to concrete placement. Under no circumstances should water be allowed to adversely affect the quality of the bearing surface.

Backfill soils above the foundation should consist of select fill. Backfill soils should be placed in loose 8-inch lifts; moisture conditioned and compacted. Recommendations for select fill are included in the **Fill Material Requirements** section.

If unsuitable bearing soils are encountered in footing excavations, the excavation could be extended deeper to suitable soils and the footing could bear directly on these soils at the lower level or on lean concrete backfill placed in the excavations. As an alternative, the footings could also bear on properly compacted structural backfill extending down to the suitable soils. Overexcavation for compacted structural fill placement below footings should extend laterally beyond all edges of the footings at least 8 inches per foot of overexcavation depth below footing base elevation. The overexcavation should then be backfilled up to the footing base elevation with well graded granular material placed in lifts of 8 inches or less in loose thickness (6 inches or less if using hand-guided compaction equipment) and compacted to at least 95 percent of the material's standard effort maximum dry density (ASTM D 698). The overexcavation and backfill procedure is described in the following figure.



NOTE: Excavations in sketches shown vertical for convenience. Excavations should be sloped as necessary for safety.

4.3.4 Foundation Construction Monitoring

The performance of the foundation system for the proposed structure will be highly dependent upon the quality of construction. Thus, we recommend that fill pad compaction and foundation

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installation be monitored full time by an experienced soil technician under the direction of a Geotechnical Engineer. During foundation installation, the base should be monitored to evaluate the condition of the subgrade. We would be pleased to develop a plan for compaction and foundation installation monitoring to be incorporated in the overall quality control program.

4.4 Seismic Considerations

Description	Value
2015 International Building Code Site Classification (IBC) 1	D ²
Site Latitude (Degrees)	29.334985°N
Site Longitude (Degrees)	99.135651°W
Mapped Spectral Acceleration for Short Periods (0.2-Second): (SS) 3	0.065 g
Mapped Spectral Acceleration for a 1-Second Period: (S1) 3	0.023 g
1	The site class definition was determined using shear strength and SPT N-values in conjunction with section 1613.3.2 in the 2015 IBC and Table 20.3-1 in the 2010 ASCE-7.
2	Boring extended to a maximum depth of 15 feet, and this seismic site class definition considers similar conditions continues below the maximum depth of the subsurface exploration.
3	The Spectral Acceleration values were determined using publicly available information provided on the United States Geological Survey (USGS) website. The spectral acceleration values can be used to determine the site coefficients using Tables 1613.3.3 (1) and 1613.3.3 (2) in the 2015 IBC.

5.0 GENERAL COMMENTS

Terracon should be retained to review the final design plans and specifications so comments can be made regarding interpretation and implementation of our geotechnical recommendations in the design and specifications. Terracon also should be retained to provide observation and testing services during grading, excavation, foundation construction and other earth-related construction phases of the project.

The analysis and recommendations presented in this report are based upon the data obtained from the boring performed at the indicated locations and from other information discussed in this report. This report does not reflect variations that may occur away from our boring, across the site, or due to the modifying effects of weather. The nature and extent of such variations may not become evident until during or after construction. If variations appear, we should be immediately notified so that further evaluation and supplemental recommendations can be provided. Prospective subcontractors should familiarize themselves with the conditions at the site and retain their own experts to interpret the data in this report and perform additional testing and/or inspection as they deem necessary prior to bidding.

Geotechnical Engineering Report

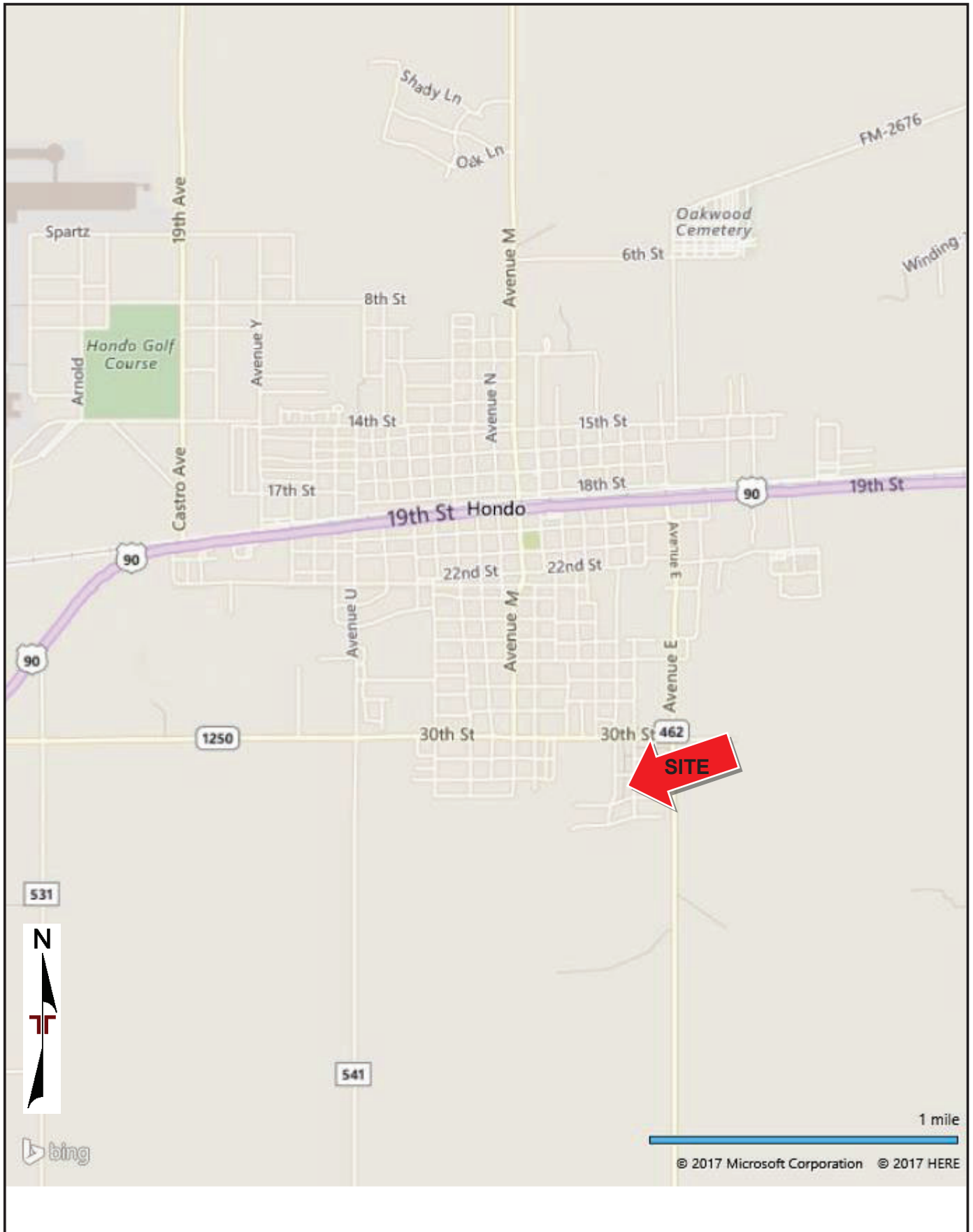
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The scope of services for this project does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No warranties, either express or implied, are intended or made. Site safety, excavation support, and dewatering requirements are the responsibility of others. In the event that changes in the nature, design, or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless Terracon reviews the changes and either verifies or modifies the conclusions of this report in writing.

APPENDIX A



Project Manager: AW	Project No. 90175068	 6911 Blanco Rd San Antonio, TX 78216-6164	SITE LOCATION PLAN Medina Regional Hospital (MRH) Specialty Clinic Renovations 3202 Avenue G Hondo, Texas	Exhibit A-1
Drawn by: AW	Scale: AS SHOWN			
Checked by: GPS	File Name: A-1			
Approved by: GPS	Date: 3/30/2017			



DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

Project Manager:	AW	Project No.	90175068
Drawn by:	AW	Scale:	AS SHOWN
Checked by:	GPS	File Name:	A-2
Approved by:	GPS	Date:	3/30/2017

Terracon
 6911 Blanco Rd
 San Antonio, TX 78216-6164

BORING LOCATION PLAN
 Medina Regional Hospital (MRH) Specialty Clinic
 Renovations
 3202 Avenue G
 Hondo, Texas

Exhibit
A-2

Geotechnical Engineering Report

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**Field Exploration Description**

The boring location was marked by Terracon personnel and the location of the boring was determined by the client at the field. A truck-mounted, rotary drill rig equipped with continuous flight augers was used to advance the boreholes. Soil samples were obtained by split barrel sampling procedures. In the split-barrel sampling procedure, a standard 2-inch O.D. split-barrel sampling spoon is driven into the ground with a 140-pound hammer falling a distance of 30 inches. The number of blows required to advance the sampling spoon the last 12 inches of a normal 18-inch penetration is recorded as the standard penetration resistance value. These values are indicated on the boring log at the depths of occurrence. The samples were sealed and transported to the laboratory for testing and classification.

The samples were tagged for identification, sealed to reduce moisture loss, and taken to our laboratory for further examination, testing, and classification. Information provided on the boring logs attached to this report includes soil descriptions, consistency evaluations, boring depths, sampling intervals, and groundwater conditions. The borings were backfilled with soil cuttings after completion of drilling.

Our field representative prepared the field logs as part of the drilling operations. The field logs included visual classifications of the materials encountered during drilling and our field representative interpretation of the subsurface conditions between samples. Each boring log included with this report represents the engineer's/geologist's interpretation of the field logs and include modifications based on visual observations and testing of the samples in the laboratory.

The scope of services for our geotechnical engineering services does not include addressing any environmental issues pertinent to the site.

BORING LOG NO. B-1

PROJECT: Medina Regional Hospital (MRH) Specialty Clinic Renovations

CLIENT: Medina Healthcare System
Hondo, Texas

SITE: 3202 Avenue G
Hondo, Texas

GRAPHIC LOG	LOCATION See Exhibit A-2 Latitude: 29.334985° Longitude: -99.135651°	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	ATTERBERG LIMITS	PERCENT FINES
	DEPTH						LL-PL-PI	
0.8	Asphalt Section Asphalt 2.75 inches Base Material 5.5 inches			X	4-8-9 N=17	30	63-26-37	81
4.0	STRATUM I FAT CLAY (CH): dark brown, very stiff to hard			X	6-7-12 N=19	27		
5.0	STRATUM II LEAN CLAY (CL): reddish brown to light brown, very stiff - with calcaerous deposits between 4 and 7 feet			X	6-12-12 N=24	18	46-17-29	71
10.0				X	9-10-12 N=22	12		
15.0				X	7-13-14 N=27	17		
15.0	Boring Terminated at 15 Feet			X	10-11-13 N=24	14		

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Flight Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

WATER LEVEL OBSERVATIONS
Groundwater not encountered



6911 Blanco Rd
San Antonio, TX

Notes:	
Boring Started: 3/10/2017	Boring Completed: 3/10/2017
Drill Rig: CME-75	Driller: Ramco
Project No.: 90175068	Exhibit: A-4

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. 06145030 LOG 90175068.GPJ TERRACON_DATATEMPLATE.GDT 3/31/17

BORING LOG NO. B-2

PROJECT: Medina Regional Hospital (MRH) Specialty Clinic Renovations

**CLIENT: Medina Healthcare System
Hondo, Texas**

**SITE: 3202 Avenue G
Hondo, Texas**

GRAPHIC LOG	LOCATION See Exhibit A-2 Latitude: 29.334843° Longitude: -99.135683°	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	ATTERBERG LIMITS	PERCENT FINES
	LL-PL-PI							
DEPTH								
4.0	STRATUM I FAT CLAY (CH): dark brown, stiff to very stiff			X	3-4-5 N=9	23		
				X	8-9-15 N=24	24	69-23-46	
15.0	STRATUM II LEAN CLAY (CL): reddish brown to light brown, very stiff to hard - with calcaerous deposits between 4 and 7 feet	5		X	7-8-13 N=21	16		66
				X	10-11-17 N=28	13		
				X	9-15-19 N=34	16	38-17-21	81
				X	10-15-17 N=32	14		
	Boring Terminated at 15 Feet	15						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Flight Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered



6911 Blanco Rd
San Antonio, TX

Boring Started: 3/10/2017

Boring Completed: 3/10/2017

Drill Rig: CME-75

Driller: Ramco

Project No.: 90175068

Exhibit: A-5

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. 06145030 LOG 90175068.GPJ TERRACON_DATATEMPLATE.GDT 3/31/17

APPENDIX B

Geotechnical Engineering Report

Medina Regional Hospital (MRH) Specialty Clinic Renovations ■ Hondo, Texas
March 31, 2017 ■ Terracon Project No. 90175068

**Laboratory Testing**

Samples retrieved during the field exploration were taken to the laboratory for further observation by the project geotechnical engineer and were classified in accordance with the Unified Soil Classification System (USCS) described in this Appendix. At that time, the field descriptions were confirmed or modified as necessary and an applicable laboratory testing program was formulated to determine engineering properties of the subsurface materials.

Laboratory tests were conducted on selected soil samples and the test results are presented in this appendix. The laboratory test results were used for the geotechnical engineering analyses, and the development of foundation and earthwork recommendations. Laboratory tests were performed in general accordance with the applicable ASTM, local or other accepted standards.

Selected soil samples obtained from the site were tested for the following engineering properties:

- Moisture Content
- Atterberg Limits
- Soils Finer than No. 200 Mesh Sieve












Sample Disposal

All samples were returned to our laboratory. The samples not tested in the laboratory will be stored for a period of 30 days subsequent to submittal of this report and will be discarded after this period, unless other arrangements are made prior to the disposal period.

APPENDIX C

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING			WATER LEVEL		Water Initially Encountered	FIELD TESTS	(HP) Hand Penetrometer
	Auger	Split Spoon			Water Level After a Specified Period of Time		(T) Torvane
					Water Level After a Specified Period of Time		(b/f) Standard Penetration Test (blows per foot)
	Shelby Tube	Macro Core		Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.			(PID) Photo-Ionization Detector
							(OVA) Organic Vapor Analyzer
Ring Sampler	Rock Core						
							
Grab Sample	No Recovery						

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification is based on the Unified Soil Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

LOCATION AND ELEVATION NOTES

Unless otherwise noted, Latitude and Longitude are approximately determined using a hand-held GPS device. The accuracy of such devices is variable. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS	RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance Includes gravels, sands and silts.			CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance			
	Descriptive Term (Density)	Standard Penetration or N-Value Blows/Ft.	Ring Sampler Blows/Ft.	Descriptive Term (Consistency)	Unconfined Compressive Strength, Qu, tsf	Standard Penetration or N-Value Blows/Ft.	Ring Sampler Blows/Ft.
	Very Loose	0 - 3	0 - 6	Very Soft	less than 0.25	0 - 1	< 3
	Loose	4 - 9	7 - 18	Soft	0.25 to 0.50	2 - 4	3 - 4
	Medium Dense	10 - 29	19 - 58	Medium-Stiff	0.50 to 1.00	4 - 8	5 - 9
	Dense	30 - 50	59 - 98	Stiff	1.00 to 2.00	8 - 15	10 - 18
	Very Dense	> 50	≥ 99	Very Stiff	2.00 to 4.00	15 - 30	19 - 42
				Hard	> 4.00	> 30	> 42

RELATIVE PROPORTIONS OF SAND AND GRAVEL

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 15
With	15 - 29
Modifier	> 30

RELATIVE PROPORTIONS OF FINES

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 5
With	5 - 12
Modifier	> 12

GRAIN SIZE TERMINOLOGY

Major Component of Sample	Particle Size
Boulders	Over 12 in. (300 mm)
Cobbles	12 in. to 3 in. (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm)
Silt or Clay	Passing #200 sieve (0.075mm)

PLASTICITY DESCRIPTION

Term	Plasticity Index
Non-plastic	0
Low	1 - 10
Medium	11 - 30
High	> 30

UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests ^A				Soil Classification		
				Group Symbol	Group Name ^B	
Coarse Grained Soils: More than 50% retained on No. 200 sieve	Gravels: More than 50% of coarse fraction retained on No. 4 sieve	Clean Gravels: Less than 5% fines ^C	$Cu \geq 4$ and $1 \leq Cc \leq 3$ ^E	GW	Well-graded gravel ^F	
			$Cu < 4$ and/or $1 > Cc > 3$ ^E	GP	Poorly graded gravel ^F	
		Gravels with Fines: More than 12% fines ^C	Fines classify as ML or MH	GM	Silty gravel ^{F,G,H}	
			Fines classify as CL or CH	GC	Clayey gravel ^{F,G,H}	
			Fines classify as CL or CH	SC	Clayey sand ^{G,H,I}	
	Sands: 50% or more of coarse fraction passes No. 4 sieve	Clean Sands: Less than 5% fines ^D	$Cu \geq 6$ and $1 \leq Cc \leq 3$ ^E	SW	Well-graded sand ^I	
			$Cu < 6$ and/or $1 > Cc > 3$ ^E	SP	Poorly graded sand ^I	
		Sands with Fines: More than 12% fines ^D	Fines classify as ML or MH	SM	Silty sand ^{G,H,I}	
			Fines classify as CL or CH	SC	Clayey sand ^{G,H,I}	
			Fines classify as CL or CH	CL	Lean clay ^{K,L,M}	
Fine-Grained Soils: 50% or more passes the No. 200 sieve	Silts and Clays: Liquid limit less than 50	Inorganic:	$PI > 7$ and plots on or above "A" line ^J	CL	Lean clay ^{K,L,M}	
			$PI < 4$ or plots below "A" line ^J	ML	Silt ^{K,L,M}	
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay ^{K,L,M,N}
			Liquid limit - not dried			Organic silt ^{K,L,M,O}
			Inorganic:	PI plots on or above "A" line	CH	Fat clay ^{K,L,M}
	PI plots below "A" line	MH		Elastic Silt ^{K,L,M}		
	Silts and Clays: Liquid limit 50 or more	Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay ^{K,L,M,P}
			Liquid limit - not dried			Organic silt ^{K,L,M,Q}
			Inorganic:	PI plots on or above "A" line	CH	Fat clay ^{K,L,M}
		PI plots below "A" line		MH	Elastic Silt ^{K,L,M}	
Primarily organic matter, dark in color, and organic odor		PT	Peat			

^A Based on the material passing the 3-inch (75-mm) sieve

^B If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

^C Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

^D Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay

$${}^E Cu = D_{60}/D_{10} \quad Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$$

^F If soil contains $\geq 15\%$ sand, add "with sand" to group name.

^G If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

^H If fines are organic, add "with organic fines" to group name.

^I If soil contains $\geq 15\%$ gravel, add "with gravel" to group name.

^J If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

^K If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

^L If soil contains $\geq 30\%$ plus No. 200 predominantly sand, add "sandy" to group name.

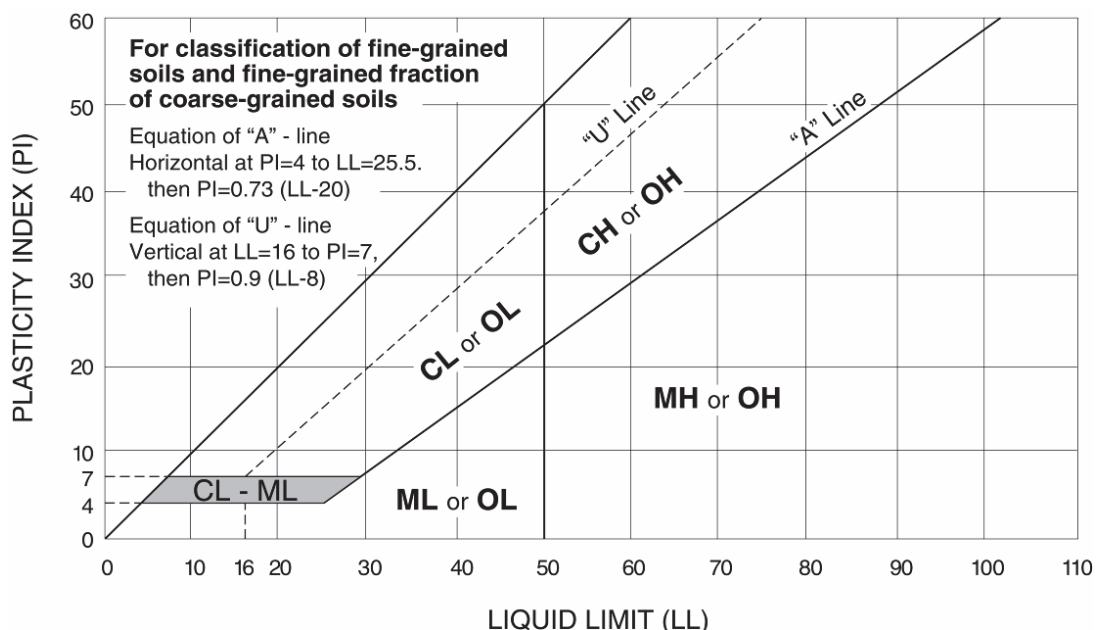
^M If soil contains $\geq 30\%$ plus No. 200, predominantly gravel, add "gravelly" to group name.

^N $PI \geq 4$ and plots on or above "A" line.

^O $PI < 4$ or plots below "A" line.

^P PI plots on or above "A" line.

^Q PI plots below "A" line.





April 12, 2017

Medina Healthcare System
3100 Avenue E
Hondo, Texas

Attn: Mr. Norman Terrill
Office: 830-426-7908
Cell: 210-213-5625
Fax: 830-426-7955
Email: nterrill@medinahospital.net

Re: Geotechnical Engineering Letter
(MRH) Specialty Clinic Renovations – Pavement Recommendations
3202 Avenue G
San Antonio, Texas
Terracon Project No. 90175068

Dear Mr. Terrill:

Terracon Consultants, Inc. (Terracon) has submitted a geotechnical report for this project dated March 31, 2017. The report provided Recommendations for foundations for the proposed canopy at the project. Based on an email request from the Architect Mr. Jason E. Puchot with RVK Architect dated April 3, 2017; we understand that pavement Recommendations will be required for this project. Both flexible and rigid pavement systems are provided for the project. Based on our knowledge of the project, we anticipate that traffic loads will be produced primarily by automobile traffic and trash removal trucks.

Subgrade Preparation

After sawcut of the existing pavement that requires to be repaved, the subgrade should be proof-rolled where possible to aid in locating loose or soft areas. Proof-rolling can be performed with a 15-ton roller or fully loaded dump truck. Wet, soft, low-density or dry material should either be removed or moisture conditioned and recompacted to the moisture contents and densities.

Due to the presence of the expansive clay, movement should be expected. If the movement of the pavement is not acceptable, then the pavement subgrade should be prepared similar to the building pad provided in the “**building pad**” section of the original report.

Design Recommendationss

For this project Light and Heavy pavement section alternatives have been provided. Light is for areas expected to receive only car traffic. Heavy assumes areas with heavy traffic, such as trash pickup areas and main access drive areas.



The flexible pavement section was designed in general accordance with the National Asphalt Pavement Association (NAPA) Information Series (IS-109) method (Class 1 for Light and Class 2 for Heavy). The rigid pavement section was designed using the American Concrete Institute (ACI 330R-01) method (Traffic Category A (ADTT=0) for Light and A-1 (ADTT=10) for Heavy). If heavier traffic loading is expected, Terracon should be provided with the information and allowed to review these pavement sections.

	FLEXIBLE PAVEMENT SYSTEM (inches)			
	Raw Subgrade		Modified Subgrade	
	Light Duty	Heavy Duty	Light Duty	Heavy Duty
Hot Mix Asphaltic Concrete	2.0	2.0	2.0	2.0
Base Material ¹	10.0	14.0	6.0	10.0
Modified Subgrade	----	----	6.0	6.0
Moisture Conditioned Subgrade	6.0	6.0	----	----
¹	Asphaltic base material may be used in place of crushed limestone base material. Every 2.5 inches of crushed limestone base material may be replaced with 1 inch of asphaltic base material. However, the minimum thickness of the asphaltic base material is 4 inches.			
²	Tensar TX 130 geogrid may be used in lieu of modified subgrade. The geogrid should be placed at the bottom of the base course, and on top of the pavement subgrade.			

	RIGID PAVEMENT SYSTEM (inches)			
	Raw Subgrade		Modified Subgrade	
	Light Duty	Heavy Duty	Light Duty	Heavy Duty
Reinforced Concrete	5.5	6.5	5.0	6.0
Modified Subgrade	----	----	6.0	6.0
Moisture Conditioned Subgrade	6.0	6.0	----	----
Dumpster pad should be constructed as heavy duty rigid section.				

Proper perimeter drainage is very important and should be provided so infiltration of surface water from unpaved areas surrounding the pavement is minimized. We do not recommend installation of landscape beds or islands in the pavement areas. Such features provide an avenue for water to enter into the pavement section and underlying soil subgrade. Water penetration usually results in degradation of the pavement section with time as vehicular traffic traverses the affected area.

Curbs should extend through the base and at least 3 inches into the soil subgrade below the base course. This will help reduce migration of subsurface water into the pavement base course from adjacent areas. A crack sealant compatible to both asphalt and concrete should be provided at all concrete-asphalt interfaces.

Geotechnical Engineering Letter

(MRH) Specialty Clinic Renovations – Pavement Recommendations ■ San Antonio, Texas
April 12, 2017 ■ Terracon Project No. 90175068

Pavement areas that will be subjected to heavy wheel and traffic volumes, such as waste bin or "dumpster" areas, entrance/exit ramps, and delivery areas, should be a rigid pavement section constructed of reinforced concrete. The concrete pavement areas should be large enough to properly accommodate the vehicular traffic and loads. For example:

- The dumpster pad should be large enough so that the wheels of the collection truck are entirely supported on the concrete pavement during lifting of the waste bin; and
- The concrete pavement should extend beyond any areas that require extensive turning, stopping, and maneuvering.

The pavement design engineer should consider these and other similar situations when planning and designing pavement areas. Waste bin and other areas that are not designed to accommodate these situations often result in localized pavement failures.

The pavement section has been designed using generally recognized structural coefficients for the pavement materials. These structural coefficients reflect the relative strength of the pavement materials and their contribution to the structural integrity of the pavement. If the pavement does not drain properly, it is likely that ponded water will infiltrate the pavement materials resulting in a weakening of the materials. As a result, the structural coefficients of the pavement materials will be reduced and the life and performance of the pavement will be shortened. The Asphalt Institute recommends a minimum of 2 percent slope for asphalt pavements. The importance of proper drainage cannot be overemphasized and should be thoroughly considered by the project team.

Pavement Section Materials

Presented below are selection and preparation guidelines for various materials that may be used to construct the pavement sections. Submittals should be made for each pavement material. The submittals should be reviewed by the Geotechnical Engineer and appropriate members of the design team and should provide test information necessary to verify full compliance with the recommended or specified material properties.

- **Hot Mix Asphaltic Concrete Surface Course** - The asphaltic concrete surface course should be plant mixed, hot laid Type C or D Surface. The asphaltic concrete base course should also be plant mixed, hot laid Type A or B. Each mix should meet the master specifications requirements of 2004 TXDOT Standard Specifications Item 341, Item SS 3224 (2011) and specific criteria for the job mix formula. The mix should be compacted between 91 and 95 percent of the maximum theoretical density as measured by TEX-227-F. The asphalt cement content by percent of total mixture weight should fall within a tolerance of ± 0.3 percent asphalt cement from the specific mix. In addition, the mix should be designed so 75 to 85 percent of the voids in the mineral aggregate (VMA) are filled with asphalt cement. The grade of the asphalt cement should be PG 64-22 or higher performance grade. Aggregates known to be prone to stripping should not

Geotechnical Engineering Letter

(MRH) Specialty Clinic Renovations – Pavement Recommendations ■ San Antonio, Texas
April 12, 2017 ■ Terracon Project No. 90175068

be used in the hot mix. If such aggregates are used measures should be taken to mitigate this concern. The mix should have at least 70 percent strength retention when tested in accordance with TEX-531-C.

Pavement specimens, which shall be either cores or sections of asphaltic pavement, will be tested according to Test Method TEX-207-F. The nuclear-density gauge or other methods which correlate satisfactorily with results obtained from project pavement specimens may be used when approved by the Engineer. Unless otherwise shown on the plans, the Contractor shall be responsible for obtaining the required pavement specimens at their expense and in a manner and at locations selected by the Engineer.

- **Concrete** - Concrete should have a minimum 28-day design compressive strength of 4,000 psi.
- **Granular Base Material** - Base material may be composed of crushed limestone base meeting all of the requirements of 2004 TxDOT Item 247, Type A, Grade 1 or 2; including triaxial strength. The material should be compacted to at least 95 percent of the maximum dry density as determined in accordance with ASTM D 1557 at moisture contents ranging from -2 and +3 percentage points of the optimum moisture content.
- **Modified Subgrade** - The subgrade may be treated with hydrated lime in accordance with TxDOT Item 260 in order to improve its strength and improve its load carrying capacity. If used, the quantity of hydrated lime required should be determined after the site is stripped of the loose topsoil and the subgrade soils are exposed. Additionally the subgrade should be tested for sulfates prior to use of lime. We anticipate that approximately 6 percent hydrated lime will be required. This is equivalent to about 30 pounds of hydrated lime per square yard for a 6 inch treatment depth. However, the actual percentage should be determined by laboratory tests on samples of the clayey subgrade prior to construction. The optimum lime content should result in a soil-lime mixture with a pH of at least 12.4 when tested in accordance with ASTM C 977, Appendix XI and should reduce the Plasticity Index to 20 or less.

The lime should initially be blended with a mixing device such as a Pulvermixer, sufficient water added, and be allowed to cure for at least 48 hours. After curing, the lime-soil should be remixed to meet the in-place gradation requirements of Item 260 and compacted to at least 95 percent of the maximum dry density determined in accordance with ASTM D 698 at moisture contents ranging from optimum and + 4 percentage points above the optimum moisture content.

Geotechnical Engineering Letter

(MRH) Specialty Clinic Renovations – Pavement Recommendations ■ San Antonio, Texas
 April 12, 2017 ■ Terracon Project No. 90175068

- **Moisture Conditioned Subgrade** - The subgrade should be scarified to a depth of 6 inches and then moisture conditioned and compacted as recommended in the **Compaction Requirements** section of this report.
- **Concrete** - Concrete should have a minimum 28-day design compressive strength of 3,000 psi.
- **Granular Base Material** - Base material may be composed of crushed limestone base meeting all of the requirements of 2004 TxDOT Item 247, Type A, Grade 1 or 2; including triaxial strength. The material should be compacted to at least 95 percent of the maximum dry density as determined in accordance with ASTM D 1557 at moisture contents ranging from -2 and +3 percentage points of the optimum moisture content.
- **Moisture Conditioned Subgrade** - The subgrade should be scarified to a depth of 6 inches and then moisture conditioned and compacted as recommended in the **Compaction Requirements** section of this report.

Details regarding subgrade preparation, fill materials, placement and compaction are presented in **Earthwork** section under subsections **Fill Materials and Placement** and **Compaction Requirements**.

Pavement Joints and Reinforcement

The following is recommended for all concrete pavement sections in this report. Refer to ACI 330 “Guide for Design and Construction of Concrete Parking Lots” for additional information.

Item	Description
Distributed Reinforcing Steel	№ 3 reinforcing steel bars at 15 inches on-center-each-way, Grade 60. It is imperative that the distributed steel be positioned accurately in the pavement cross section, namely 2 inches from the top of the pavement.
Contraction Joint Spacing	12.5 feet each way for pavement thickness of 5 to 5.5 inches. 15 feet each way for pavement thickness of 6 inches or greater. Saw cut control joints should be cut within 6 to 12 hours of concrete placement.
Contraction Joint Depth	At least ¼ of pavement thickness.
Contraction Joint Width	One-fourth inch or as required by joint sealant manufacturer.
Construction Joint Spacing	To attempt to limit the quantity of joints in the pavement, consideration can be given to installing construction joints at contraction joint locations, where it is applicable.
Construction Joint Depth/Width	Full depth of pavement thickness. Construct sealant reservoir along one edge of the joint. Width of reservoir to be ¼ inch or as required by joint sealant manufacturer. Depth of reservoir to be at least ¼ of pavement thickness.

Geotechnical Engineering Letter

(MRH) Specialty Clinic Renovations – Pavement Recommendations ■ San Antonio, Texas
 April 12, 2017 ■ Terracon Project No. 90175068

Item	Description
Isolation Joint Spacing	As required to isolate pavement from structures, etc.
Isolation Joint Depth	Full depth of pavement thickness.
Isolation Joint Width	One-half to 1 inch or as required by the joint sealant manufacturer.
Expansion Joint	In this locale, drying shrinkage of concrete typically significantly exceeds anticipated expansion due to thermal affects. As a result, the need for expansion joints is eliminated provided all joints (including saw cuts) are sealed. Construction of an unnecessary joint may be also become a maintenance problem. <u>All</u> joints should be sealed. If all joints, including sawcuts, are not sealed then expansion joints should be installed. All joints should sealed and maintained.

All construction joints have dowels. Dowel information varies with pavement thickness as presented as follows:

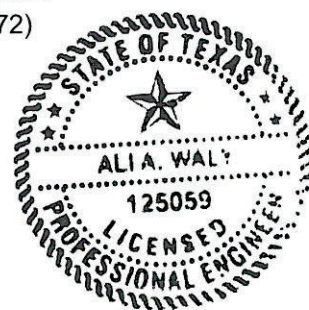
Pavement Thickness	5, 5½ inches	6, 6½ inches
Dowels	5/8 inch diameter	¾ inch diameter
Dowel Spacing	12 inches on center	12 inches on center
Dowel Length	12 inches long	14 inches long
Dowel Embedment	5 inches	6 inches

Unless noted otherwise in this letter, our Recommendations for the project presented in our report (Terracon Project No. 90175068) dated March 31, 2017 remain unchanged. If you have any questions regarding this letter, please do not hesitate to contact one of the undersigned.

If you have any questions regarding this letter, please do not hesitate to contact one of the undersigned.

Sincerely,
Terracon Consultants, Inc.
 (Firm Registration: TX F3272)

Ali Waly, P.E.
 Project Engineer



Gregory P. Stieben, P.E.
 Senior Consultant

AW/GPS/mhb – 90175068

Copies To: Addressee: (1) Electronic

Martinez Asbestos and Environmental Consulting, LLC
9738 Sandie
Helotes, Texas 78023
MartinezEnvironmental@gmail.com

April 19, 2023

Mr. Brandon Haby
Facilities Superintendent
Medina Healthcare System
3100 Avenue E
Hondo, Texas 78861

**RE: Asbestos-Containing Materials Survey
Vacant Medical Office Building
3103 Avenue G
Hondo, Medina County, Texas**

Mr. Haby:

Martinez Asbestos and Environmental Consulting, LLC (MAEC) is pleased to forward this report documenting the results of the Asbestos-Containing Materials (ACM) Survey performed at the above-referenced location. **MAEC** understands an ACM Survey is required for future renovation or demolition activities at the referenced location.

PURPOSE AND SCOPE OF WORK

The purpose of the ACM Survey was to identify and sample suspect ACM at the above-referenced location for laboratory analysis for asbestos content and prepare a report documenting the results of the survey. This report may be used for purposes of notification and permitting with respect to renovation activities at this location.

SURVEY METHODOLOGY

The survey was conducted on April 10, 2023 by Dr. Fernando A. Martinez; a State-licensed Asbestos Consultant (TDSHS license No. 105762) authorized through the Texas Department of State Health Services (TDSHS). The survey was performed pursuant to the *Texas Asbestos Health Protection Rules, March 2003*, regulated in the State of Texas by the TDSHS.

Dr. Martinez' sampling strategy was to locate homogeneous materials and collect bulk samples of suspect ACM for laboratory analysis for asbestos content. The term "homogeneous," as defined by Environmental Protection Agency (EPA) 40 CFR Part 763, means any material having the same color and texture and having been installed in the same general time period. The homogeneous materials were then assessed in terms of friability, condition, and quantity. The term "friable", as defined by the EPA, means a material that when dry can be reduced to a powder using hand pressure.

Suspect ACM observed and sampled included: HVAC duct with mastic, ceiling tile, insulation above drop ceiling, tan sheetrock with associated joint compound, beige streaked floor tile with associated black mastic, light blue sheetrock with associated joint compound, cove base with associated mastic/adhesive, gray floor tile with associated black mastic, exterior brick and grout. It should be noted that there was no window glazing on exterior windows, and the roof was not sampled as to not cause any penetrations as it is intended to remain in place following renovation activities. A total of 27 bulk samples of suspect ACM were collected for laboratory analysis. Sampling layout attached hereto as **Attachment A**.

All samples were submitted for analysis to Crisp Analytical Laboratories in Carrollton, Texas which is accredited by the National Voluntary Accreditation Program (NVLAP) and licensed by the TDSHS under License No. 30-0235. The bulk samples were analyzed for asbestos content by Polarized Light Microscopy (PLM) coupled with Dispersion Staining in accordance with the EPA method outlined in 40 CFR Part 763, Subpart F, Appendix A. The Laboratory Report of Analyses and Chain of Custody are attached hereto as **Attachment(s) B**. Relevant MAEC staff licenses and certifications are attached as **Attachment C**.

RESULTS

The EPA 40 CFR Part 763 defines ACM as any material or product, which contains more than one (1) percent asbestos by weight or volume. **Based on the report of analyses, NONE of the materials tested contained ACM fibers.**

RECOMMENDATIONS

If during the renovation or demolition activities other suspect materials are observed that have not been sampled, work should cease, and suspect materials sampled for ACM.

LIMITATIONS

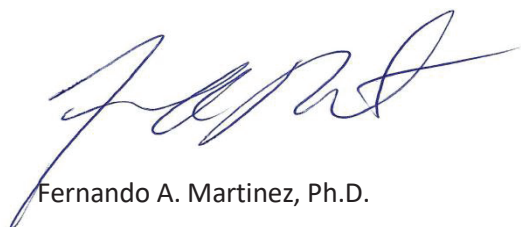
It should be noted that during its prime, asbestos was used in over 3,000 different products and can still be found in some today. An attempt to locate and identify "all" asbestos was beyond the scope of this survey. Consequently, there may be materials and/or areas containing asbestos or other hazardous materials, which were inaccessible and require destructive sampling techniques to access.

CLOSING

We appreciate the opportunity to be of professional service to you on this important project. Should you have questions regarding this report or require additional information, please contact our office at your convenience.

Very truly yours,

Martinez Asbestos and Environmental Consulting, LLC



Fernando A. Martinez, Ph.D.

Asbestos Individual Consultant

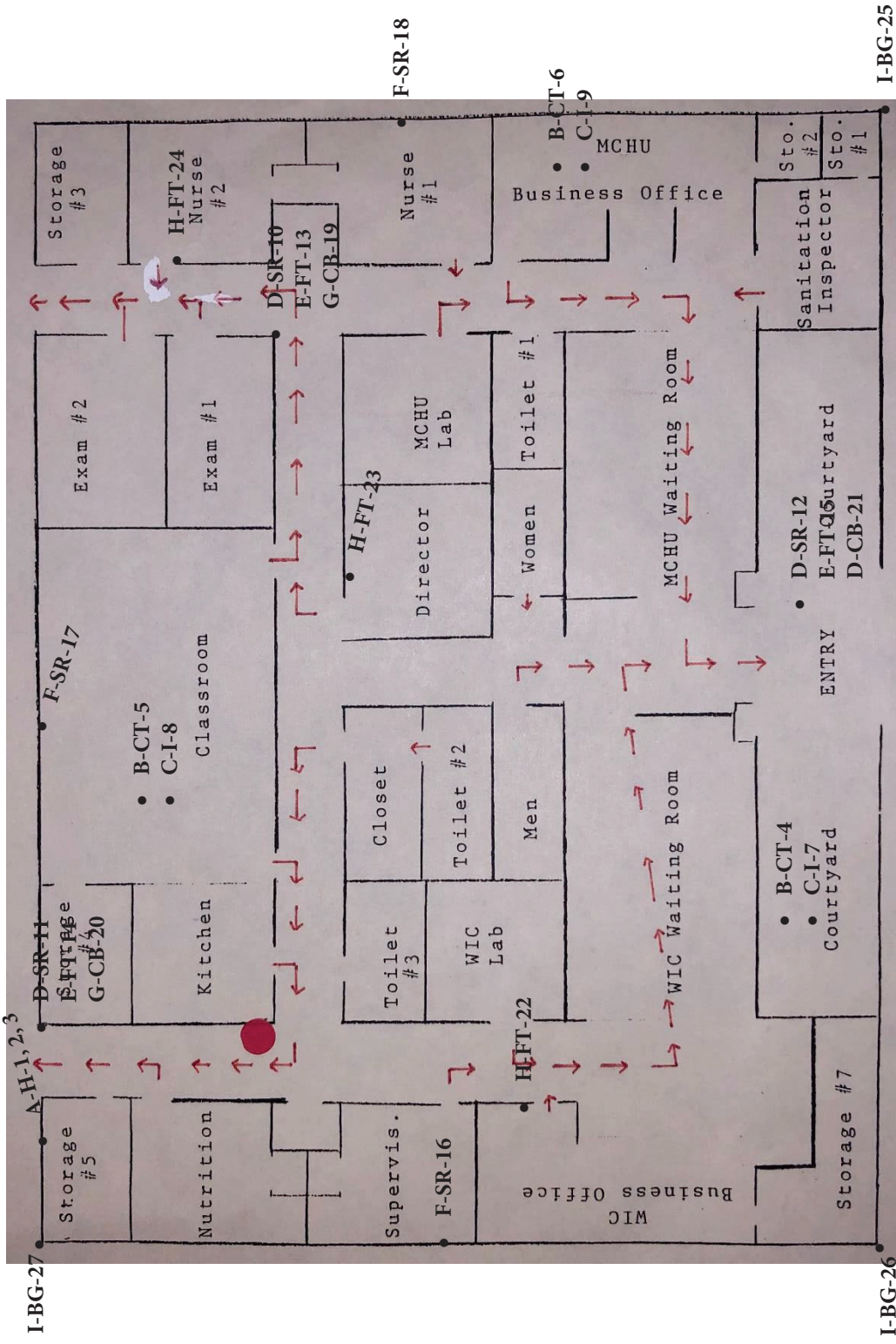
TDSHS License No. 10-5762

Martinez Asbestos and Environmental Consulting, LLC
9738 Sandie, Helotes, Texas 78023

Office Phone: (210) 365-6900
MartinezEnvironmental@gmail.com

ATTACHMENT A
MATERIAL SAMPLING LOCATIONS

Hondo Healthcare System
Vacant Medical Office Building
Asbestos Survey - Sampling Layout
3103 Avenue G
Hondo, Medina County, Texas 78861



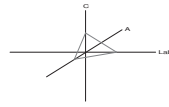
[Signature]
ACM Survey
04/10/2023

- ACM sampling locations
all results negative - no acm detected

**ATTACHMENT B
LABORATORY REPORT OF ANALYSIS
AND
CHAIN-OF-CUSTODY**

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Phone 225-751-5632
Fax 225-751-5634

Materials Characterization - Bulk Asbestos Analysis

Laboratory Analysis Report - Polarized Light

Martinez Asbestos & Environmental Consulting

9738 Sadie
Helotes, TX 78023

Attn: Fernando Martinez

Customer Project: 3103A-23 Vacant Office Building
Reference #: CAL23043044RL Date: 04/17/23

Analysis and Method

Summary of polarized light microscopy (PLM / Stereomicroscopy bulk asbestos analysis) using the methods described in 40CFR Part 763 Appendix E to Subpart E (Interim and EPA 600 / R-93 / 116 (Improved)). The sample is first viewed with the aid of a stereomicroscope. Numerous liquid slide preparations are created for analysis under the polarized microscope where identifications and quantifications are performed. Calibrated liquid refractive oils are used as liquid mounting medium. These oils are used for identification (dispersion staining). A calibrated visual estimation is reported, should any asbestiform mineral be present. Other techniques such as acid washing are used in conjunction with refractive oils for detection of smaller quantities of asbestos. All asbestos percentages are based on calibrated visual estimation traceable to NIST standards for regulated asbestos. Traceability to measurement and calibration is achieved by using known amounts and types of asbestos from standards where analyst and laboratory accuracy are measured. As little as 0.001% asbestos can be detected in favorable samples, while detection in unfavorable samples may approach the detection limit of 0.50% (well above the laboratory definition of trace).

Discussion

Vermiculite containing samples may contain trace amounts of actinolite/tremolite. When not detected by PLM, these samples should be analyzed using TEM methods and / or water separation techniques. Suspected actinolite/vermiculite presence will be indicated through the sample comment section of this report.

Fibrous talc containing samples may contain a regulated asbestos fiber known as anthophyllite. Under certain conditions the same fiber may actually contain both talc and anthophyllite (a phenomenon called intergrowth). Again, TEM detection methods are recommended. CA Labs PLM report comments will denote suspected amounts of asbestiform anthophyllite with talc, where further analysis is recommended.

Some samples (floor tiles, surfacings, etc.) may contain fibers too small to be detectable by PLM analysis and should be analyzed by TEM bulk protocols.

A "trace asbestos" will be reported if the analyst observes far less than 1% asbestos. CA Labs defines "trace asbestos" as a few fibers detected by the analyst in several preparations and will indicate as such under these circumstances.

Since allowable variation in quantification of samples close to 1% is high, <1% may be reported. Such results are ideal for point counting, and the technique is mandatory for friable samples (NESHAP, Nov. 1990 and clarification letter 8 May 1991) under 1% percent asbestos or "trace asbestos". **In order to make all initial PLM reports issued from CA Labs NESHAP compliant, all <1% asbestos results (except floor tiles) will be point counted at no additional charge.**

Qualifications

CA Labs is accredited by the National Voluntary Accreditation Program (NVLAP) for selected test methods for airborne fiber analysis (TEM), and for bulk asbestos fiber analysis (PLM). CA Labs is also accredited by AIHA LAP, LLC. in the PLM asbestos field of testing for Industrial Hygiene. All analysts have completed college courses or hold a degree in a natural science (geology, biology, or environmental science). Recognition by a state professional board in one these disciplines is preferred, but not required. Extensive in-house training programs are used to augment the educational background of the analyst. The Laboratory Director and Quality Manager have received supplemental McCrone Research training for asbestos identification. Analysis performed at Crisp Analytical Labs, LLC 1929 Old Denton Road Carrollton, TX 75006

Dallas NVLAP Lab Code 200349-0 TEM/PLM TCEQ# T104704513-15-3 TDH 30-0235
AIHA LAP, LLC Laboratory #102929

CA Labs
Dedicated to Quality

Crisp Analytical, L.L.C.

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Carrollton, TX 75006
Phone 972-242-2754
Fax 972-242-2798

CA Labs, L.L.C.

12232 Industriplex, Suite 32
Baton Rouge, LA 70809
Phone 225-751-5632
Fax 225-751-5634

Overview of Project Sample Material Containing Asbestos

Customer Project:		3103A-23 Vacant Office Building		CA Labs Project #: CAL23043044RL	
Laboratory Sample ID	Sample #	Layer #	Analysts Physical Description of Subsample	Asbestos type / calibrated visual estimate percent	List of Affected Building Material Types

No Asbestos Detected.

Dallas NVLAP Lab Code 200349-0 TEM/PLM TCEQ# T104704513-15-3 TDH 30-0235
AIHA LAP, LLC Laboratory #102929

Glossary of abbreviations (non-asbestos fibers and non-fibrous minerals):

ca - carbonate	pe - perlite	fg - fiberglass	pa - palygorskite (clay)
gypsum - gypsum	qu - quartz	mw - mineral wool	
bi - binder		wo - wollastinite	
or - organic		ta - talc	
ma - matrix		sy - synthetic	
mi - mica		ce - cellulose	
ve - vermiculite		br - brucite	
ot - other		ka - kaolin (clay)	

This report relates to the items tested. This report is not to be used by the customer to claim product certification, approval or endorsement by NVLAP, NIST, AIHA LAP, LLC, or any other agency of the federal government. This report may not be reproduced except in full without written permission from CA Labs. These results are submitted pursuant to CA Labs' current terms and sale, condition of sale, including the company's standard warranty and limitations of liability provisions and no responsibility or liability is assumed for the manner in which the results are used or interpreted. Unless notified in writing to return the samples covered by this report, CA Labs will store the samples for a period of ninety (90) days before discarding. A shipping or handling fee may be assessed for the return of any samples.

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Polarized Light Asbestiform Materials Characterization

Customer Info: Martinez Asbestos & Environmental Consulting 9738 Sadie Helotes, TX 78023	Attn: Fernando Martinez	Customer Project: 3103A-23 Vacant Office Building	CA Labs Project #: CAL23043044RL
Phone # 210-365-6900		Turnaround Time: 3 Days	Date: 4/17/2023
Fax #			Samples Rec'd: 4/13/23 10:30am
			Date Of Sampling: 4/10/2023
			Purchase Order #:

Laboratory Sample ID	Sample #	Com ment	Layer #	Analysts Physical Description of Subsample	Homo-geneo us (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
33858	A-H-01		01-1	<i>HVAC duct/ white sealant with foil</i>	n	None Detected		100% qu,gy,bi,ot
33859	A-H-02		02-1	<i>HVAC duct/ white sealant with brown paper and foil</i>	n	None Detected	10% ce	90% qu,bi,gy,ot
33860	A-H-03		03-1	<i>HVAC duct/ white sealant with brown paper and foil</i>	n	None Detected	10% ce	90% qu,bi,gy,ot
33861	B-CT-04		04-1	Ceiling tile/ tan ceiling tile	y	None Detected	35% ce 35% fg	30% qu,pe,ca
33862	B-CT-05		05-1	Ceiling tile/ tan ceiling tile	y	None Detected	35% ce 35% fg	30% qu,pe,ca
33863	B-CT-06		06-1	Ceiling tile/ tan ceiling tile	y	None Detected	35% ce 35% fg	30% qu,pe,ca
33864	C-I-07		07-1	Insulation/ pink insulation	y	None Detected	100% fg	


Dallas NVLAP Lab Code 200349-0 TEM/PLM TCEQ# T104704513-15-3 TDH 30-0235

AIHA LAP, LLC Laboratory #102929

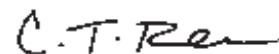
Analysis Method: Interim (40CFR Part 763 Appendix E to Subpart E) / Improved (EPA-600 / R-93/116). All samples received in good condition unless noted.
Preparation Method: HCL acid washing for carbonate based samples, chemical reduction for organically bound components, oil immersion for identification of asbestos types by dispersion attaining / becke line method.

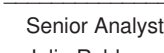
ca - carbonate	mi - mica	fg - fiberglass	ce - cellulose
gy - gypsum	ve - vermiculite	mw - mineral wool	br - brucite
bi - binder	ot - other	wo - wollastonite	ka - kaolin (clay)
or - organic	pe - perlite	ta - talc	pa - palygorskite (clay)
ma - matrix	qu - quartz	sy - synthetic	

Approved Signatories:


John Monaco
Analyst

1. Fire Damage significant fiber damage - reported percentages reflect unaltered fibers
2. Fire Damage no significant fiber damages effecting fibrous percentages
3. Actinolite in association with Vermiculite
4. Layer not analyzed - attached to previous positive layer and contamination is suspected
5. Not enough sample to analyze


Technical Manager
Tanner Rasmussen


Senior Analyst
Julio Robles

6. Anthophyllite in association with Fibrous Talc
7. Contamination suspected from other building materials
8. Favorable scenario for water separation on vermiculite for possible analysis by another method
9. < 1% Result point counted positive
10. TEM analysis suggested

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Polarized Light Asbestiform Materials Characterization

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Phone # 210-365-6900		Turnaround Time: 3 Days	Date: 4/17/2023
Fax #			Samples Rec'd: 4/13/23 10:30am
			Date Of Sampling: 4/10/2023
			Purchase Order #:

Laboratory Sample ID	Sample #	Comment	Layer #	Analysts Physical Description of Subsample	Homo-geneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
33865	C-I-08		08-1	Insulation/ pink insulation	y	None Detected	100% fg	
33866	C-I-09		09-1	Insulation/ pink insulation	y	None Detected	100% fg	
33867	D-SR-10		10-1	Sheetrock/joint compound/ tan surfaced white compound	n	None Detected	100% qu,bi,ca	
33867			10-2	white drywall with brown paper	n	None Detected	20% ce	80% qu,gy
33868	D-SR-11		11-1	Sheetrock/joint compound/ tan surfaced white compound	n	None Detected	100% qu,bi,ca	
33868			11-2	white drywall with brown paper	n	None Detected	20% ce	80% qu,gy
33869	D-SR-12		12-1	Sheetrock/joint compound/ tan surfaced white compound	n	None Detected	100% qu,bi,ca	


Dallas NVLAP Lab Code 200349-0 TEM/PLM TCEQ# T104704513-15-3 TDH 30-0235

AIHA LAP, LLC Laboratory #102929

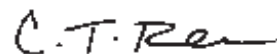
Analysis Method: Interim (40CFR Part 763 Appendix E to Subpart E) / Improved (EPA-600 / R-93/116). All samples received in good condition unless noted.
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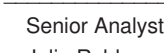
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gy - gypsum	ve - vermiculite	mw - mineral wool	br - brucite
bi - binder	ot - other	wo - wollastonite	ka - kaolin (clay)
or - organic	pe - perlite	ta - talc	pa - palygorskite (clay)
ma - matrix	qu - quartz	sy - synthetic	

Approved Signatories:


John Monaco
Analyst

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Polarized Light Asbestiform Materials Characterization

Customer Info:	Attn: Fernando Martinez	Customer Project:	CA Labs Project #:
Martinez Asbestos & Environmental Consulting		3103A-23 Vacant Office Building	CAL23043044RL
9738 Sadie Helotes, TX 78023		Turnaround Time:	Date: 4/17/2023
		3 Days	Samples Rec'd: 4/13/23 10:30am
Phone #	210-365-6900		Date Of Sampling: 4/10/2023
Fax #			Purchase Order #:

Laboratory Sample ID	Sample #	Com ment	Layer #	Analysts Physical Description of Subsample	Homo-geneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
33869			12-2	white drywall with brown paper	n	None Detected	20% ce	80% qu,gy
				Floor tile with mastic/ gray				
33870	E-FT-13		13-1	floor tile	y	None Detected		100% qu,ca
33870			13-2	black mastic	y	None Detected		100% gy,bi
				Floor tile with mastic/ gray				
33871	E-FT-14		14-1	floor tile	y	None Detected		100% qu,ca
33871			14-2	black mastic	y	None Detected		100% gy,bi
				Floor tile with mastic/ gray				
33872	E-FT-15		15-1	floor tile	y	None Detected		100% qu,ca
33872			15-2	black mastic	y	None Detected		100% gy,bi


Dallas NVLAP Lab Code 200349-0 TEM/PLM TCEQ# T104704513-15-3 TDH 30-0235

AIHA LAP, LLC Laboratory #102929


Analysis Method: Interim (40CFR Part 763 Appendix E to Subpart E) / Improved (EPA-600 / R-93/116). All samples received in good condition unless noted.
Preparation Method: HCL acid washing for carbonate based samples, chemical reduction for organically bound components, oil immersion for identification of asbestos types by dispersion attaining / becke line method.


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bi - binder	ot - other	wo - wollastonite	ka - kaolin (clay)
or - organic	pe - perlite	ta - talc	pa - palygorskite (clay)
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Approved Signatories:


John Monaco
Analyst

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Fax 225-751-5634

Polarized Light Asbestiform Materials Characterization

Customer Info: Martinez Asbestos & Environmental Consulting 9738 Sadie Helotes, TX 78023	Attn: Fernando Martinez	Customer Project: 3103A-23 Vacant Office Building	CA Labs Project #: CAL23043044RL
Phone # 210-365-6900		Turnaround Time: 3 Days	Date: 4/17/2023
Fax #			Samples Rec'd: 4/13/23 10:30am
			Date Of Sampling: 4/10/2023
			Purchase Order #:

Laboratory Sample ID	Sample #	Com ment	Layer #	Analysts Physical Description of Subsample	Homo-geneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
33873	F-SR-16		16-1	Sheetrock/joint compound/ <i>blue surfaced white compound</i>	n	None Detected		100% qu,bi,ca
33873			16-2	<i>white drywall with brown paper</i>	n	None Detected	20% ce	80% qu,gy
33874	F-SR-17		17-1	Sheetrock/joint compound/ <i>blue surfaced white compound</i>	n	None Detected		100% qu,bi,ca
33874			17-2	<i>white compound (beneath tape)</i>	y	None Detected		100% qu,mi,ca
33874			17-3	<i>white drywall with brown paper</i>	n	None Detected	20% ce	80% qu,gy
33875	F-SR-18		18-1	Sheetrock/joint compound/ <i>blue surfaced white compound</i>	n	None Detected		100% qu,bi,ca
33875			18-2	<i>white drywall with brown paper</i>	n	None Detected	20% ce	80% qu,gy


Dallas NVLAP Lab Code 200349-0 TEM/PLM TCEQ# T104704513-15-3 TDH 30-0235

AIHA LAP, LLC Laboratory #102929

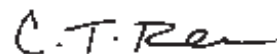
Analysis Method: Interim (40CFR Part 763 Appendix E to Subpart E) / Improved (EPA-600 / R-93/116). All samples received in good condition unless noted.
Preparation Method: HCL acid washing for carbonate based samples, chemical reduction for organically bound components, oil immersion for identification of asbestos types by dispersion attaining / becke line method.

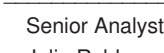
ca - carbonate	mi - mica	fg - fiberglass	ce - cellulose
gy - gypsum	ve - vermiculite	mw - mineral wool	br - brucite
bi - binder	ot - other	wo - wollastonite	ka - kaolin (clay)
or - organic	pe - perlite	ta - talc	pa - palygorskite (clay)
ma - matrix	qu - quartz	sy - synthetic	

Approved Signatories:


John Monaco
Analyst

1. Fire Damage significant fiber damage - reported percentages reflect unaltered fibers
2. Fire Damage no significant fiber damages effecting fibrous percentages
3. Actinolite in association with Vermiculite
4. Layer not analyzed - attached to previous positive layer and contamination is suspected
5. Not enough sample to analyze


Technical Manager
Tanner Rasmussen


Senior Analyst
Julio Robles

6. Anthophyllite in association with Fibrous Talc
7. Contamination suspected from other building materials
8. Favorable scenario for water separation on vermiculite for possible analysis by another method
9. < 1% Result point counted positive
10. TEM analysis suggested

CA Labs
Dedicated to Quality

Crisp Analytical, L.L.C.
1929 Old Denton Road
Carrollton, TX 75006
Phone 972-242-2754
Fax 972-242-2798

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Polarized Light Asbestiform Materials Characterization

Customer Info: Martinez Asbestos & Environmental Consulting 9738 Sadie Helotes, TX 78023	Attn: Fernando Martinez	Customer Project: 3103A-23 Vacant Office Building	CA Labs Project #: CAL23043044RL
Phone # 210-365-6900		Turnaround Time: 3 Days	Date: 4/17/2023
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Laboratory Sample ID	Sample #	Com ment	Layer #	Analysts Physical Description of Subsample	Homogeneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
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				Cove base with adhesive/				
33876	G-CB-19	19-1	black baseboard	y	None Detected		100% gy,ma	

33876		19-2	tan mastic	y	None Detected	3% ta	97% gy,bi	
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33876		19-3	white compound	y	None Detected		100% mi,ca	
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				Cove base with adhesive/				
33877	G-CB-20	20-1	gray baseboard	y	None Detected		100% gy,ma	

33877		20-2	tan mastic	y	None Detected	3% ta	97% gy,bi	
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33877		20-3	white compound	y	None Detected		100% mi,ca	
-------	--	------	----------------	---	---------------	--	------------	--

				Cove base with adhesive/				
33878	G-CB-21	21-1	gray baseboard	y	None Detected		100% gy,ma	


Dallas NVLAP Lab Code 200349-0 TEM/PLM TCEQ# T104704513-15-3 TDH 30-0235

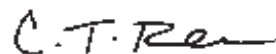
AIHA LAP, LLC Laboratory #102929


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Preparation Method: HCL acid washing for carbonate based samples, chemical reduction for organically bound components, oil immersion for identification of asbestos types by dispersion attaining / becke line method.

- | | | | |
|----------------|------------------|-------------------|--------------------------|
| ca - carbonate | mi - mica | fg - fiberglass | ce - cellulose |
| gy - gypsum | ve - vermiculite | mw - mineral wool | br - brucite |
| bi - binder | ot - other | wo - wollastonite | ka - kaolin (clay) |
| or - organic | pe - perlite | ta - talc | pa - palygorskite (clay) |
| ma - matrix | qu - quartz | sy - synthetic | |

Approved Signatories:


John Monaco
Analyst


Technical Manager
Tanner Rasmussen


Senior Analyst
Julio Robles

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Polarized Light Asbestiform Materials Characterization

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Phone # 210-365-6900		Turnaround Time: 3 Days	Date: 4/17/2023
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Laboratory Sample ID	Sample #	Com ment	Layer #	Analysts Physical Description of Subsample	Homo-geneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
33878			21-2	tan mastic	y	None Detected		100% gy,bi
33878			21-3	white compound	y	None Detected		100% mi,ca
				Floor tile with mastic/ gray				
33879	H-FT-22		22-1	floor tile	y	None Detected		100% qu,ca
33879			22-2	tan mastic with debris	n	None Detected		100% gy,bi,ot
				Floor tile with mastic/ gray				
33880	H-FT-23		23-1	floor tile	y	None Detected		100% qu,ca
33880			23-2	tan and black mastic	n	None Detected		100% gy,bi
				Floor tile with mastic/ gray				
33881	H-FT-24		24-1	floor tile	y	None Detected		100% qu,ca


Dallas NVLAP Lab Code 200349-0 TEM/PLM TCEQ# T104704513-15-3 TDH 30-0235

AIHA LAP, LLC Laboratory #102929

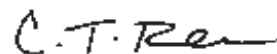
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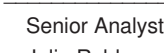
ca - carbonate	mi - mica	fg - fiberglass	ce - cellulose
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John Monaco
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Polarized Light Asbestiform Materials Characterization

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Martinez Asbestos & Environmental Consulting
9738 Sadie
Helotes, TX 78023

Customer Project: 3103A-23 Vacant Office Building
Turnaround Time: 3 Days

CA Labs Project #: CAL23043044RL
Date: 4/17/2023
Samples Rec'd: 4/13/23 10:30am
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Fax #

Laboratory Sample ID	Sample #	Comment	Layer #	Analysts Physical Description of Subsample	Homogeneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
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33881			24-2	tan mastic	y	None Detected		100% gy,bi
				Brick and grouting/ red				
33882	I-BG-25		25-1	bricking	y	None Detected		100% qu,ot
				Brick and grouting/ red				
33882			25-2	gray grouting	y	None Detected		100% qu,ca
				Brick and grouting/ red				
33883	I-BG-26		26-1	bricking	y	None Detected		100% qu,ot
				Brick and grouting/ red				
33883			26-2	gray grouting	y	None Detected		100% qu,ca
				Brick and grouting/ red				
33884	I-BG-27		27-1	bricking	y	None Detected		100% qu,ot
				Brick and grouting/ red				
33884			27-2	gray grouting	y	None Detected		100% qu,ca


Dallas NVLAP Lab Code 200349-0 TEM/PLM TCEQ# T104704513-15-3 TDH 30-0235

AIHA LAP, LLC Laboratory #102929


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Asbestos Sampling Record/Chain-of-Custody Form

CAL23043044

Project: Vacant Office Building Project No. 3103A-23

Project Location: 3103 Ave G, Hondo, Texas 78861 Insp. Date 04-10-2023

HG Area	Material Description	Qty. LF/SF	Friable Y/N	Material Locations
A	HVAC Duct			Mechanical Room
B	Ceiling Tile			Drop ceiling - Throughout
C	Insulation (pink)			Above Drop ceiling - Throughout
D	Sheetrock/Joint Compound (Tan)			Interior walls - Throughout
E	Floor Tile w/Black Mastic (large streaked)			Interior flooring - Halls & offices

Sample No. (Proj. Abrev./HG Area #)	Sampling Location	Condition	% Asbestos
A-H-01	HVAC Duct - Mechanical Room	good ↓	
A-H-02	↓		
A-H-03	↓		
B-CT-04	Interior "Court yard" Area		
B-CT-05	"Classroom"		
B-CT-06	"Business office"		
C-I-07	Interior "Court yard" Area		
C-I-08	"Classroom"		
C-I-09	"Business office"		
D-SR-10	Hallway wall		
D-SR-11	NE Rear Exit Hall		
D-SR-12	Front Entry - Partition wall		
E-FT-13	Hallway - Flooring		
E-FT-14	NE Rear Exit - Hall flooring		
E-FT-15	Front Entry Area - Near partition		

HG Designations: VT=vinyl tile; MS=mastic; JC=joint compound; SR=wallboard; TX=texture; DM=duct mastic; CB= cove base; CM= cove mastic; CT=ceiling tile; RC=roof cement; RT=roof tar; TS=TSI; VD=vibration dampener

Others: windows - no glazing; roof - not tested 10:30AM

Relinquished by: _____ Date: _____ Received by: APR 13 2023 Date: _____
 Relinquished by: _____ Date: _____ Received by: [Signature] Date: _____

Sampled and inspected by: Fernando A. Martinez, Ph.D. License # 105762 Send results by FAX to: martinezenvironmental@gmail.com

Analysis requested: PLM Point Count if <10% by PLM
 PCM Progressive (stop @ 1st positive result per homogeneous area)
 Don't analyze latex mastic Don't analyze fiberglass Composite Other
 Turnaround Time requested: 24 hour 48 hour 3 day 5 day Other
3-day Turnaround

Asbestos Sampling Record/Chain-of-Custody Form

CAL 23043044

Project: Vacant Office Building Project No. 3103A-23

Project Location: 3103 Avenue G, Hondo, TX 78861 Insp. Date 04-10-2023

HG Area	Material Description	Qty. LF/SF	Friable Y/N	Material Locations
F	Sheetrock/Joint Compound (light blue)			Interior walls - Accent walls
G	Cove Base of Adhesive			Floor Trim - Throughout
H	Floor Tile w/mastic (gray)			Office Flooring
I	Ext Brick & Grout			Exterior Columns

Sample No. (Proj. Abrev./HG Area #)	Sampling Location	Condition	% Asbestos
F-SR-16	"Supervisor office"	good	
F-SR-17	"Classroom"		
F-SR-18	"Nurse #2 office"		
G-CB-19	Hallway - Floor Trim		
G-CB-20	NE Rear Exit - Floor Trim		
G-CB-21	Entry way - near partition - Floor Trim		
H-FT-22	"Business office" - Flooring		
H-FT-23	"Director office" - Flooring		
H-FT-24	"Nurse #2 office" - Flooring		
I-BG-25	Exterior Brick & Grout		
I-BG-26	↓		
I-BG-27	↓		

HG Designations: VT=vinyl tile; MS=mastic; JC=joint compound; SR=wallboard; TX=texture; DM=duct mastic; CB= cove base; CM= cove mastic; CT=ceiling tile; RC=roof cement; RT=roof tar; TS=TSI; VD=vibration dampener

Others:

Exterior windows - no glazing; Roof not tested

10:30AM

Relinquished by: _____ Date: _____ Received by: APR 13 2023 Date: _____

Relinquished by: _____ Date: _____ Received by: [Signature] Date: _____

Sampled and inspected by: Fernando A. Martinez, Ph.D. License # 105762 Send results by FAX to: martinezenvironmental@gmail.com
 (Name and License No.) [Signature]

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 Turnaround Time requested: 24 hour 48 hour 3 day 5 day Other

3-day Turn Around

**ATTACHMENT C
STAFF AND FIRM LICENSES**



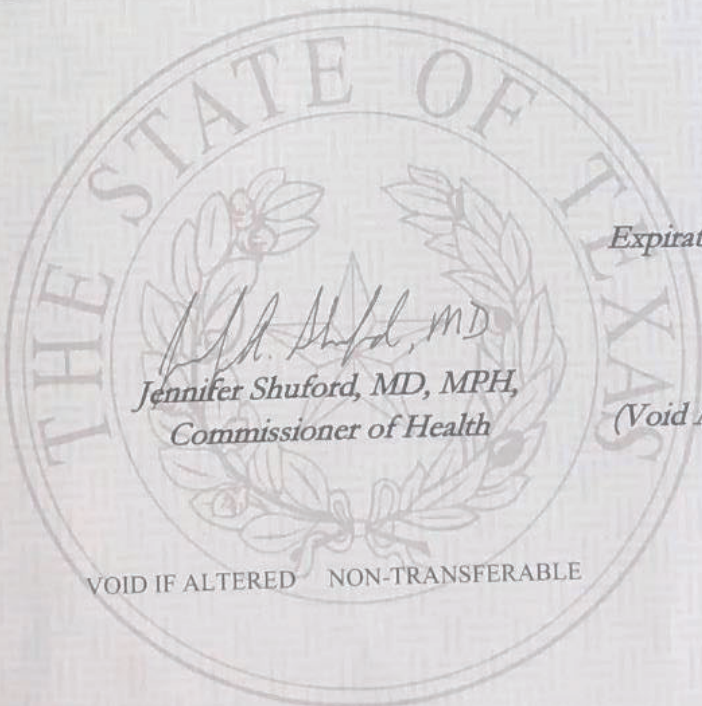
Texas Department of State Health Services

MARTINEZ ASBESTOS AND ENVIRONMENTAL CONSULTING LLC

is certified to perform as an

Asbestos Consultant Agency

in the State of Texas and is hereby governed by the rights, privileges and responsibilities set forth in Texas Occupations Code, Chapter 1954 and Title 12, Texas Administrative Code, Chapter 295 relating to Texas Asbestos Health Protection, as long as this license is not suspended or revoked.



License Number: 100570

Expiration Date: 01/09/2025

Control Number: 97543

*Jennifer Shuford, MD, MPH,
Commissioner of Health*

(Void After Expiration Date)

VOID IF ALTERED NON-TRANSFERABLE

SEE BACK



**Texas Department of
State Health Services**

Asbestos Individual Consultant

FERNANDO A MARTINEZ

License No. 105762

Control No. 97892

Expiration Date: 18-Oct-2023



SECTION 00 41 00 BID FORM

THE PROJECT AND THE PARTIES

1.01 TO: MEDINA HEALTHCARE SYSTEM - MEDINA REGIONAL HOSPITAL

1.02 FOR: NEW ADMINISTRATION BUILDING RENOVATION – HONDO

1.03 DATE: _____ (BIDDER TO ENTER DATE)

1.04 SUBMITTED BY:

- A. Bidder's Full Name _____
- B. Address _____
- C. City, State, Zip _____

1.05 OFFER

A. Having examined the Place of The Work and all matters referred to in the Instructions to Bidders and the Contract Documents prepared by GRG, for the above mentioned project, we, the undersigned, hereby offer to enter into a Contract to perform the Work for the Sum of:

B. _____
_____ dollars
(\$ _____), in lawful money of the United States of America.

C. We have included the required performance assurance bonds in the Bid Amount as required by Section 00 73 00 Instructions to Bidders.

1. The cost of the required performance assurance bonds is _____ dollars
(\$ _____), in lawful money of the United States of America.

D. All applicable federal taxes are included and State of Texas sales and use taxes are included in the Bid Sum.

1.06 ACCEPTANCE

A. This offer shall be open to acceptance and is irrevocable for thirty days from the bid closing date.

B. If this bid is accepted by Owner within the time period stated above, we will:

- 1. Execute the Agreement within seven days of receipt of Notice of Award.
- 2. Furnish the required bonds within seven days of receipt of Notice of Award.
- 3. Commence work within seven days after written Notice to Proceed of this bid.

1.07 CONTRACT TIME

A. If this Bid is accepted, we will:

- 1. Complete the Work within our specified time period as follows:

_____ (Insert Number of Days using Words)

_____ (Insert Number of Days using Numbers)

- 2. Liquidated damages shall be assessed for failure to complete work within the amount of time stated Section 00 21 13 "instructions to Bidders: and within the Owner Contractor Agreement.

1.08 CHANGES TO THE WORK

- A. When Architect establishes that the method of valuation for Changes in the Work will be net cost plus a percentage fee in accordance with General Conditions, our percentage fee will be:
 - 1. _____percent overhead and profit on the net cost of our own Work;
 - 2. _____percent on the cost of work done by any Subcontractor.
- B. On work deleted from the Contract, our credit to Owner shall be Architect-approved net cost plus _____of the overhead and profit percentage noted above.

1.09 ADDENDA

- A. The following Addenda have been received. The modifications to the Bid Documents noted below have been considered and all costs are included in the Bid Sum.
 - 1. Addendum # _____ Dated _____.
 - 2. Addendum # _____ Dated _____.
 - 3. Addendum # _____ Dated _____.
 - 4. Addendum # _____ Dated _____.

1.10 BID FORM SUPPLEMENTS

- A. The following Supplements are attached to this Bid Form and are considered an integral part of this Bid Form:
 - 1. Document 00 43 36 - Proposed Subcontractors Form: Include the names of all Subcontractors and the portions of the Work they will perform.

1.11 TAX EXEMPT STATUS

- A. The Owner is a tax exempt entity and as such is not subject to sales tax levies. The Base Bid Sum therefore does not include an allowance for such taxes.
- B. In accordance with Ruling No. 9, Repairment and Contractor (amended April 3, 1962) Limited Sales, Excise and Use Tax Rules and Regulations, Comptroller of Public Accounts, State of Texas the cost of materials for this Project will be a stated amount in the Owner/Contractor Agreement and as such, sales taxes will not be levied on the cost of the materials. Accordingly, no sales taxes have been included in this proposal. After receipt of request from the Contractor, the Owner will provide evidence of tax exempt status in the form required by the State of Texas.

1.12 REPRESENTATIONS

- A. By the act of submitting this bid/proposal for the proposed project, the Bidder/Proposer (hereinafter referred to as the Bidder) represents that:
 - 1. The Bidder and all subcontractors the Bidder intends to employ have carefully and thoroughly reviewed the drawings, specifications and other bidding documents and have found them complete and free from ambiguities and sufficient for the purpose intended.
 - 2. The Bidder and all workers, employees and subcontractors the Bidder intends to employ are skilled and experienced in the type of construction represented by the bidding documents.
 - 3. The bid amounts are based solely upon the bidding documents and properly issued written addenda and not upon any other written representations.
 - 4. Neither the Bidder nor any of the Bidder's employees, agents, intended suppliers or subcontractors have relied upon any verbal representations from the Owner, or the Owner's employees or agents including architects, engineers or consultants in assembling the bid amounts.

NEW ADMINISTRATION BUILDING RENOVATION – HONDO
MEDINA HEALTHCARE SYSTEM

1.13 BID FORM SIGNATURE(S)

A. The Corporate Seal of

B. _____

C. (Bidder - print the full name of your firm)

D. was hereunto affixed in the presence of:

E. _____

F. (Authorized signing officer, Title)

END OF BID FORM

SECTION 00 43 10 PARTIAL RELEASE OF LIENS

**AFFIDAVIT AND PARTIAL RELEASE OF LIEN
STATE OF TEXAS
COUNTY OF MEDINA**

CHECK ONE:

SUBCONTRACTOR SUPPLIER OTHER: _____

NAME: _____

BEFORE ME, THE UNDERSIGNED AUTHORITY, ON THIS DAY PERSONALLY APPEARED WHO, BEING DULY SWORN, UPON HIS/HER OATH STATES THAT THE FOLLOWING IS TRUE AND CORRECT AND WITHIN HIS/HER PERSONAL KNOWLEDGE:

I AM A DULY AUTHORIZED AGENT FOR (COMPANY NAME), A GENERAL CONTRACTOR (TYPE OF BUSINESS), WHICH HAS AUTHORIZED ME TO MAKE THIS AFFIDAVIT, TO ENTER INTO THE AGREEMENTS AND TO GRANT THE LIEN WAIVERS HEREIN SET FORTH, ON ITS BEHALF.

IN CONSIDERATION OF, AND CONDITIONED UPON RECEIPT OF PAYMENT, THE ABOVE COMPANY DOES HEREBY WAIVE AND RELEASE ALL LIENS, RIGHTS, AND INTEREST (WHETHER CHOATE OR INCHOATE AND INCLUDING, WITHOUT LIMITATION, ALL MECHANIC'S AND MATERIALMAN'S LIENS UNDER THE CONSTITUTION AND STATUTES OF THE STATE OF TEXAS) OWNED, CLAIMED OR HELD, AND TO THE LAND AND IMPROVEMENTS TO THE FULL EXTENT OF THE AMOUNT REQUESTED IN THE PREVIOUS MONTH'S APPLICATION FOR PAYMENT.

FOR CONSIDERATION IN HAND PAID, THE ABOVE COMPANY DOES HEREBY CERTIFY AND ACKNOWLEDGE THAT IT HAS BEEN FULLY PAID, LESS RETAINAGE, FOR ALL WORK AND LABOR DONE, AND FOR MATERIALS SUPPLIED, AS OF _____ (PREVIOUS MONTH) ON THE PROJECT LISTED BELOW.

THE COMPANY AGREES TO DEFEND, INDEMNIFY AND HOLD THE MEDINA HEALTHCARE SYSTEM HARMLESS FROM ANY AND ALL LIENS AND CLAIMS FOR DAMAGES, INCLUDING ATTORNEY'S FEES AND EXPENSES, OF SUPPLIERS OF MATERIALS, SUBCONTRACTORS, EQUIPMENT LESSORS AND ANY OTHER FURNISHING MATERIALS, LABOROR EQUIPMENT IN CONNECTION WITH THE CONSTRUCTION OF THE PROJECT LISTED BELOW.

THE CONTRACTOR SHALL DEFEND, INDEMNIFY, AND HOLD HARMLESS, MEDINA HEALTHCARE SYSTEM AND ALL OF ITS TRUSTEES, OFFICERS, AGENTS, AND EMPLOYEES FROM AND AGAINST ALL SUITS, ACTIONS, OR CLAIMS OF ANY CHARACTER BROUGHT FOR OR ON ACCOUNT OF ANY INJURIES OR DAMAGES (INCLUDING DEATH) RECEIVED OR SUSTAINED BY ANY PERSON OR PROPERTY ON ACCOUNT OF, ARISING OUT OF, OR IN

NEW ADMINISTRATION BUILDING – HONDO
MEDINA HEALTHCARE SYSTEM

**CONNECTION WITH, ANY NEGLIGENT ACT OR OMISSION OF CONTRACTOR OR ANY AGENT,
EMPLOYEE, SUBCONTRACTOR OR SUPPLIER OF CONTRACTOR IN THE EXECUTION OR
PERFORMANCE OF THE CONTRACT FOR THE MEDINA HEALTHCARE SYSTEM ("PROJECT").**

PROJECT: MHS NEW ADMINISTRATION BUILDING RENOVATION – HONDO

COMPANY NAME: _____

SIGNATURE: _____

PRINTED NAME: _____

TITLE: _____

COMPANY ADDRESS: _____

DATE: _____

PHONE: _____

SUBSCRIBED AND SWORN TO ME BEFORE THIS _____ DAY OF _____, 20_____

END OF SECTION

NEW ADMINISTRATION BUILDING – HONDO
MEDINA HEALTHCARE SYSTEM

SECTION 00 43 13 RELEASE OF LIENS

PURSUANT TO THE TERMS OF THE CONTRACT BETWEEN MEDINA HEALTHCARE SYSTEM (HEREAFTER CALLED THE "OWNER") AND _____ (CONTRACTOR'S NAME) (HEREAFTER CALLED THE "CONTRACTOR") DATED _____, OR ITS ASSIGNEES, IF ANY, THE CONTRACTOR UPON FINAL PAYMENT BY THE OWNER DOES REMISE, RELEASE, AND DISCHARGE THE OWNER, ITS OFFICERS, AGENTS, CONSULTANTS, AND EMPLOYEES, INCLUDING THE ARCHITECTS AND ENGINEERS AND THEIR EMPLOYEES OF AND FROM ALL LIABILITIES, OBLIGATIONS, CLAIMS AND DEMANDS WHATSOEVER UNDER OR ARISING FROM THIS CONTRACT AND ASSOCIATED SUBCONTRACTS, EXCEPT: (STATE EXCEPTIONS OR STATE NONE)

THE CONTRACTOR AGREES THAT HE WILL COMPLY WITH ALL THE PROVISIONS OF THIS CONTRACT, INCLUDING WITHOUT LIMITATION THOSE PROVISIONS RELATING TO NOTIFICATION TO THE OWNER AND RELATING TO THE DEFENSE OR PROSECUTION OF LITIGATION. THE COMPANY AGREES TO DEFEND, INDEMNIFY AND HOLD THE MEDINA HEALTHCARE SYSTEM HARMLESS FROM ANY AND ALL LIENS AND CLAIMS FOR DAMAGES, INCLUDING ATTORNEY'S FEES AND EXPENSES, OF SUPPLIERS OF MATERIALS, SUBCONTRACTORS, EQUIPMENT LESSORS AND ANY OTHER FURNISHING MATERIALS, LABOR OR EQUIPMENT IN CONNECTION WITH THE CONSTRUCTION OF THE PROJECT LISTED BELOW.

PROJECT: MHS NEW ADMINISTRATION BUILDING RENOVATION – HONDO

IN WITNESS WHEREOF, THIS RELEASE HAS BEEN EXECUTED THIS _____ DAY OF _____, 20____.

Contractor's Authorized
Representative Signature

Notary Public in and for

_____ County, Texas

MY COMMISSION EXPIRES THE _____ DAY OF _____, 20_____.

END OF SECTION

SECTION 00 43 36 PROPOSED SUBCONTRACTORS FORM

PART 1 PARTICULARS

1.01 HEREWITH IS THE LIST OF SUBCONTRACTORS REFERENCED IN THE BID SUBMITTED BY:

A. (Bidder) _____

1.02 TO (OWNER): _____

1.03 DATED _____ AND WHICH IS AN INTEGRAL PART OF THE BID FORM.

PART 2 LIST OF SUBCONTRACTORS

2.01 WORK SUBJECT.....SUBCONTRACTOR NAME

- A. Sitework
- B. Selective Demolition
- C. Concrete
- D. Steel Framed Entry Canopies Structure
- E. Thermal and Moisture Protection
- F. Finish Carpentry
- G. Cabinetry
- H. Glazing
- I. Hardware
- J. Gypsum Board Systems
- K. Tile
- L. Suspended Acoustical Ceilings
- M. Carpeting/Floors
- N. Painting
- O. Specialties
- P. Fire Accessories
- Q. Plumbing
- R. Mechanical
- S. Electrical
- T. Roofing

PART 3 NOT USED

END OF PROPOSED SUBCONTRACTORS FORM

SECTION 00 50 00
CONTRACTING FORMS AND SUPPLEMENTS

PART 1 GENERAL

1.01 AGREEMENT AND CONDITIONS OF THE CONTRACT

- A. The Agreement is based on AIA A101.
- B. The General Conditions are based on AIA A201 and Supplementary Conditions.

1.02 FORMS

- A. Use the following forms for the specified purposes unless otherwise indicated elsewhere in the Contract Documents.
- B. Bond Forms:
 - 1. Performance and Payment Bond Form: AIA A312.
- C. Post-Award Certificates and Other Forms:
 - 1. Certificate of Insurance Form: ACORD 25.
 - 2. Application for Payment Form: AIA G702 and G703.
- D. Clarification and Modification Forms:
 - 1. Supplemental Instruction Form: AIA G710.
 - 2. Construction Change Directive Form: AIA G714.
 - 3. Change Order Form: AIA G701.
- E. Closeout Forms:
 - 1. Certificate of Substantial Completion Form: AIA G704.
 - 2. Affidavit of Payment of Debts and Claims Form: AIA G706.
 - 3. Affidavit of Release of Liens Form: AIA G706A.
 - 4. Consent of Surety to Final Payment Form: AIA G707.

1.03 REFERENCE STANDARDS

- A. AIA A101 - Standard Form of Agreement Between Owner and Contractor where the basis of Payment is a Stipulated Sum; 2007.
- B. AIA A201 – General Conditions; 2017.
- C. AIA A305 - Contractor's Qualification Statement; 2020.
- D. AIA A312 - Performance Bond and Payment Bond; 2010.
- E. AIA G701 - Change Order; 2001.
- F. AIA G702 - Application and Certificate for Payment; 1992.
- G. AIA G703 - Continuation Sheet; 1992.
- H. AIA G704 - Certificate of Substantial Completion; 2000.
- I. AIA G710 - Architect's Supplemental Instructions; 1992.
- J. AIA G714 - Construction Change Directive; 2007.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

NEW ADMINISTRATION BUILDING RENOVATION – HONDO
MEDINA HEALTHCARE SYSTEM

SECTION 00 52 00 AGREEMENT FORM

PART 1 GENERAL

1.01 FORM OF AGREEMENT

- A. THE AGREEMENT TO BE EXECUTED IS THE AIA A101 –“STANDARD FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR WHERE THE BASIS OF PAYMENT IS A STIPULATED SUM”, 2017 EDITION.**

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF AGREEMENT FORM

DRAFT AIA® Document A101® - 2017

Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum

AGREEMENT made as of the « » day of « » in the year « »
(In words, indicate day, month and year.)

BETWEEN the Owner:
(Name, legal status, address and other information)

« »
« »
« »
« »

and the Contractor:
(Name, legal status, address and other information)

« »
« »
« »
« »

for the following Project:
(Name, location and detailed description)

« »
« »
« »

The Architect:
(Name, legal status, address and other information)

« »
« »
« »
« »

The Owner and Contractor agree as follows.

ADDITIONS AND DELETIONS: The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

The parties should complete A101®-2017, Exhibit A, Insurance and Bonds, contemporaneously with this Agreement. AIA Document A201®-2017, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.



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TABLE OF ARTICLES

- 1 THE CONTRACT DOCUMENTS**
- 2 THE WORK OF THIS CONTRACT**
- 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION**
- 4 CONTRACT SUM**
- 5 PAYMENTS**
- 6 DISPUTE RESOLUTION**
- 7 TERMINATION OR SUSPENSION**
- 8 MISCELLANEOUS PROVISIONS**
- 9 ENUMERATION OF CONTRACT DOCUMENTS**

EXHIBIT A INSURANCE AND BONDS

ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement, and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9.

ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be:

(Check one of the following boxes.)

- [« »] The date of this Agreement.
- [« »] A date set forth in a notice to proceed issued by the Owner.
- [« »] Established as follows:
(Insert a date or a means to determine the date of commencement of the Work.)
 [« »]

If a date of commencement of the Work is not selected, then the date of commencement shall be the date of this Agreement.

§ 3.2 The Contract Time shall be measured from the date of commencement of the Work.

§ 3.3 Substantial Completion

§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion of the entire Work:

(Check one of the following boxes and complete the necessary information.)

- [« »] Not later than « » (« ») calendar days from the date of commencement of the Work.

[« »] By the following date: « »

§ 3.3.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work are to be completed prior to Substantial Completion of the entire Work, the Contractor shall achieve Substantial Completion of such portions by the following dates:

Portion of Work	Substantial Completion Date

§ 3.3.3 If the Contractor fails to achieve Substantial Completion as provided in this Section 3.3, liquidated damages, if any, shall be assessed as set forth in Section 4.5.

ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be « » (\$ « »), subject to additions and deductions as provided in the Contract Documents.

§ 4.2 Alternates

§ 4.2.1 Alternates, if any, included in the Contract Sum:

Item	Price

§ 4.2.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this Agreement. Upon acceptance, the Owner shall issue a Modification to this Agreement. (Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)

Item	Price	Conditions for Acceptance

§ 4.3 Allowances, if any, included in the Contract Sum: (Identify each allowance.)

Item	Price

§ 4.4 Unit prices, if any: (Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price per Unit (\$0.00)

§ 4.5 Liquidated damages, if any: (Insert terms and conditions for liquidated damages, if any.)

« »

§ 4.6 Other: (Insert provisions for bonus or other incentives, if any, that might result in a change to the Contract Sum.)

« »

ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

§ 5.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

« »

§ 5.1.3 Provided that an Application for Payment is received by the Architect not later than the « » day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the « » day of the « » month. If an Application for Payment is received by the Architect after the application date fixed above, payment of the amount certified shall be made by the Owner not later than « » (« ») days after the Architect receives the Application for Payment.

(Federal, state or local laws may require payment within a certain period of time.)

§ 5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Architect may require. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.5 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.6 In accordance with AIA Document A201™–2017, General Conditions of the Contract for Construction, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

§ 5.1.6.1 The amount of each progress payment shall first include:

- .1 That portion of the Contract Sum properly allocable to completed Work;
- .2 That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and
- .3 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified.

§ 5.1.6.2 The amount of each progress payment shall then be reduced by:

- .1 The aggregate of any amounts previously paid by the Owner;
- .2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A201–2017;
- .3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;
- .4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A201–2017; and
- .5 Retainage withheld pursuant to Section 5.1.7.

§ 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to Substantial Completion of the Work, the Owner may withhold the following amount, as retainage, from the payment otherwise due:

(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)

« »

§ 5.1.7.1.1 The following items are not subject to retainage:
(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)

« »

§ 5.1.7.2 Reduction or limitation of retainage, if any, shall be as follows:
(If the retainage established in Section 5.1.7.1 is to be modified prior to Substantial Completion of the entire Work, including modifications for Substantial Completion of portions of the Work as provided in Section 3.3.2, insert provisions for such modifications.)

« »

§ 5.1.7.3 Except as set forth in this Section 5.1.7.3, upon Substantial Completion of the Work, the Contractor may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 5.1.7. The Application for Payment submitted at Substantial Completion shall not include retainage as follows:
(Insert any other conditions for release of retainage upon Substantial Completion.)

« »

§ 5.1.8 If final completion of the Work is materially delayed through no fault of the Contractor, the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A201–2017.

§ 5.1.9 Except with the Owner’s prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

§ 5.2 Final Payment

§ 5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when

- .1 the Contractor has fully performed the Contract except for the Contractor’s responsibility to correct Work as provided in Article 12 of AIA Document A201–2017, and to satisfy other requirements, if any, which extend beyond final payment; and
- .2 a final Certificate for Payment has been issued by the Architect.

§ 5.2.2 The Owner’s final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect’s final Certificate for Payment, or as follows:

« »

§ 5.3 Interest

Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

(Insert rate of interest agreed upon, if any.)

« » % « »

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

The Architect will serve as the Initial Decision Maker pursuant to Article 15 of AIA Document A201–2017, unless the parties appoint below another individual, not a party to this Agreement, to serve as the Initial Decision Maker.

(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

« »

« »

« »

« »

§ 6.2 Binding Dispute Resolution

For any Claim subject to, but not resolved by, mediation pursuant to Article 15 of AIA Document A201–2017, the method of binding dispute resolution shall be as follows:

(Check the appropriate box.)

Arbitration pursuant to Section 15.4 of AIA Document A201–2017

Litigation in a court of competent jurisdiction

Other *(Specify)*

If the Owner and Contractor do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201–2017.

§ 7.1.1 If the Contract is terminated for the Owner’s convenience in accordance with Article 14 of AIA Document A201–2017, then the Owner shall pay the Contractor a termination fee as follows:

(Insert the amount of, or method for determining, the fee, if any, payable to the Contractor following a termination for the Owner’s convenience.)

§ 7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2017.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201–2017 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 The Owner’s representative:

(Name, address, email address, and other information)

§ 8.3 The Contractor’s representative:

(Name, address, email address, and other information)

§ 8.4 Neither the Owner’s nor the Contractor’s representative shall be changed without ten days’ prior notice to the other party.

§ 8.5 Insurance and Bonds

§ 8.5.1 The Owner and the Contractor shall purchase and maintain insurance as set forth in AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum, Exhibit A, Insurance and Bonds, and elsewhere in the Contract Documents.

§ 8.5.2 The Contractor shall provide bonds as set forth in AIA Document A101™–2017 Exhibit A, and elsewhere in the Contract Documents.

§ 8.6 Notice in electronic format, pursuant to Article 1 of AIA Document A201–2017, may be given in accordance with AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, if completed, or as otherwise set forth below:

(If other than in accordance with AIA Document E203–2013, insert requirements for delivering notice in electronic format such as name, title, and email address of the recipient and whether and how the system will be required to generate a read receipt for the transmission.)

« »

§ 8.7 Other provisions:

« »

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

- .1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor
- .2 AIA Document A101™–2017, Exhibit A, Insurance and Bonds
- .3 AIA Document A201™–2017, General Conditions of the Contract for Construction
- .4 AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:

(Insert the date of the E203-2013 incorporated into this Agreement.)

« »

.5 Drawings

Number	Title	Date

.6 Specifications

Section	Title	Date	Pages

.7 Addenda, if any:

Number	Date	Pages

Portions of Addenda relating to bidding or proposal requirements are not part of the Contract Documents unless the bidding or proposal requirements are also enumerated in this Article 9.

.8 Other Exhibits:

(Check all boxes that apply and include appropriate information identifying the exhibit where required.)

[« »] AIA Document E204™–2017, Sustainable Projects Exhibit, dated as indicated below:
(Insert the date of the E204-2017 incorporated into this Agreement.)

« »

[« »] The Sustainability Plan:

Title	Date	Pages

[« »] Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages

.9 Other documents, if any, listed below:

(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201™-2017 provides that the advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or proposal, portions of Addenda relating to bidding or proposal requirements, and other information furnished by the Owner in anticipation of receiving bids or proposals, are not part of the Contract Documents unless enumerated in this Agreement. Any such documents should be listed here only if intended to be part of the Contract Documents.)

« »

This Agreement entered into as of the day and year first written above.

OWNER (Signature)

« »« »

(Printed name and title)

CONTRACTOR (Signature)

« »« »

(Printed name and title)

NEW ADMINISTRATION BUILDING RENOVATION – HONDO
MEDINA HEALTHCARE SYSTEM

SECTION 00 72 00 – GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

PART 1 - GENERAL

1.1 CONTRACT FOR CONSTRUCTION

- A. The General Conditions of the Contract are set forth in the American Institute of Architects Document A201, entitled "General Conditions of the Contract of Construction", dated 2017, containing Articles 1 through 14 and are hereby made part of this Specification.
- B. The General Conditions shall become a part of this Contract and shall apply to the Contractor and all Subcontractors.
- C. Refer to the following modified General Conditions of the Contract for Construction, AIA Document A201, 2017 edition. This modified General Conditions is hereby made a part of these specifications and shall apply to the Contractor and all subcontractors.

PART 2 - PRODUCTS (Not Applicable).

PART 3 – EXECUTION (Not Applicable)

END OF SECTION



AIA® Document A201® – 2007

General Conditions of the Contract for Construction

for the following PROJECT:

(Name and location or address)

New Administration Building Renovation - Hondo
3103 Avenue G
Hondo, Texas 78861

THE OWNER:

(Name, legal status and address)

Medina Regional Hospital
3100 Avenue E
Hondo, Texas 78861

THE ARCHITECT:

(Name, legal status and address)

GRG Professional Services, LLC, dba GRG Architecture
118 Broadway, Suite 620
San Antonio, Texas 78205

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This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Init.

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User Notes:

(3B9ADA32)

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 BASIC DEFINITIONS

§ 1.1.1 THE CONTRACT DOCUMENTS

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding requirements.

§ 1.1.2 THE CONTRACT

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

§ 1.1.3 THE WORK

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 THE PROJECT

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by separate contractors.

§ 1.1.5 THE DRAWINGS

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams.

§ 1.1.6 THE SPECIFICATIONS

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 INSTRUMENTS OF SERVICE

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 INITIAL DECISION MAKER

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2 and certify termination of the Agreement under Section 14.2.2.

§ 1.2 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.3 CAPITALIZATION

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 INTERPRETATION

In the interest of brevity the Contract Documents frequently omit modifying words such as “all” and “any” and articles such as “the” and “an,” but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 OWNERSHIP AND USE OF DRAWINGS, SPECIFICATIONS AND OTHER INSTRUMENTS OF SERVICE

§ 1.5.1 The Architect and the Architect’s consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and will retain all common law, statutory and other reserved rights, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Architect’s or Architect’s consultants’ reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors and material or equipment suppliers are authorized to use and reproduce the Instruments of Service provided to them solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers may not use the Instruments of Service on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Architect and the Architect’s consultants.

§ 1.6 TRANSMISSION OF DATA IN DIGITAL FORM

If the parties intend to transmit Instruments of Service or any other information or documentation in digital form, they shall endeavor to establish necessary protocols governing such transmissions, unless otherwise already provided in the Agreement or the Contract Documents.

ARTICLE 2 OWNER

§ 2.1 GENERAL

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner’s approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term “Owner” means the Owner or the Owner’s authorized representative.

§ 2.1.2 The Owner shall furnish to the Contractor within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of or enforce mechanic’s lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner’s interest therein.

§ 2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

§ 2.2.1 Prior to commencement of the Work, the Contractor may request in writing that the Owner provide reasonable evidence that the Owner has made financial arrangements to fulfill the Owner’s obligations under the Contract. Thereafter, the Contractor may only request such evidence if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) a change in the Work materially changes the Contract Sum; or (3) the Contractor identifies in writing a reasonable concern regarding the Owner’s ability to make payment when due. The Owner shall furnish such evidence as a condition precedent to commencement or continuation of the Work or

the portion of the Work affected by a material change. After the Owner furnishes the evidence, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.2 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.2.3 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.2.4 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.2.5 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.3 OWNER'S RIGHT TO STOP THE WORK

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.4 OWNER'S RIGHT TO CARRY OUT THE WORK

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect or failure. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

ARTICLE 3 CONTRACTOR

§ 3.1 GENERAL

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.2.3, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall make Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless the Contract Documents give other specific instructions concerning these matters. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the jobsite safety thereof and, except as stated below, shall be fully and solely responsible for the jobsite safety of such means, methods, techniques, sequences or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely written notice to the Owner and Architect and shall not proceed with that portion of the Work without further written instructions from the Architect. If the Contractor is then instructed to proceed with the required means, methods, techniques, sequences or procedures without acceptance of changes proposed by the Contractor, the Owner shall be solely responsible for any loss or damage arising solely from those Owner-required means, methods, techniques, sequences or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.4 LABOR AND MATERIALS

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other

facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Except in the case of minor changes in the Work authorized by the Architect in accordance with Sections 3.12.8 or 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

§ 3.5 WARRANTY

The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.6 TAXES

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 PERMITS, FEES, NOTICES AND COMPLIANCE WITH LAWS

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions. If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature, that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 21 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor in writing, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may proceed as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume

the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 ALLOWANCES

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- .1** Allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2** Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- .3** Whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 SUPERINTENDENT

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect the name and qualifications of a proposed superintendent. The Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to the proposed superintendent or (2) that the Architect requires additional time to review. Failure of the Architect to reply within the 14 day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 CONTRACTOR'S CONSTRUCTION SCHEDULES

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.

§ 3.10.2 The Contractor shall prepare a submittal schedule, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, and shall submit the schedule(s) for the Architect's approval. The Architect's approval shall not unreasonably be delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

§ 3.11 DOCUMENTS AND SAMPLES AT THE SITE

The Contractor shall maintain at the site for the Owner one copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and one copy of approved Shop Drawings, Product Data, Samples and similar required submittals. These shall be available to the Architect and shall be delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. Their purpose is to demonstrate the way by which the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve and submit to the Architect Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such written notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. The Contractor shall not be

required to provide professional services in violation of applicable law. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall cause such services or certifications to be provided by a properly licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review, approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Contractor shall not be responsible for the adequacy of the performance and design criteria specified in the Contract Documents.

§ 3.13 USE OF SITE

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.14 CUTTING AND PATCHING

§ 3.14.1 The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting and patching shall be restored to the condition existing prior to the cutting, fitting and patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or separate contractors by cutting, patching or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter such construction by the Owner or a separate contractor except with written consent of the Owner and of such separate contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's consent to cutting or otherwise altering the Work.

§ 3.15 CLEANING UP

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 ACCESS TO WORK

The Contractor shall provide the Owner and Architect access to the Work in preparation and progress wherever located.

§ 3.17 ROYALTIES, PATENTS AND COPYRIGHTS

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for such defense or loss when a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications or other documents prepared by the Owner or Architect. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a copyright or a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Architect.

§ 3.18 INDEMNIFICATION

§ 3.18.1 To the fullest extent permitted by law the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

ARTICLE 4 ARCHITECT

§ 4.1 GENERAL

§ 4.1.1 The Owner shall retain an architect lawfully licensed to practice architecture or an entity lawfully practicing architecture in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 4.1.2 Duties, responsibilities and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the Owner, Contractor and Architect. Consent shall not be unreasonably withheld.

§ 4.1.3 If the employment of the Architect is terminated, the Owner shall employ a successor architect as to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

§ 4.2 ADMINISTRATION OF THE CONTRACT

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for, the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents, except as provided in Section 3.3.1.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and report to the Owner (1) known deviations from the Contract Documents and from the most recent construction schedule submitted by the Contractor, and (2) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 COMMUNICATIONS FACILITATING CONTRACT ADMINISTRATION

Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate with each other through the Architect about matters arising out of or relating to the Contract. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner.

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.5.2 and 13.5.3, whether or not such Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5 and 3.12. The Architect's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Architect, of any construction means, methods, techniques, sequences or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may authorize minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more project representatives to assist in carrying out the Architect's responsibilities at the site. The duties, responsibilities and limitations of authority of such project representatives shall be as set forth in an exhibit to be incorporated in the Contract Documents.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 DEFINITIONS

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a separate contractor or subcontractors of a separate contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

§ 5.2.1 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. The Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to any such proposed person or entity or (2) that the Architect requires additional time for review. Failure of the Owner or Architect to reply within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person or entity previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.3 SUBCONTRACTUAL RELATIONS

By appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work, which the Contractor, by these Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may

be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 CONTINGENT ASSIGNMENT OF SUBCONTRACTS

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

- .1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor in writing; and
- .2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon such assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 OWNER'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

§ 6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided in Article 15.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each separate contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to the construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, separate contractors and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces, the Owner shall be deemed to be subject to the same obligations and to have the same rights that apply to the Contractor under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6 and Articles 10, 11 and 12.

§ 6.2 MUTUAL RESPONSIBILITY

§ 6.2.1 The Contractor shall afford the Owner and separate contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a separate contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Architect apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor so to report shall constitute an acknowledgment that

the Owner's or separate contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then reasonably discoverable.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a separate contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a separate contractor's delays, improperly timed activities, damage to the Work or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or separate contractors as provided in Section 10.2.5.

§ 6.2.5 The Owner and each separate contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 OWNER'S RIGHT TO CLEAN UP

If a dispute arises among the Contractor, separate contractors and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 GENERAL

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor and Architect; a Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor; an order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents, and the Contractor shall proceed promptly, unless otherwise provided in the Change Order, Construction Change Directive or order for a minor change in the Work.

§ 7.2 CHANGE ORDERS

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor and Architect stating their agreement upon all of the following:

- .1 The change in the Work;
- .2 The amount of the adjustment, if any, in the Contract Sum; and
- .3 The extent of the adjustment, if any, in the Contract Time.

§ 7.3 CONSTRUCTION CHANGE DIRECTIVES

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- .1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- .2 Unit prices stated in the Contract Documents or subsequently agreed upon;
- .3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or

.4 As provided in Section 7.3.7.

§ 7.3.4 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed in a proposed Change Order or Construction Change Directive so that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 7.3.5 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.6 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.7 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the method and the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.7 shall be limited to the following:

- .1 Costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance;
- .2 Costs of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed;
- .3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
- .4 Costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work; and
- .5 Additional costs of supervision and field office personnel directly attributable to the change.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 MINOR CHANGES IN THE WORK

The Architect has authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes will be effected by written order signed by the Architect and shall be binding on the Owner and Contractor.

ARTICLE 8 TIME

§ 8.1 DEFINITIONS

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term “day” as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 PROGRESS AND COMPLETION

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor and Owner. The date of commencement of the Work shall not be changed by the effective date of such insurance.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 DELAYS AND EXTENSIONS OF TIME

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by an act or neglect of the Owner or Architect, or of an employee of either, or of a separate contractor employed by the Owner; or by changes ordered in the Work; or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor’s control; or by delay authorized by the Owner pending mediation and arbitration; or by other causes that the Architect determines may justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 CONTRACT SUM

The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.2 SCHEDULE OF VALUES

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit to the Architect, before the first Application for Payment, a schedule of values allocating the entire Contract Sum to the various portions of the Work and prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor’s Applications for Payment.

§ 9.3 APPLICATIONS FOR PAYMENT

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. Such application shall be notarized, if required, and supported by such data substantiating the Contractor’s right to payment as the Owner or Architect may require, such as copies of requisitions from Subcontractors and material suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or material supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage and transportation to the site for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.

§ 9.4 CERTIFICATES FOR PAYMENT

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Architect determines is properly due, or notify the Contractor and Owner in writing of the Architect's reasons for withholding certification in whole or in part as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data comprising the Application for Payment, that, to the best of the Architect's knowledge, information and belief, the Work has progressed to the point indicated and that the quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion and to specific qualifications expressed by the Architect. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor's right to payment, or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 DECISIONS TO WITHHOLD CERTIFICATION

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to the Owner is provided by the Contractor;

- .3 failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;
- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a separate contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- .7 repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When the above reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.3 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or material or equipment suppliers to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Architect will reflect such payment on the next Certificate for Payment.

§ 9.6 PROGRESS PAYMENTS

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor no later than seven days after receipt of payment from the Owner the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and material and equipment suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay or to see to the payment of money to a Subcontractor, except as may otherwise be required by law.

§ 9.6.5 Contractor payments to material and equipment suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors and suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, shall create any fiduciary liability or tort liability on the part of the Contractor for breach of trust or shall entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.7 FAILURE OF PAYMENT

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' written notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended

appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shut-down, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 SUBSTANTIAL COMPLETION

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate. Upon such acceptance and consent of surety, if any, the Owner shall make payment of retainage applying to such Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 PARTIAL OCCUPANCY OR USE

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer as required under Section 11.3.1.5 and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 FINAL COMPLETION AND FINAL PAYMENT

§ 9.10.1 Upon receipt of the Contractor's written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection and, when the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect

will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment and (5), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- .1 liens, Claims, security interests or encumbrances arising out of the Contract and unsettled;
- .2 failure of the Work to comply with the requirements of the Contract Documents; or
- .3 terms of special warranties required by the Contract Documents.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 SAFETY PRECAUTIONS AND PROGRAMS

The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.2 SAFETY OF PERSONS AND PROPERTY

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to

- .1 employees on the Work and other persons who may be affected thereby;
- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors; and
- .3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss.

§ 10.2.3 The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent sites and utilities.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3, except damage or loss attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 INJURY OR DAMAGE TO PERSON OR PROPERTY

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, written notice of such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 HAZARDOUS MATERIALS

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the Owner and Architect in writing.

§ 10.3.2 Upon receipt of the Contractor's written notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of such material or substance or who are to perform the task of removal or safe containment of such material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased in the amount of the Contractor's reasonable additional costs of shut-down, delay and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall indemnify the Owner for the cost and expense the Owner incurs (1) for remediation of a material or substance the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall indemnify the Contractor for all cost and expense thereby incurred.

§ 10.4 EMERGENCIES

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 CONTRACTOR'S LIABILITY INSURANCE

§ 11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations and completed operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

- .1 Claims under workers' compensation, disability benefit and other similar employee benefit acts that are applicable to the Work to be performed;
- .2 Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;
- .3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;
- .4 Claims for damages insured by usual personal injury liability coverage;
- .5 Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;
- .6 Claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle;
- .7 Claims for bodily injury or property damage arising out of completed operations; and
- .8 Claims involving contractual liability insurance applicable to the Contractor's obligations under Section 3.18.

§ 11.1.2 The insurance required by Section 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from the date of commencement of the Work until the date of final payment and termination of any coverage required to be maintained after final payment, and, with respect to the Contractor's completed operations coverage, until the expiration of the period for correction

of Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents.

§ 11.1.3 Certificates of insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work and thereafter upon renewal or replacement of each required policy of insurance. These certificates and the insurance policies required by this Section 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner. An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment as required by Section 9.10.2 and thereafter upon renewal or replacement of such coverage until the expiration of the time required by Section 11.1.2. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness.

§ 11.1.4 The Contractor shall cause the commercial liability coverage required by the Contract Documents to include (1) the Owner, the Architect and the Architect's consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's completed operations.

§ 11.2 OWNER'S LIABILITY INSURANCE

The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance.

§ 11.3 PROPERTY INSURANCE

§ 11.3.1 Unless otherwise provided, the Owner shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder's risk "all-risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract Modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Section 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Section 11.3 to be covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project.

§ 11.3.1.1 Property insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect's and Contractor's services and expenses required as a result of such insured loss.

§ 11.3.1.2 If the Owner does not intend to purchase such property insurance required by the Contract and with all of the coverages in the amount described above, the Owner shall so inform the Contractor in writing prior to commencement of the Work. The Contractor may then effect insurance that will protect the interests of the Contractor, Subcontractors and Sub-subcontractors in the Work, and by appropriate Change Order the cost thereof shall be charged to the Owner. If the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain insurance as described above, without so notifying the Contractor in writing, then the Owner shall bear all reasonable costs properly attributable thereto.

§ 11.3.1.3 If the property insurance requires deductibles, the Owner shall pay costs not covered because of such deductibles.

§ 11.3.1.4 This property insurance shall cover portions of the Work stored off the site, and also portions of the Work in transit.

§ 11.3.1.5 Partial occupancy or use in accordance with Section 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or

otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

§ 11.3.2 BOILER AND MACHINERY INSURANCE

The Owner shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner; this insurance shall include interests of the Owner, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall be named insureds.

§ 11.3.3 LOSS OF USE INSURANCE

The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused. The Owner waives all rights of action against the Contractor for loss of use of the Owner's property, including consequential losses due to fire or other hazards however caused.

§ 11.3.4 If the Contractor requests in writing that insurance for risks other than those described herein or other special causes of loss be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.

§ 11.3.5 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, the Owner shall waive all rights in accordance with the terms of Section 11.3.7 for damages caused by fire or other causes of loss covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.

§ 11.3.6 Before an exposure to loss may occur, the Owner shall file with the Contractor a copy of each policy that includes insurance coverages required by this Section 11.3. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be canceled or allowed to expire, and that its limits will not be reduced, until at least 30 days' prior written notice has been given to the Contractor.

§ 11.3.7 WAIVERS OF SUBROGATION

The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents and employees, each of the other, and (2) the Architect, Architect's consultants, separate contractors described in Article 6, if any, and any of their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other causes of loss to the extent covered by property insurance obtained pursuant to this Section 11.3 or other property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by the Owner as fiduciary. The Owner or Contractor, as appropriate, shall require of the Architect, Architect's consultants, separate contractors described in Article 6, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

§ 11.3.8 A loss insured under the Owner's property insurance shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.3.10. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

§ 11.3.9 If required in writing by a party in interest, the Owner as fiduciary shall, upon occurrence of an insured loss, give bond for proper performance of the Owner's duties. The cost of required bonds shall be charged against proceeds received as fiduciary. The Owner shall deposit in a separate account proceeds so received, which the

Owner shall distribute in accordance with such agreement as the parties in interest may reach, or as determined in accordance with the method of binding dispute resolution selected in the Agreement between the Owner and Contractor. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor after notification of a Change in the Work in accordance with Article 7.

§ 11.3.10 The Owner as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Owner's exercise of this power; if such objection is made, the dispute shall be resolved in the manner selected by the Owner and Contractor as the method of binding dispute resolution in the Agreement. If the Owner and Contractor have selected arbitration as the method of binding dispute resolution, the Owner as fiduciary shall make settlement with insurers or, in the case of a dispute over distribution of insurance proceeds, in accordance with the directions of the arbitrators.

§ 11.4 PERFORMANCE BOND AND PAYMENT BOND

§ 11.4.1 The Owner shall have the right to require the Contractor to furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract.

§ 11.4.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 UNCOVERING OF WORK

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be at the Owner's expense. If such Work is not in accordance with the Contract Documents, such costs and the cost of correction shall be at the Contractor's expense unless the condition was caused by the Owner or a separate contractor in which event the Owner shall be responsible for payment of such costs.

§ 12.2 CORRECTION OF WORK

§ 12.2.1 BEFORE OR AFTER SUBSTANTIAL COMPLETION

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, whether discovered before or after Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 AFTER SUBSTANTIAL COMPLETION

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.4.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the Owner or separate contractors caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 ACCEPTANCE OF NONCONFORMING WORK

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 GOVERNING LAW

The Contract shall be governed by the law of the place where the Project is located except that, if the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 SUCCESSORS AND ASSIGNS

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns and legal representatives to covenants, agreements and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate such assignment.

§ 13.3 WRITTEN NOTICE

Written notice shall be deemed to have been duly served if delivered in person to the individual, to a member of the firm or entity, or to an officer of the corporation for which it was intended; or if delivered at, or sent by registered or certified mail or by courier service providing proof of delivery to, the last business address known to the party giving notice.

§ 13.4 RIGHTS AND REMEDIES

§ 13.4.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights and remedies otherwise imposed or available by law.

§ 13.4.2 No action or failure to act by the Owner, Architect or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach there under, except as may be specifically agreed in writing.

§ 13.5 TESTS AND INSPECTIONS

§ 13.5.1 Tests, inspections and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of (1) tests, inspections or approvals that do not become requirements until after bids are received or negotiations concluded, and (2) tests, inspections or approvals where building codes or applicable laws or regulations prohibit the Owner from delegating their cost to the Contractor.

§ 13.5.2 If the Architect, Owner or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection or approval not included under Section 13.5.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection or approval by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.5.3, shall be at the Owner's expense.

§ 13.5.3 If such procedures for testing, inspection or approval under Sections 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure including those of repeated procedures and compensation for the Architect's services and expenses shall be at the Contractor's expense.

§ 13.5.4 Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.5.5 If the Architect is to observe tests, inspections or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.5.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.6 INTEREST

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at such rate as the parties may agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

§ 13.7 TIME LIMITS ON CLAIMS

The Owner and Contractor shall commence all claims and causes of action, whether in contract, tort, breach of warranty or otherwise, against the other arising out of or related to the Contract in accordance with the requirements of the final dispute resolution method selected in the Agreement within the time period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all claims and causes of action not commenced in accordance with this Section 13.7.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 TERMINATION BY THE CONTRACTOR

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, for any of the following reasons:

- .1** Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- .2** An act of government, such as a declaration of national emergency that requires all Work to be stopped;

- .3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
- .4 The Owner has failed to furnish to the Contractor promptly, upon the Contractor's request, reasonable evidence as required by Section 2.2.1.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, repeated suspensions, delays or interruptions of the entire Work by the Owner as described in Section 14.3 constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' written notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, including reasonable overhead and profit, costs incurred by reason of such termination, and damages.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' written notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 TERMINATION BY THE OWNER FOR CAUSE

§ 14.2.1 The Owner may terminate the Contract if the Contractor

- .1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- .2 fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;
- .3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- .4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the above reasons exist, the Owner, upon certification by the Initial Decision Maker that sufficient cause exists to justify such action, may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- .1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 Accept assignment of subcontracts pursuant to Section 5.4; and
- .3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 SUSPENSION BY THE OWNER FOR CONVENIENCE

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay or interruption as described in Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

- .1 that performance is, was or would have been so suspended, delayed or interrupted by another cause for which the Contractor is responsible; or
- .2 that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 TERMINATION BY THE OWNER FOR CONVENIENCE

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- .1 cease operations as directed by the Owner in the notice;
- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment for Work executed, and costs incurred by reason of such termination, along with reasonable overhead and profit on the Work not executed.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 CLAIMS

§ 15.1.1 DEFINITION

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim.

§ 15.1.2 NOTICE OF CLAIMS

Claims by either the Owner or Contractor must be initiated by written notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party must be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3 CONTINUING CONTRACT PERFORMANCE

Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents. The Architect will prepare Change Orders and issue Certificates for Payment in accordance with the decisions of the Initial Decision Maker.

§ 15.1.4 CLAIMS FOR ADDITIONAL COST

If the Contractor wishes to make a Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.5 CLAIMS FOR ADDITIONAL TIME

§ 15.1.5.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, written notice as provided herein shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.5.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated and had an adverse effect on the scheduled construction.

§ 15.1.6 CLAIMS FOR CONSEQUENTIAL DAMAGES

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

- .1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- .2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.6 shall be deemed to preclude an award of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 INITIAL DECISION

§ 15.2.1 Claims, excluding those arising under Sections 10.3, 10.4, 11.3.9, and 11.3.10, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the Initial Decision Maker with no decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of such request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of an initial decision, demand in writing that the other party file for mediation within 60 days of the initial decision. If such a demand is made and the party receiving the demand fails to file for mediation within the time required, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 MEDIATION

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.6 shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.4 ARBITRATION

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 15.4.4 CONSOLIDATION OR JOINDER

§ 15.4.4.1 Either party, at its sole discretion, may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Either party, at its sole discretion, may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an

additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as the Owner and Contractor under this Agreement.



Init.

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Additions and Deletions Report for **AIA® Document A201® – 2007**

This Additions and Deletions Report, as defined on page 1 of the associated document, reproduces below all text the author has added to the standard form AIA document in order to complete it, as well as any text the author may have added to or deleted from the original AIA text. Added text is shown underlined. Deleted text is indicated with a horizontal line through the original AIA text.

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PAGE 1

New Administration Building Renovation - Hondo
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Medina Regional Hospital
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Hondo, Texas 78861

...

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San Antonio, Texas 78205

Certification of Document's Authenticity

AIA® Document D401™ – 2003

I, Edward A. Garza, AIA, hereby certify, to the best of my knowledge, information and belief, that I created the attached final document simultaneously with its associated Additions and Deletions Report and this certification at 11:07:23 ET on 07/20/2024 under Order No. 2114551713 from AIA Contract Documents software and that in preparing the attached final document I made no changes to the original text of AIA® Document A201™ - 2007, General Conditions of the Contract for Construction, other than those additions and deletions shown in the associated Additions and Deletions Report.

(Signed)

(Title)

(Dated)

SECTION 00 73 00 SUPPLEMENTARY CONDITIONS

PART 1 GENERAL

1.01 SUMMARY

1.02 THESE SUPPLEMENTARY CONDITIONS AMEND AND SUPPLEMENT THE GENERAL CONDITIONS AIA A-201 AND OTHER PROVISIONS OF THE CONTRACT DOCUMENTS AS INDICATED BELOW. PROVISIONS THAT ARE NOT SO AMENDED OR SUPPLEMENTED REMAIN IN FULL FORCE AND EFFECT.

1.03 THE TERMS USED IN THESE SUPPLEMENTARY CONDITIONS THAT ARE DEFINED IN THE GENERAL CONDITIONS HAVE THE MEANINGS ASSIGNED TO THEM IN THE GENERAL CONDITIONS.

1.04 MODIFICATIONS TO GENERAL CONDITIONS

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

PART 4 MODIFICATIONS TO AIA A201

4.01 ARTICLE 1 - GENERAL PROVISIONS

A. 1.1 - BASIC DEFINITIONS

B. 1.1.2 Add the following to the end of the Subparagraph:

1. The Contract Documents comprise the entire agreement between the Owner and the Contractor and there are no conversations, understandings, agreements, conditions or representations, express or implied, with reference to the subject matter hereof that are not merged herein or superseded hereby.

C. 1.1.3 Add the following to the end of the first sentence:

- 1 , including the transportation of materials and supplies to or from the site, competent supervision of the Work and the provision of insurance and payment and performance bonds in accordance with the Contract Documents.”

D. 1.1.5.1 Add the following new Subparagraph:

1. Any discrepancy or conflict within or between the Drawings and Specifications shall be brought to the attention of the Architect. Notwithstanding Subparagraph 1.2.1, discrepancies or conflicts not brought to Architect’s attention and clarified during the bidding of the Project will be deemed to have been bid or proposed in the more costly or difficult manner, and the better quality or greater quantity of the Work shall be provided by the Contractor in accordance with Architect’s interpretation.

E. Add the following Subparagraphs to Paragraph 1.1:

F. 1.1.9 THE PROJECT MANUAL

The Project Manual is a volume assembled for the Work which may include the Proposal requirements, sample forms, Conditions of the Contract and Specifications.

G. 1.1.10 ADDENDUM, ADDENDA

An Addendum is a written or graphic instrument issued by the Architect prior to receipt of Proposals which modifies or interprets the Proposal Documents by additions, deletions, clarifications, or corrections. Addenda will become part of the Contract Documents when the Agreement is executed. The Contractor and his Subcontractors shall post all Addendum items on their sets of the Drawings and Specifications.

H. 1.1.11 ALTERNATE(S), ALTERNATIVE(S)

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An Alternate (or Alternative) is the amount stated in the Proposal to be added or deducted from the amount of the Base Proposal if the corresponding change in the Work, as described by the Proposal Documents, is accepted. Except as designated otherwise in the Proposal Documents, the Alternative shall remain valid for at least the same period of time the Proposal remains valid unless a longer period has been designated and, regardless if the Agreement has been executed.

I. 1.1.12 APPROVED, APPROVED EQUIVALENT, APPROVED EQUAL, OR EQUAL

The terms Approved, Approved Equivalent, Approved Equal and/or Equal, relate to the substitution of products or systems approved in writing by the Architect.

J. 1.1.13 BASE PROPOSAL

The Base Proposal is the sum stated in the Proposal for which the Proposer offers to perform the Work described in the Proposal Documents as the Base Proposal, to which Work may be added, or from which Work may be deducted by the sums stated in the Alternates.

K. 1.1.14 CONTRACT TIME

The Contract Time is the period of time, including Anticipated Weather Days, which is established in the Contract Documents for Substantial Completion of the Work. This period of time is subject to authorized adjustment for Net Weather Days and other Calendar Day extensions of time as enumerated in the Contract Documents. The Contractor's responsibility to provide services under this Agreement commences with the award of the initial Contract for Construction and terminates at Final Completion, plus one (1) year for general warranty items, plus any extended warranties

L. 1.1.15 DATE OF AGREEMENT

The date of the Agreement shall mean the date the Owner formally awards a Contract for Construction of the Work. This date will be inserted on the first page of the Agreement Between Owner and Contractor and shall be referenced in Performance Bond and Payment Bond forms. See also Date of Commencement of the Work.

M. 1.1.16 DATE OF COMMENCEMENT OF THE WORK

The Date of Commencement of the Work shall mean the earlier of the dates that either (1) the fully executed Agreement Between Owner and Contractor, or (2) a written Notice to Proceed is delivered to the Contractor. The earlier of these two dates constitutes day zero ("0") of the stated Contract Time.

N. 1.1.17 DATE OF SUBSTANTIAL COMPLETION

See AIA Document A201, Section 9.8.1.

O. 1.1.18 DAYS

The following days are referenced in the documents:

1. Calendar Days: The days of the Gregorian Calendar. The Contract Time is established in Calendar Days and extensions of time granted for Regular Work Days lost, if any will be converted to Calendar Days.
2. Holidays: The days officially recognized by the construction industry in this area as a holiday; normally limited to the observance days of New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day and the day after, and Christmas Day.
3. Regular Work Days: All Calendar Days except Holidays, Saturdays and Sundays. Requests for extensions of time shall be requested on the basis of Regular Work Days, and those days, if approved, will be converted to Calendar Days by multiplying by a factor of one and four-tenths (1.4).
4. Anticipated Weather Days: An allowance of Regular Work Days, established as probable days lost due to weather delays; said allowance to be included in the Contractor's proposed Completion Time on his Proposal Form. Refer to Section 8.3 for Schedule of Days.
5. Weather Days: Regular Work Days when rain, flooding, snow, unusually high winds,

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excessively wet grounds, or similar circumstances prevent progress on major portions of the Work. The Contractor will be entitled to an extension of the Contract Time for the net additional time, if any, which results from deducting the amount of Anticipated Weather Days from the total amount of Weather Days.

6. Net Weather Days: The difference in Working Days between Anticipated Weather Days and Weather Days.

P. 1.1.19 FINAL COMPLETION

Final Completion is achieved after the Work has been completed by the Contractor, the final inspection has been performed by the Architect and the Owner, the Contract Closeout process has been completed, and the final Certificate for Payment has been issued by the Architect to the Owner. See Sections 1.1.14 and 9.10 and Specification sections regarding Contract Close Out.

Q. 1.1.20 NOTICE TO PROCEED

A Notice to Proceed is a notice that may be given by the Owner to the Contractor that directs the Contractor to start the Work. It may also establish the Date of Commencement of the Work.

R. 1.1.21 PROPOSAL

A Proposal is a complete and properly signed proposal to do the Work for the sums stipulated therein, submitted on the prescribed forms in accordance with the Proposal Documents.

S. 1.1.22 PROPOSAL DOCUMENTS

Proposal Documents consist of all documents and bound into or referenced in the Project Manual, the Drawings, and Addenda related thereto. The Project Manual contains the Proposal requirements, Contract and other forms, Conditions of the Contract, the Specifications, and a list of Drawings and Schedules, some of which are bound into the Project Manual (other Drawings and Specifications are bound separately).

T. 1.1.23 PROPOSER

A Proposer is a person or entity who submits a Proposal.

U. 1.1.24 PROVIDE

Whenever the word "provide" is used in these documents, it shall mean the same as "furnish and install.

V. 1.1.25 PUNCH LIST

A punch list is a comprehensive list prepared by the Contractor prior to Substantial Completion to establish all items to be completed or corrected; this list may be supplemented by the Architect or the Owner. See Section 9.8.

W. 1.1.26 SUB-PROPOSER

A Sub-proposer is a person or entity who submits a Proposal to a Proposer for materials, equipment or labor for a portion of the Work.

X. 1.1.27 UNIT PRICE(S)

A Unit Price is a cost for a unit of work, as described in the Proposal Documents. The Owner may add or deduct Unit Price work at the amounts stated on the Proposal Form and such amounts shall not be subject to additional mark-up by the Contractor or his Subcontractors.

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- Y. 1.2 - EXECUTION, CORRELATION AND INTENT
- Z. 1.2.4 Add the following to the end of the subparagraph: "Specification organization and Drawing arrangement shall not make the Architect an arbiter to establish subcontract limits. The Architect assumes no responsibility, either direct or implied, for omissions or duplications by the Contractor or by his Subcontractors due to real or alleged error in the arrangement of Drawings or Specifications."

4.02 ARTICLE 3 - CONTRACTOR

- A. 3.1 - GENERAL
 - 1. 3.1.1 Add the following to the end of the Subparagraph:
 - a. The Contractor shall at all times be an independent contractor, not an employee or agent of the Owner, and the relationship of the parties hereunder shall in no event be construed as constituting any other relationship.
- B. 3.3 - SUPERVISION AND CONSTRUCTION PROCEDURES
 - 1. 3.3.1 Add the following to the end of subparagraph: "The Contractor shall assign a superintendent or foreman who shall make decisions in behalf of the Contractor and his Subcontractors. He shall be on the project, in this capacity, at all times while work on the project is in progress."
- C. 3.5 - WARRANTY
 - 1. 3.5.1 Add the following at the end of the Subparagraph:
 - a. Neither the Owner's or Architect's inspection nor failure to inspect shall relieve the Contractor of any obligation hereunder. If any Work fails to conform to the Contract Documents, the Contractor shall promptly replace and remedy the same at the Contractor's expense. No acceptance or payment by the Owner shall constitute a waiver of the foregoing and nothing herein shall exclude or limit any warranties implied by law.
- D. 3.7 - PERMITS, FEES, AND NOTICES
 - 1. 3.7.1 Add the following sentence to Paragraph 3.7.1:
 - a. A building permit shall be obtained from the authority having jurisdiction before commencement any work for which a permit is required.
- E. 3.9 - SUPERINTENDENT
 - 1. 3.9.1 Delete entire paragraph 3.9.1 and replace with the following:
 - a. The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project during the progress of the Work. The Superintendent shall at all times be satisfactory to the Owner. Subject to the Contractor's sole right to terminate the employment of the Superintendent, the Contractor shall not replace the Superintendent without the consent of the Owner. Should the Superintendent terminate his employment with the Contractor, his replacement is subject to the Owner's approval. The Superintendent shall represent the Contractor and all communication given to him shall be as binding as if given to the Contractor. Important communications shall be confirmed in writing. Other communications shall be so confirmed on written request in each case.
- F. 3.13 - USE OF THE SITE
 - 1. 3.13.1 Add the following at the end of the Subparagraph:
 - a. The Contractor shall so conduct its operations as not to unreasonably interfere with traffic on public thoroughfares adjacent or near to the Project site.

4.03 ARTICLE 4 - ADMINISTRATION OF THE CONTRACT

- A. 4.2 - ARCHITECT'S ADMINISTRATION OF THE CONTRACT
 - 1. 4.2.6 Add the following at the end of the Subparagraph:
 - a. Certain portions of the Work will be tested and/or observed at various stages, sometimes off the Project site, between initial observation or review and final positioning of the completed Work. Nothing in any initial or prior approval or test result shall govern if at any subsequent time the Work or any portion thereof is found

not to conform to the requirements of the Contract Documents.

2. 4.2.7 Delete the Subparagraph and replace with the following:
 - a. The Architect will review and comment or take other appropriate action upon the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with the design concept expressed in the Contract Documents. The Architect's action will be taken with reasonable promptness as to cause no delay in the Work or in the activities of the Owner or separate contractors, while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, or for coordination of the various trades, or for compliance with schedules, all of which remain the sole responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of its obligations under Paragraphs 3.3, 3.5 and 3.12. The Architect's review shall not constitute consideration or approval of safety precautions or, unless otherwise stated by the Architect, of any construction means, methods, techniques, sequences or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component. If, on occasion, the Architect reviewed and/or commented upon items or subjects which are the responsibility of the Contractor, such action shall be interpreted as voluntary assistance by the Architect, and shall not create a duty or obligation upon the Architect to provide similar review and comment on other items or subjects.

4.04 ARTICLE 5 - SUBCONTRACTORS

A. 5.1 - DEFINITIONS

1. Add the following sub-paragraph:
 - a. 5.1.3"Nothing contained in the Contract Documents shall create any contractual relation between the Owner or Architect and any Subcontract or Sub-Subcontractor, nor shall there be any obligation on the Owner to pay, to see to the payment of any sums due any Subcontractor or Sub-Subcontractor, nor create any obligation of any kind express or implied upon the Owner or Architect in favor of any Subcontractor or Sub-Subcontractor."

B. 5.2 - AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

1. 5.2.1 Add the following to the end of the sub-paragraph:
 - a. Failure to object shall not constitute a waiver of any of the requirements of the Contract Documents."
2. 5.2.1.1 Add the following sub-subparagraph:
 - a. Before entering into a contract with any Subcontractor, the General Contractor shall investigate the proposed Subcontractor's reputation and ability to perform the work and satisfy himself that the Subcontractor is stable, reputable and skilled in the work of this section. Should the Subcontractor selected by the General Contractor default on the contract including failure to complete the Work in conformance with the Contract Documents, or enters into bankruptcy, the Owner will pay the Architect as an additional service for any additional work occasioned by such default or bankruptcy. The Owner will then deduct an equal amount from the Contract Sum by Change Order as reimbursement to the Owner for such payments to the Architect.

4.05 ARTICLE 7 – CHANGES IN THE WORK

A. 7.1. – GENERAL

1. Delete the text of Section 7.1.2 in its entirety and substitute the following:
2. 7.1.2 A Change Order shall be based on agreement among the Owner, Contractor, and Architect, except when the Contract balance is amended as a result of Owner's Right to

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Carry out the Work under Section 2.4. or the Owner's assessment of liquidated damages as allowed by the Contract Documents. In such event, the Change Order is deemed approved by Contractor, and Contractor's signature(s) are not required. A Construction Change Directive requires agreement by the Owner, or the Owner's representative, and Architect, and may or may not be agreed to by the Contractor; an order for a minor change may be issued by the Architect alone.

4.06 TIME

A. Insert the following Section 8.4:

1. 8.4 LIQUIDATED DAMAGES

- a. 8.4.1 The wording in Section 8.4.2 will be modified to include the completion times proposed for this Project and will be included in the Agreement Between Owner and Contractor under Time of Completion.
- b. 8.4.2 The Work to be performed under this Agreement shall be substantially completed within the deadline established in the Contract Documents, or by such dates thereafter as may be established in any written extensions granted under Article 8 of the General Conditions. The parties hereto agree that time is of the essence of this Contract and that the pecuniary damages which would be suffered by the Owner, if the Contractor does not substantially complete all Work called for in the Contract Documents by the specified date, are in their very nature difficult of ascertainment. It is therefore expressly agreed as apart of the consideration inducing the Owner to execute this Contract that the Owner may deduct from the final payment made to the Contractor a sum equal to the amount stated in Section 3.3 of the AIA A101-2017, per day, for each and every Calendar Day beyond the agreed date which the Contractor shall require for Substantial Completion of the Work included in this Contract. It is expressly understood that the said sum per day, per site, is agreed upon as a fair estimate of the pecuniary damages which will be sustained by the Owner in the event that the Work is not substantially completed within the agreed time, or within the legally extended time, if any, otherwise provided for herein. Said sum shall be considered as liquidated damages only and in no sense shall be considered a penalty or forfeiture, said damage being caused by additional compensation to personnel, and other miscellaneous increased costs, all of which are difficult of exact ascertainment.
- c. 8.4.3 The Owner's use of the Substantially Complete facilities shall not be disrupted or prohibited in any way. Failure to complete and close-out the Project within sixty (60) days after the scheduled Substantial Completion date will result in liquidated damages being assessed in the amount of one-third of the amount stated in Section 3.3 of the AIA A101-2017, per day. It is expressly understood that said sum per day is agreed upon as a fair estimate of the pecuniary damages that will be sustained by the Owner in the event that the Project close-out does not occur on a timely basis. Said sum shall be considered as liquidated damages only, and in no sense shall be considered a penalty or forfeiture; said damage being caused by additional compensation to personnel, and other miscellaneous increased costs, all of which are difficult of exact ascertainment.

4.07 ARTICLE 9 - PAYMENTS AND COMPLETION

A. 9.1 - CONTRACT SUM

1. 9.1.1 Add the following at the end of Subparagraph 9.1.1:

B. All costs of overtime work required by the Contract Time and the nature of the Work, as set forth in or inferable from the Contract Documents, except costs of emergencies covered in Paragraph 10.6, shall be and are included in the Contract Sum.

C. 9.3 - APPLICATIONS FOR PAYMENT

1. 9.3.1 Add the following to Subparagraph 9.3.1:
 - a. The form of Application for Payment shall be a notarized AIA Document G702, Application and Certification for Payment, supported by AIA Document G703,

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Continuation Sheet.

- b. 9.3.1.3 Add the following as a new Clause to Subparagraph 9.3.1:
- c. Along with the Application for Payment, and as a condition to the payment of any amounts stated therein, the Contractor will submit the following:
- d. An Affidavit certifying that payment has been made to all Subcontractors, Sub-subcontractors, suppliers, employees, materialmen and other persons relating to Work for which the Contractor has been paid; and
- e. A revised and updated Construction Schedule reflecting actual job progress to the date of the Application for Payment, taking into account all factors known at the time of such Application for Payment.
- f. Payment shall be made on the percentage of value of the Work actually performed and included in the Application for Payment, as specified in Article 5 of the Agreement.
- g. To ensure proper performance of the work, the Owner shall retain ten (10) percent of the amount of each Application for Payment, henceforth called retainage. Payments shall be made at the time of Substantial Completion to reduce the retainage to five (5) percent. This retainage shall be held for 30 days following the issuance of a Certificate of Substantial Completion. Retainage shall be in addition to any amount retained for remaining incomplete or unacceptable work.”
- h. 9.5.1.6 Add the following to the end of the Subparagraph:
- i. The progress of construction must not lag behind the construction progress schedule approved by the Owner. If the construction or any portion or phase thereof falls behind the schedule approved by the Owner, further payment may be withheld until the pace of construction is accelerated to the satisfaction of the Owner to meet the scheduled Contract Time.

D. 9.8 - SUBSTANTIAL COMPLETION

- 1. Add the following new sub-subparagraph:
 - a. 9.8.2.1 “If, in Architect's opinion during the inspection, the Project or the designated portion thereof which Owner has agreed to accept separately is not sufficiently complete to warrant inspection, or if the list of items to be completed or corrected is not sufficiently complete to warrant inspection, then Architect may terminate the inspection and notify the Contractor that the Project is not ready for inspection. If for such reasons, Architect is required to make additional inspections, the Owner may deduct the cost of Architect's additional services made necessary thereby from any payments due the Contractor. The Architect's compensation shall be determined in accordance with the applicable provisions of the Owner-Architect Agreement.”

E. 9.10 - FINAL COMPLETION AND FINAL PAYMENT

- 1. Add new Sub-paragraphs as follows:
 - a. 9.10.5 Contractor shall pay promptly, and see that any subcontractor pays promptly, all indebtedness for labor, materials, equipment or other work used in performance of the Work. Contractor shall not permit any lien or charge to attach to the Work or Owner's premises; if any does so attach, Contractor shall promptly procure its release and indemnify Owner against all damage and expense incident thereto. Upon completion of the Work and before any final settlement, Contractor shall show evidence satisfactory to Owner of payment and release of all debts, taxes, liens, charges, obligations and claims for labor, materials, or subcontractors or for injuries to persons or property arising out of or connected with the performance of this Agreement. Contractor waives any rights it may now have, or which it may acquire during the operation of this Agreement to file liens or encumbrances against Owner or Owner's property.
 - b. 9.10.6 Prior to written acceptance of the Work by Owner, all work shall remain the risk of Contractor. Contractor shall be responsible for all loss, deterioration, damage or destruction and shall repair, renew and make good at his own expense, all such loss, damage or destruction however caused.

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F. 9.11 - SUPPLEMENTARY PAYMENT CONDITIONS AND REQUIREMENTS

1. Add the following new subparagraphs:
 - a. 9.11.1 The following paragraphs are supplementary to and shall act in conjunction with the other paragraphs of Article 9.
 - b. 9.11.2 After the Architect has issued a Certificate of Payment, the Owner will make payment within thirty days or within thirty days from date established for progress payments, whichever is later.
 - c. 9.11.3 If the Contractor has not substantially completed the Work by the Contracted Date of Substantial Completion, no further progress payments will be made by the Owner until Substantial Completion has been accomplished and certified by the Architect in accordance with 9.8.
 - d. 9.11.5 As a condition to final payment at the Owner's discretion, the Contractor shall submit in triplicate executed and notarized AIA Form G706A (Contractor's Affidavit of Release of Liens), AIA Form G706 (Contractor's Affidavit of Payment of Debts and Claims), and AIA Form G707 (Consent of Surety Company to Final Payment). As an additional condition to final payment, if so requested by the Owner, the Contractor shall submit in duplicate an Affidavit of Payment of Debts and Claims and Release of Liens, in a form approved by the Owner, from the Contractor, and any or all Subcontractors and material suppliers on the project, and other affidavits, certificates, etc., requested by the Owner which the Owner feels are appropriate. Upon completion of the Work and before any final settlement, Contractor shall show evidence satisfactory to Owner of payment and release of all debts, taxes, liens, charges, obligations and claims for labor, materials, or Subcontractors or for injuries to persons or property arising out of or connected with the performance of this Contract.
 - e. 9.11.6 Final payment shall be due and payable not earlier than thirty (30) days after acceptance of the work and issuance of final Certificate for Payment."

4.08 ARTICLE 11 - INSURANCE AND BONDS

A. 11.1 - CONTRACTOR'S LIABILITY INSURANCE

1. 11.1.1.8 Liability insurance shall include all major divisions of coverage and be on a comprehensive basis including:
 - a. Premises Operations (including X, C, and U coverages as applicable.)
 - b. Independent Contractors' Protective.
 - c. Products and Completed Operations.
 - d. Personal Injury Liability with Employment Exclusion deleted.
 - e. Contractual, including specified provision for Contractor's obligation under paragraph 3.18.
 - f. Owned, non-owned and hired motor vehicles.
 - g. Broad Form Property Damage including Completed Operations.
2. 11.1.2 Add the following clause to paragraph 11.1.2:
 - a. 11.1.2.1 Insurance required by Subparagraph 11.1.1 shall be written for not less than the following limits, or greater if required by law:
 - 1) Comprehensive General Liability:
 - (a) General Aggregate\$ 1,000,000.
 - (b) Products/Completed Operations Aggregate\$ 1,000,000.
 - (c) Personal & Advertising Injury\$ 1,000,000.
 - (d) Each Occurrence\$ 500,000.
 - 2) Fire Damage (Any one fire) \$ 50,000.
 - 3) Medical Expense (Any one person) \$ 5,000.
 - 4) Automobile Liability:
 - (a) Combined Single Limit\$ 1,000,000.
 - (b) Bodily Injury - Per Person\$ 500,000.
 - (c) Bodily Injury - Per Accident\$ 1,000,000.
 - (d) Property Damage\$ 1,000,000.

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- 5) Umbrella Excess Liability:
 - (a) Each Occurrence\$ 2,000,000.
 - (b) Aggregate\$ 2,000,000.
 - 6) Worker's Compensation Statutory Limits Employers' Liability:
 - (a) Each Accident\$ 500,000.
 - (b) Disease - Policy Limit\$ 500,000.
 - (c) Disease - Each Employee\$ 500,000.
 - 7) Aircraft Liability (owned and non-owned) when applicable\$ 1,000,000.
 - 8) Watercraft Liability (owned and non-owned) when applicable\$ 1,000,000.
3. 11.1.2 Add the following to the end of the paragraph and add the following subparagraphs: Coverage afforded under said insurance shall be extended, endorsements added, and exclusions removed as follows:
- a. .1 Coverage shall be extended for products/completed operations and Contractor's (or subcontractor's) contractual liability. Specifically, said insurance must provide coverage for all indemnification and/or defense obligations created by this Contract.
 - b. .2 Coverage shall be extended to include as additional insured, the Owner and any other person or entity so required by this Contract.
 - c. .3 Any restrictions or limitations on coverage afforded to the Owner (or any other person or entity required by the Contract to be named as "additional insureds") shall be deleted, including, but not limited to, any restriction of coverage to liability "arising out of Contractor's work or materials, parts, or equipment furnished in connection therewith." The parties agree that it is their intention that the insurance required to be obtained shall apply fully to any "additional insured," as if that person or entity were a "named insured."
 - d. .4 All coverage shall be endorsed to state that it is primary with respect to any and all other insurance that may be available to the Owner and any other person or entity required by the Contract to be named as an additional insured, and shall be endorsed to include waivers of subrogation in favor of the Owner, any other "additional insureds", and their respective insurers;
 - e. .5 Commercial or business auto liability insurance, including uninsured/underinsured motorists and personal injury protection coverage shall be endorsed to state that it is primary and non-contributing with respect to any other insurance that may be available to the Owner and any other person or entity required by the Contract documents to be named as an additional insured, and shall be endorsed to include waivers of subrogation in favor of the Owner, any other "additional insureds" required by this Contract, and their respective insurers;
 - f. .6 All coverage shall be endorsed to require that the Owner and any other person or entity required by Contract to be named as an additional insured be given written notice at least 45 days prior to any cancellation, modification, or non-renewal of coverage occurring before the policy's expiration date.
 - g. .7 Should the Contractor fail to purchase, or fail to continue in force until completion of the project insurance in the amount indicated above, the Owner may purchase such insurance and the cost thereof shall be borne by the Contractor.
4. 11.1.3 Modify the second sentence as follows: Delete "...at least 30 days prior written notice..." and substitute "... at least 45 days prior written notice..."
5. Add the following sentence to Subparagraph 11.1.3: The Certificates shall be ACORD form 25-S.Add new paragraphs as follows:
- a. 11.1.4 Contractor shall cause all subcontractors employed by the Contractor to furnish and maintain the same minimum limits and coverage as specified under 11.1.2.1, 11.1.2.2 and 11.1.2.3 Contractor shall maintain evidence of such insurance for the duration of the job. As an alternative, the Contractor may add subcontractors employed by the Contractor to his policy as additional insureds for the duration of the project.
 - b. 11.1.5 Contractor shall require that all policies in any way related to any work and maintained by Contractor, as well as all policies maintained by subcontractors to

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include clauses wherein each underwriter agrees to waive its rights of subrogation against the Owner. The limits of liability shown for each type of insurance coverage to be provided by Contractor pursuant hereto shall not be deemed to constitute a limitation of Contractor's liability for claims hereunder.

- c. 11.1.6 Should the Contractor fail to purchase, or fail to continue in force until completion of the project insurance in the amounts indicated above, or required below, the Owner may purchase such insurance and the cost thereof shall be borne by the Contractor. In the alternative, at the Owner's option, the Owner hereby specifically reserves the right to rescind or terminate this Contract at any time, if the Owner determines that Contractor has not complied with any of the requirements for any insurance required under any provision of Article 11.
- B. 11.2 - OWNER'S LIABILITY INSURANCE
1. 11.2.1 Delete the sentence and substitute the following:
 - a. The Contractor shall purchase and maintain insurance covering the Owner's contingent liability for claims which may arise from operations under the Contract.
 2. 11.2.2 Add the following Sub-subparagraph:
 - a. Should the Contractor fail to purchase, or fail to continue in force until completion of the project insurance in the amount indicated above, the Owner may purchase such insurance and the cost thereof shall be borne by the Contractor.
- C. 11.4 - PROPERTY INSURANCE
1. 11.4.1 Delete paragraph and replace with the following:
 - a. The Contractor shall purchase and maintain an "All Risk" builders risk policy covering the entire work at the site for the full insurable value of the work, including transit thereto and including materials stored offsite and destined to become a part of the work. Policy shall include insurance coverage of the construction against physical loss or damage for perils of fire, theft, vandalism, malicious mischief, flood, earthquake and other acts of nature. Insurance shall include endorsement allowing occupancy of the project, in part or in whole, by the Owner prior to final completion of the construction. This insurance shall include the interest of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the work. A copy of such policy will be furnished to the Owner upon request.
 - b. The policy shall contain a provision that coverage afforded under the policy will not be canceled until at least 45 days prior written notice has been given to the Owner.
 2. 11.4.2 Modify the paragraph by substituting "Contractor" for "Owner" at the first reference to "Owner" in the first sentence.
 3. 11.4.6 Change the word "Owner" to read "Contractor" and change the word "Contractor" to read "Owner".
 4. 11.4.7 Add the following new paragraph:
 - a. In waiving rights of recovery under terms of this subparagraph, the term Owner shall be deemed to include his employees and the Architect/Engineer and his employees as the Owner's representative, as provided in the contract documents.
 5. 11.4.8 and 11.4.9 Change the words "Owner's" and "Owner" to read "Contractor's" and "Contractor".

4.09 ARTICLE 12 - UNCOVERING AND CORRECTION OF WORK

- A. 12.2 - CORRECTION OF WORK
1. Add the following new subparagraphs:
 - a. 12.2.7 "Contractor shall furnish the Owner his written guarantee to cover the one year guarantee period indicated by this Article, as well as all other specific guarantees required for individual items of material, equipment or work."
 - b. 12.2.8 "Immediately prior to termination of the guarantee period, the Contractor shall make an inspection of the premises in company with the Owner and Architect and shall take note of any repairs that may be necessary. Contractor shall, within ten days from date of inspection, commence making any repairs that may be necessary and shall prosecute the work without interruption until completed to the satisfaction of the

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Owner even though the date of completion may extend beyond the limit of the guarantee period."

B. 12.3 - ACCEPTANCE OF NONCONFORMING WORK

1. Add the following sub-subparagraph:
 - a. 12.3.1.1 "If for any reason it may be expedient to the Owner to accept any work or material that is not in accordance with the drawings and the specifications, or becomes damaged during the progress of the work, it may deduct from the amount of money to be paid to the Contractor an amount equal to the difference in the value between said work and that which is specified or shown on the drawings."

4.10 ARTICLE 13 - MISCELLANEOUS PROVISIONS

A. 13.2 - SUCCESSORS AND ASSIGNS

1. Add the following the Subparagraph:
 - a. 13.2.1 Assignment of Subcontracting: Neither this Agreement nor any claim for payment of sums due or to become due shall be assignable in whole or in part by Contractor or by operation of law without the written consent of the Owner nor shall Contractor subcontract the work or any part thereof without the prior written consent of the Owner.

4.11 ARTICLE 14 - TERMINATION OR SUSPENSION FO THE CONTRACT

A. 14-4 - TERMINATION BY THE OWNER FOR CONVENIENCE

1. Delete paragraph 14.4.3 and replace with the following:
 - a. 14.4.3 In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment from the Owner on the same basis provided in Subparagraph 14.1.2.

END OF SECTION

SECTION 01 10 00 SUMMARY

PART 1 GENERAL

1.01 PROJECT

- A. Project Name: New Administration Building Renovation - Hondo
- B. Owner's Name: Medina Healthcare System, Inc.
- C. Architect's Name: GRG Architecture.
- D. The Project consists of exterior improvements and interior renovation finish out of approximately 4,300 s.f. to accommodate new administrative offices in Hondo, Texas.

1.02 CONTRACT DESCRIPTION

- A. Contract Type: A single prime contract based on a Stipulated Price as described in Document 00 52 00 - Agreement Form.

1.03 DESCRIPTION OF ALTERATIONS WORK

- A. Scope of selective demolition and removal of existing utilities for preparation of new work is shown on drawings and specified in Section 02 41 20.
- B. Scope of alterations work is shown on drawings.
- C. Plumbing: Alter existing and add new construction.
- D. HVAC: Relocation of existing units and installation of new units at new mechanical mezzanine to serve both existing and new areas.
- E. Electrical Power and Lighting: Alter existing and add new construction.
- F. Fire Alarm: Alter existing and add new construction.
- G. Security System: Add new system.

1.04 WORK BY OWNER

- A. Items noted NIC (Not in Contract) will be supplied and installed by Owner before Substantial Completion. Some items include:
 - 1. Movable cabinets.
 - 2. Furnishings.
 - 3. Small equipment.
 - 4. Paper Towel dispensers.
 - 5. Soap Dispensers.

1.05 OWNER OCCUPANCY

- A. Owner intends to occupy the Project upon Substantial Completion.
- B. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.
- C. Schedule the Work to accommodate Owner occupancy.

1.06 CONTRACTOR USE OF SITE AND PREMISES

- A. Construction Operations: Entire site and building will be available.
- B. Arrange use of site and premises to allow:
 - 1. Work by Owner.
- C. Provide access to and from site as required by law and by Owner:
 - 1. Do not obstruct roadways, sidewalks, or other public ways without permit.

1.07 WORK EXCLUDED

- A. Work under this Contract specifically excludes handling, removal and abatement of asbestos containing materials, polychlorinated biphenyl (PCB) and/or any other hazardous materials.
- B. If the Contractor should discover or have reason to believe as a result of his operations, that asbestos containing materials, PCB or other hazardous materials are present, immediately

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cease operations and notify Owner. The Owner will arrange to: 1) have this area inspected, and 2) remove any hazardous materials.

- C. No claims for additional compensation will be allowed for suspicion or finding of hazardous materials unless the Owner fails to promptly conduct an inspection and remove any hazardous materials found.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 20 00 PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Procedures for preparation and submittal of applications for progress payments.
- B. Documentation of changes in Contract Sum and Contract Time.
- C. Change procedures.
- D. Procedures for preparation and submittal of application for final payment.

1.02 RELATED REQUIREMENTS

- A. Section 00 50 00 - Contracting Forms and Supplements: Forms to be used.

1.03 SCHEDULE OF VALUES

- A. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit draft to Architect for approval.
- B. Forms filled out by hand will not be accepted.
- C. Submit Schedule of Values in duplicate within 15 days after date of Owner-Contractor Agreement.

1.04 APPLICATIONS FOR PROGRESS PAYMENTS

- A. Payment Period: Submit at intervals stipulated in the Agreement.
- B. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Architect for approval.
- C. Forms filled out by hand will not be accepted.
- D. For each item, provide a column for listing each of the following:
 - 1. Item Number.
 - 2. Description of work.
 - 3. Scheduled Values.
 - 4. Previous Applications.
 - 5. Work in Place and Stored Materials under this Application.
 - 6. Authorized Change Orders.
 - 7. Total Completed and Stored to Date of Application.
 - 8. Percentage of Completion.
 - 9. Balance to Finish.
 - 10. Retainage.
- E. Execute certification by signature of authorized officer.
- F. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed.
- G. Submit three copies of each Application for Payment.
- H. Include the following with the application:
 - 1. Partial release of liens from major Subcontractors and vendors.
- I. When Architect requires substantiating information, submit data justifying dollar amounts in question. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.

1.05 MODIFICATION PROCEDURES

- A. For minor changes not involving an adjustment to the Contract Sum or Contract Time, Architect will issue instructions directly to Contractor.
- B. For other required changes, Architect will issue a document signed by Owner instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.

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1. The document will describe the required changes and will designate method of determining any change in Contract Sum or Contract Time.
 2. Promptly execute the change.
- C. For changes for which advance pricing is desired, Architect will issue a document that includes a detailed description of a proposed change with supplementary or revised drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within 10 days.
- D. Contractor may propose a change by submitting a request for change to Architect, describing the proposed change and its full effect on the Work, with a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full documentation and a statement describing the effect on Work by separate or other contractors. Document any requested substitutions in accordance with Section 01 60 00.
- E. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.
- F. Execution of Change Orders: Architect will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.
- G. After execution of Change Order, promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.

1.06 APPLICATION FOR FINAL PAYMENT

- A. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.
- B. Application for Final Payment will not be considered until the following have been accomplished:
1. All closeout procedures specified in Section 01 70 00.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 30 00 ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Electronic document submittals.
- B. Preconstruction meeting.
- C. Site mobilization meeting.
- D. Progress meetings.
- E. Construction progress schedule.
- F. Progress photographs.
- G. Requests for information.
- H. Submittals for review, information, and project closeout.
- I. Submittal procedures.

1.02 RELATED REQUIREMENTS

- A. Section 01 70 00 - Execution and Closeout Requirements: Additional coordination requirements.

1.03 DEFINITIONS

- A. Shop Drawings: Drawings, diagrams, schedules and other data specifically prepared for the Work by the Contractor or a Subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.
- B. Product Data: Illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.
- C. Samples: Physical examples which illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.
- D. Governmental Review Comments: Written comments and process stamps by authorized governmental representatives on or accompanying returned documents previously submitted for building permits, operating licenses, code or ordinance approvals or variances, or other similar or related governmental reviews or approvals.
- E. "A ACTION": Fabrication, manufacture and/or construction may proceed, providing the Work is in accordance with all requirements of the Contract Documents. The Architect's final acceptance of the Work will be contingent upon such compliance.
- F. "B ACTION": Manufacture and fabrication for construction may proceed. The Architect's final acceptance of the Work will be contingent upon compliance with all notations and all requirements of the Contract Documents.
- G. "C ACTION": No work shall be fabricated, manufactured and/or constructed. The Contractor shall redraw and resubmit the Shop Drawings or other submittals to conform with all requirements of the Contract Documents. Resubmit to the Architect, until resubmission is not required. Submittals marked "C ACTION" are not permitted on the construction site.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 ELECTRONIC DOCUMENT SUBMITTAL SERVICE

- A. All documents transmitted for purposes of administration of the contract are to be in electronic (PDF) format. At a minimum, contractor is to use Bluebeam Revu software, or, at contractor's option, an Internet-based submittal service or project management software that receives, logs and stores documents, provides electronic stamping and signatures, and notifies addressees via email.

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1. Besides submittals for review, information, and closeout, this procedure applies to requests for information (RFIs), progress documentation, contract modification documents (e.g. supplementary instructions, change proposals, change orders), applications for payment, field reports and meeting minutes, Contractor's correction punchlist, and any other document any participant wishes to make part of the project record.
 2. It is Contractor's responsibility to submit documents in PDF format.
 3. Users of the service need an email address, Internet access, and PDF review software that includes ability to mark up and apply electronic stamps (such as Adobe Acrobat, www.adobe.com, or Bluebeam PDF Revu, www.bluebeam.com), unless such software capability is provided by the service provider.
 4. Paper document transmittals will not be reviewed; emailed PDF documents will not be reviewed.
 5. All other specified submittal and document transmission procedures apply, except that electronic document requirements do not apply to samples or color selection charts.
- B. Submittal Service (at contractor's option) : Use one of the following:
1. Newforma Project Cloud: www.newformaprojectcloud.com.
 2. AutoDesk BIM 360: www.autodesk.com.
 3. Or approved project management software as proposed by general contractor.
- C. Training: One, one-hour, web-based training session will be arranged for all participants, with representatives of Architect and Contractor participating; further training is the responsibility of the user of the service.
- D. Project Closeout: Architect will determine when to terminate the service for the project and is responsible for obtaining archive copies of files for Owner.

3.02 PRECONSTRUCTION MEETING

- A. Architect will schedule a meeting after Notice of Award.
- B. Attendance Required:
1. Owner.
 2. Architect.
 3. Contractor.
- C. Agenda:
1. Execution of Owner-Contractor Agreement.
 2. Submission of executed bonds and insurance certificates.
 3. Distribution of Contract Documents.
 4. Submission of schedule of values, and progress schedule.
 5. Designation of personnel representing the parties to Contract, Owner and Architect.
 6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
 7. Scheduling.
- D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.03 SITE MOBILIZATION MEETING

- A. Owner will schedule a meeting at the Project site prior to Contractor occupancy.
- B. Attendance Required:
1. Contractor.
 2. Owner.
 3. Architect.
 4. Special Consultants.
 5. Contractor's Superintendent.
 6. Major Subcontractors.
- C. Agenda:
1. Use of premises by Owner and Contractor.

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2. Owner's requirements and occupancy prior to completion.
 3. Construction facilities and controls provided by Owner.
 4. Temporary utilities provided by Owner.
 5. Survey and building layout.
 6. Security and housekeeping procedures.
 7. Schedules.
 8. Application for payment procedures.
 9. Procedures for testing.
 10. Procedures for maintaining record documents.
 11. Requirements for start-up of equipment.
 12. Inspection and acceptance of equipment put into service during construction period.
- D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.04 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the Work at maximum bi-weekly intervals.
- B. Attendance Required: Job superintendent, major Subcontractors and suppliers, Owner, Architect, as appropriate to agenda topics for each meeting.
1. Contractor.
 2. Owner.
 3. Architect.
 4. Contractor's Superintendent.
 5. Major Subcontractors.
- C. Recommended Agenda:
1. Review minutes of previous meetings.
 2. Review of Work progress.
 3. Field observations, problems, and decisions.
 4. Identification of problems that impede, or will impede, planned progress.
 5. Review of submittals schedule and status of submittals.
 6. Maintenance of progress schedule.
 7. Corrective measures to regain projected schedules.
 8. Planned progress during succeeding work period.
 9. Maintenance of quality and work standards.
 10. Effect of proposed changes on progress schedule and coordination.
 11. Other business relating to Work.
- D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.05 CONSTRUCTION PROGRESS SCHEDULE

- A. Within 10 days after date of the Agreement, submit preliminary schedule defining planned operations for the first 60 days of Work, with a general outline for remainder of Work.
- B. If preliminary schedule requires revision after review, submit revised schedule within 10 days.
- C. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
1. Include written certification that major contractors have reviewed and accepted proposed schedule.
- D. Within 10 days after joint review, submit complete schedule.
- E. Submit updated schedule with each Application for Payment.

3.06 PROGRESS PHOTOGRAPHS

- A. Submit new photographs at least once a month, within 3 days after exposure.
- B. Photography Type: Digital; electronic files.

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- C. Provide photographs of site and construction throughout progress of Work produced by an experienced photographer, acceptable to Architect.
- D. Views:
 - 1. Provide non-aerial photographs from appropriate views at each specified time, until Date of Substantial Completion.
 - 2. Consult with Architect for instructions on views required.
 - 3. Provide factual presentation.
 - 4. Provide correct exposure and focus, high resolution and sharpness, maximum depth of field, and minimum distortion.
- E. Digital Photographs: 24 bit color, minimum resolution of 1024 by 768, in JPG format; provide files unaltered by photo editing software.
 - 1. Delivery Medium: Via email.
 - 2. File Naming: Include project identification, date and time of view, and view identification.
 - 3. PDF File: Assemble all photos into printable pages in PDF format, with 2 to 3 photos per page, each photo labeled with file name; one PDF file per submittal.

3.07 GOVERNMENTAL REVIEW COMMENTS

- A. Submit within seven (7) days of receipt from governmental agency.

3.08 REQUESTS FOR INFORMATION

- A. Submit written Requests for Information (RFI) using Architect provided form. See Section 01 30 00, Attachment "A", Request for Information. If desired, the form can be provided to the Contractor on electronic media, WordPerfect 8.0 or Microsoft Word.
- B. Complete upper portion of RFI form. Number RFI's sequentially. Limit each RFI to one subject. Describe nature of additional information required with references to existing drawings as required. When the Contractor has envisioned a possible solution, submit proposed solution with RFI.
- C. Submit RFI by fax or e-mail to the Architect, if desired. If submitting drawing in hard copy format, if drawings exceed 8-1/2" x 11" size, submit four (4) copies with RFI.
- D. Architect/Engineer will review RFI and provide additional information required for continuation of project consistent with design intent. If required, additional drawings will be issued with the RFI response.

3.09 PRE-SUBMITTAL COORDINATION

- A. Conduct pre-submittal conference at Project site to coordinate with appropriate trades that require coordination before proceeding with final submittal preparation and subsequent submission for review and approval.
- B. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations. Advise Architect and/or Engineer of scheduled meeting dates.
- C. Pre-submittal coordination conference will be required for the following:
 - 1. Division 21 - Fire Suppression: Review proposed pipe routing, both exposed and concealed, to ascertain compliance with architect / engineer design intent.
 - 2. Division 23 - HVAC Piping and Air Distribution.

3.10 SUBMITTALS FOR REVIEW

- A. When the following are specified in individual sections, submit them for review:
 - 1. Product data.
 - 2. Shop drawings.
 - 3. Samples for selection.
 - 4. Samples for verification.
- B. Should the Contractor, Sub-contractor or material supplier desire to obtain the Architect's or Engineer's drawing in an electronic format (CADD drawings) for use as an aid in preparing shop drawings, the Contractor shall complete the ELECTRONIC FILE TRANSFER AGREEMENT,

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See Section 01 30 00 Attachment "B." Submit the completed ELECTRONIC FILE TRANSFER AGREEMENT directly to the Architect. When the files are ready for pick-up at the design professional's office, the Contractor, Sub-contractor or material supplier will be notified by telephone, or if e-mail option is selected, the files will be forwarded by e-mail.

- C. Submit to Architect for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
- D. Samples will be reviewed only for aesthetic, color, or finish selection.
- E. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01 78 00 - Closeout Submittals.

3.11 SUBMITTALS FOR INFORMATION

- A. When the following are specified in individual sections, submit them for information:
 - 1. Design data.
 - 2. Certificates.
 - 3. Test reports.
 - 4. Inspection reports.
 - 5. Manufacturer's instructions.
 - 6. Manufacturer's field reports.
 - 7. Other types indicated.
- B. Submit for Architect's knowledge as contract administrator or for Owner. No action will be taken.

3.12 SUBMITTALS FOR PROJECT CLOSEOUT

- A. Submit Correction Punch List for Substantial Completion.
- B. Submit Final Correction Punch List for Substantial Completion.
- C. When the following are specified in individual sections, submit them at project closeout:
 - 1. Project record documents.
 - 2. Operation and maintenance data.
 - 3. Warranties.
 - 4. Bonds.
 - 5. Other types as indicated.
- D. Submit for Owner's benefit during and after project completion.

3.13 NUMBER OF COPIES OF SUBMITTALS

- A. Electronic Documents: Submit one electronic copy in PDF format; an electronically-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.
- B. Samples: Submit the number specified in individual specification sections; one of which will be retained by Architect.
 - 1. After review, produce duplicates.
 - 2. Retained samples will not be returned to Contractor unless specifically stated.

3.14 SUBMITTAL PROCEDURES

- A. Shop Drawing Procedures:
 - 1. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting the Contract Documents and coordinating related Work.
 - 2. Generic, non-project specific information submitted as shop drawings do not meet the requirements for shop drawings.
- B. Transmit each submittal with a copy of approved submittal form.
- C. Transmit each submittal with approved form.
- D. Sequentially number each different type of submittal, i.e. shop drawings and samples, requests for information, etc.

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- E. Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.
- F. Identify Project, Contractor, Subcontractor, manufacturer or supplier; pertinent drawing and detail number, specification section number, and applicable standards such as ASTM, ANSI, etc. as appropriate on each copy.
- G. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.
- H. Schedule submittals to expedite the Project, and coordinate submission of related items.
- I. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.
- J. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of the completed Work.
- K. Provide space for Contractor and Architect review stamps.
- L. When revised for resubmission, identify all changes made since previous submission.
- M. Distribute reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.
- N. Submittals not requested will not be recognized or processed.

END OF SECTION

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SECTION 01 3000.1- ATTACHMENT A – REQUEST FOR INFORMATION

TO: Edward Garza, GRG Architecture
edward.garza@grgarchitecture.com

FROM: _____

CONTRACTOR: _____

PROJECT: New Administration Building Renovation - Hondo
3103 Avenue G
Hondo, Texas

RFI Number: _____

SUBJECT: _____

Date: _____

Architect's Project No. 21-0120

Shop Dwg. Submitted _____ Yes ___ No ___ N/A

LOCATION OF WORK: _____

AFFECTED DRAWINGS: _____

DESCRIPTION (QUESTION):

PROPOSED SOLUTION:

Please respond by: _____

Attachments: _____ Signature: _____

RESPONSE:

Response by: ___ Architect ___ MEP Engineer ___ Structural Engineer ___ Civil Engineer ___ Other

Reference Drawings: _____

RESPONSE/COMMENT:

Date of Reply: _____

Attachments: _____ Signature: _____

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SECTION 01 30 00.2 ATTACHMENT B – ELECTRONIC FILE TRANSFER AGREEMENT

Pursuant to the request of _____ ("Contractor") for GRG Architecture and its consultants ("Architect") will deliver BIM model and/or AutoCadd files ("Files") subject to the following terms and conditions:

1. The Files are not Contract Documents for the Project. Data contained on the electronic Files are instruments of service and are transmitted for Contractor's information only. Only hard copy drawings and specifications are Contract Documents. These Files were created by the Architect for the express purpose of creating 2D contract documents. No implication is intended for any purpose beyond the production of 2D documents.
2. The Contractor agrees that the Files, except as expressly set forth above, are not fit for any particular purpose, including, but not limited to, quantity take offs, clash detection, ascertainment of construction or installation tolerances and clearances, preparation of shop drawings, coordination drawings, fabrication drawings, or the manufacture of any building components or system. No representation is made regarding the accuracy or completeness of the Files. In the event that a conflict arises between the signed or sealed hard copy documents prepared by the Architect and its consultants and the electronic Files, the hard copy documents shall govern. As such, any omissions or conflicts with the Files, with respect to the content of the Contract Documents, shall not be used as a basis for an increase in the Contract Sum or Time.
3. The Contractor acknowledges that the model Files do not account for or incorporate means, methods, shop standards, and routing economies required by individual subcontractors for the scope of work. Modifications to the information and routings of selected components may be required and are the responsibility of the Contractor. Therefore, the Contractor agrees that by the use of these Files, the Contractor is not relieved of its duty to fully comply with the Contract Documents, including and without limitation, the need to check, confirm and coordinate all dimensions and determine field measurements, verification of the field conditions and the coordination of the Work.
4. The Files to be furnished include work prepared by the Architect, Structural, Mechanical, Electrical, and Plumbing consultants only. Files will be furnished in Autodesk®.rvt and/or .dwg format only. One set of electronic Files will be furnished. Contractor assumes responsibility for distributing pertinent Files to its subcontractors.
5. The Contractor further acknowledges that the Architect makes no representations as to the compatibility of the Files with the user's hardware, software, and other systems. Additionally, the Files are not warranted to be free of any anomalies, errors, viruses, malware or other unintended defects.
6. Furthermore, the Contractor shall, to the fullest extent permitted by law, indemnify and hold those providing the Files harmless against all damages, liability or costs, including reasonable attorneys' fees and defense costs, arising out of or resulting from the Contractor and its Subcontractor's use of the requested electronic Files.
7. The Contractor shall require each subcontractor, to the extent of the work to be performed by the subcontractor, to be bound by the terms and conditions of this Agreement.
8. Because information presented on the electronic files can be modified, unintentionally or otherwise, we reserve the right to remove all indicia of ownership and/or involvement from each electronic display.
9. Upon receipt of the signed Agreement, the Files will be transmitted to the undersigned via electronic media as requested and appropriate to the size of the Files.

Agreed:

Date

(Contractor firm name and contact name)

SECTION 01 31 16 MECHANICAL AND ELECTRICAL COORDINATION

PART 1 GENERAL

1.01 REQUIREMENTS

- A. Provide necessary work and services required for the complete installation of heating, ventilating, air conditioning, plumbing, and electrical systems as shown on the Drawings. For convenience, Drawings showing primarily H.V.A.C. have been numbered with an "M," Drawings showing primarily electrical have been numbered with an "E" and Drawings showing primarily plumbing have been numbered with a "P".
- B. Make installations in a manner that complies with applicable codes and laws. Where the requirements of Contract Documents exceed code requirements, comply with the Contract Documents.

1.02 CONTRACT DRAWINGS

- A. The Drawings are schematic in nature, but indicate how the various components are integrated with other parts of the building. Determine exact locations by job measurement, by determining and verifying the requirements of other trades, and by review of Contract Documents.
- B. The Drawings indicate general routing of the various parts of the systems, but do not indicate all sizes, fittings, offsets, and runouts which are required. Provide correct sizes, fittings, offsets, and runouts required to fit the system into spaces allocated to them. Locate all light fixtures, vents, and supply grilles to conform to the ceiling grid system.

1.03 COORDINATION SUBMITTALS

- A. Conform to the requirements of Section 01 3000 - Administrative Requirements.
- B. Review shop drawings, product data, and samples for compliance with Contract Documents and for coordination among work of all sections of the Project Manual. Transmit to Contractor for review, then transmit to Architect.
- C. Check field dimensions and clearances and relationship to available space and anchors.
- D. Check compatibility with equipment and Work of other sections, electrical characteristics, and operational control requirements.
- E. Check motor voltages and control characteristics.
- F. Coordinate controls, interlocks, wiring of pneumatic switches, and relays.
- G. Coordinate wiring and control diagrams.
- H. Review the effect of any changes on work of other sections.
- I. Equipment and material submittals shall show sufficient data to indicate complete compliance with Contract Documents as follows:
 - 1. Proper sizes and capabilities.
 - 2. Ability to fit in the available space in a manner that will allow proper service.
 - 3. Construction methods, materials, and finishes.
 - 4. List of accessories.
- J. Product data shall include the contract item designation, building, and proposed model number.
- K. If proposed fixtures or devices are different than models specified, follow requirements of Section 01 60 00 for substitutions.
- L. For any item to be installed in or on a finished surface (such as tee bar, acoustical ceiling, plaster wall) certify that applicable Contract Documents have been checked and that the item submitted is compatible with the surface finish on which it is to be installed.
- M. Bind all submittals into three ring binders with hard plastic covers, with a table of contents listing all items in that specific submittal. Loose catalog sheets or drawings will not be acceptable. Provide a separate submittal for each type of equipment; e.g., lighting fixtures, switchgear, lighting panels, mechanical equipment, plumbing items, and ductwork accessories, each in a separate brochure. Miscellaneous apparatuses such as transformers, contactors, time

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switches, and safety switches may be contained in one submittal.

- N. Auxiliary system submittals shall contain sufficient information to show conformance with the specifications and shall include a description of the operation of each system to aid the consultant in the evaluation of each submittal.
- O. Verify and coordinate maintenance of Record Documents.

1.04 COORDINATION DOCUMENTS

- A. Shop Drawings: Provide sheet metal, piping, mechanical, and electrical fabrication Shop Drawings which show equipment, ductwork, and piping, including piping in plumbing chases, sized and drawn in exact location to be installed. Produce Drawings at 1/4 inch scale with all ductwork and piping sized accordingly. Show ductwork and piping larger than 3 inches with double lines.
- B. Coordination Drawings:
 - 1. Coordination Drawings are Drawings which indicate relationships between the various systems and other components of the building such as beams, columns, ceilings, and walls. They shall be drawn to scale and shall include plans, elevations, sections, and other details as required to clearly define the relationships of the various components. Indicate ducts, conduits, sprinkler systems, light fixtures, piping, and miscellaneous equipment on one drawing for each floor or level. Refer to Mechanical and Electrical Specifications for additional requirements.
 - 2. Prepare coordination drawings to organize installation of Products for efficient use of available space, for proper sequence of installation, and to identify potential conflicts.
 - 3. Prepare a master schedule to identify responsibilities under each section of Divisions 1 through 16 of the Specifications for activities which directly relate to this work, including submittals and temporary utilities. Identify electrical power characteristics and control wiring required for each item of equipment.
 - 4. Maintain documents for the duration of the Work, recording changes due to site instructions, modifications or adjustments.
 - 5. After Architect review of original and revised documents, reproduce and distribute copies to concerned parties.
- C. Interference Drawings:
 - 1. Interference Drawings are supplementary to Coordination Drawings and indicate conflict between the various systems and other components of the building such as beams, columns, and walls. They shall be drawn to large scale and shall include plans, elevations, sections, and other details as required to clearly define the interference and to indicate the Contractor's proposed solution.
 - 2. Submit Drawings for approval whenever job measurements and an analysis of the Drawings and specifications by the Contractor indicate that the various systems cannot be installed without significant deviation from the intent of the Contract. When such an interference is encountered, Work shall cease in the general areas of the conflict until a solution to the question has been approved by the Architect.

1.05 OPERATING MANUALS, SERVICE DATA, AND WARRANTIES

- A. Upon completion of the project, provide three copies of service manual for each type unit of equipment. Bind manuals in three D side ring binders with durable plastic covers.
- B. Prepare binder covers with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS," title of project, and subject matter of binder when multiple binders are required.
- C. Internally subdivide the binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.
- D. Contents:
 - 1. Prepare a Table of Contents for each volume, with each Product or system description identified, type on 20 pound white paper.
 - 2. Part 1: Directory, listing names, addresses, and telephone numbers of Architect, Contractor, Subcontractors, and major equipment suppliers.

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3. Part 2: Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
 - a. Significant design criteria.
 - b. List of equipment.
 - c. Wiring diagrams for electrical items and components.
 - d. Parts list for each component. Identify each major part of the unit by the manufacturer's part number.
 - e. Operating instructions.
 - f. Information required for performing periodic minor maintenance on the equipment and systems.
 - g. Maintenance instructions for finishes, including recommended cleaning methods and materials and special precautions identifying detrimental agents.
 - h. List of necessary service parts and equipment for maintenance.
 - i. Separate spare parts list stating the estimated quantities of spare parts normally required to service the equipment for a period of one year.
 - j. Manufacturer's catalogs containing optional accessory items available for the equipment.
4. Part 3: Project documents and certificates, including the following:
 - a. Shop drawings and product data.
 - b. Air and water balance reports.
 - c. Certificates.
 - d. Photocopies of warranties and bonds.
- E. Warranties: In addition to the one year warranty specified in the Conditions of the Contract, assume all responsibility for special guarantees which may be required concerning installation, operation or performance of equipment, materials, and systems provided by a distributor, manufacturer or subcontractor.
- F. Owner's Instructions: At the completion of the Project, arrange and conduct instructional classes on the mechanical, electrical, and plumbing systems for the Owner's operating personnel. Categorize the instruction into layout and orientation, operation, and maintenance of each system.

1.06 MANUFACTURER'S DIRECTIONS AND SUPERVISION

- A. Follow manufacturer's directions for installation, testing, and operation of all apparatuses and equipment provided.
- B. Where supervision by a manufacturer is required in the specification, pay all costs and follow all instructions and recommendations of the manufacturer, who shall supervise the installation, connection, startup, adjustment, instruction of the Owner, and final tests of equipment and systems. Where two or more manufacturer's equipment is interrelated, coordinate the Work and supervision.
- C. Provide a letter from the manufacturers whose supervision is required stating that they have supervised the installation and their equipment or system is operating satisfactorily in detail and in every respect and that the Owner's representative has been instructed in the operation and maintenance.

1.07 REQUIREMENTS FOR EQUIPMENT

- A. Provide equipment with necessary parts and accessories required for proper installation and operation even though the parts and accessories are not specifically mentioned herein.
- B. Provide a factory applied finish on all exterior surfaces. Touch up or refinish items which have the finish marred, before final acceptance.
- C. Provide rotating parts that are in static and dynamic balance.
- D. Provide electrical materials bearing the stamp of approval of the Underwriter's Laboratory.
- E. Eliminate any abnormal noises, which are not an inherent part of the systems as designed. Abnormal buzzing and rattling of equipment, piping, ducts, and air devices and squeaks in

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rotating equipment components are not acceptable.

1.08 PROTECTION OF EQUIPMENT

- A. Do not deliver equipment to jobsite until progress of construction has reached the stage where equipment is actually needed, or until equipment can be stored inside building to protect equipment from the weather. Equipment allowed to stand in weather will be rejected, and new equipment of a like kind shall be used.
- B. Adequately protect equipment from damage after delivery to job site. Cover with heavy tarps or drop cloths as required to protect from plaster, dirt, paint, water, adverse weather conditions, and physical damage. Ventilate as required to prevent condensation.
- C. Equipment which has been damaged by construction activities will be rejected, and new equipment of a like kind shall be used.
- D. At time of Substantial Completion, equipment shall be clean.

1.09 COORDINATION

- A. Coordinate the mechanical and electrical Work with that of other trades in order that the various components of the systems shall be installed at the proper time, shall fit the available space, and shall allow proper service access to those requiring maintenance, including equipment specified in other Divisions.
- B. Coordinate installation of mechanical and electrical Work to provide installation that is concealed from view whenever possible. Where mechanical and electrical Work is shown to be exposed or cannot be installed in a concealed condition, install in an aesthetically pleasing manner acceptable to Architect. Consult with Architect before installation to verify acceptability of proposed routing, patterns and installation details.
- C. Coordinate progress schedules, including dates for submittals and for delivery of products.
- D. Conduct conferences among Subcontractors and others concerned with the Work, to establish and maintain coordination and schedules, and to resolve coordination matters in dispute.
- E. Participate in progress meetings. Report on progress of Work to be adjusted under coordination requirements, and any required changes in schedules. Transmit minutes of meetings and reports to concerned parties.
- F. Remove and relocate items which are installed without regard to proper access as directed by the Architect, at no additional cost to the Owner.
- G. Provide materials with trim to match and fit properly with the types of adjacent ceiling, wall, and floor finishes actually installed. Model numbers in specifications or scheduled on Drawings are not intended to designate the required trim.
- H. Provide mechanical equipment with electrical characteristics compatible with that shown on Electrical Drawings and described in Electrical Division of the specifications.
- I. Prior to the fabrication of ductwork or the installation of devices in the ceilings, review the Drawings to ascertain that the locations of devices in the ceilings create a pattern which is compatible with the reflected ceiling plan and the spacing of the various ceiling mounted devices.
- J. In certain instances, the Architect may require relocation of outlets and switches. Where relocation is within 3 feet of location shown on Drawings, and when Contractor is informed of necessary relocation before Work is begun on this individual portion of the Work, no additional compensation will be allowed.

1.10 EQUIPMENT START-UP

- A. Verify utilities, connections and controls are complete, filters are in place and equipment is in operable condition as required by Divisions 15 and 16.
- B. Observe startup and adjustments; record time and date of start-up, and results.
- C. Observe equipment demonstrations in the company of the Owner's representative; record times and additional information required for Operation and Maintenance Manuals.

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1.11 INSPECTION AND ACCEPTANCE OF EQUIPMENT

- A. Prior to inspection, verify that equipment is tested and operational, and clean.
- B. Assist Architect with inspection. Prepare list of items to be completed and corrected.

PART 2 PRODUCTS NOT USED

PART 3 EXECUTION NOT USED

END OF SECTION

SECTION 01 40 00 QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Quality assurance submittals.
- B. Mock-ups.
- C. Control of installation.
- D. Tolerances.
- E. Testing and inspection services.
- F. Manufacturers' field services.

1.02 RELATED REQUIREMENTS

- A. Section 01 30 00 - Administrative Requirements: Submittal procedures.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect, in quantities specified for Product Data.
 - 1. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
 - 2. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect.
- C. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
- D. Manufacturer's Field Reports: Submit reports for Architect's benefit as contract administrator or for Owner.
 - 1. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

1.04 REFERENCES AND STANDARDS

- A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.
- C. Obtain copies of standards where required by product specification sections.
- D. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.
- E. Neither the contractual relationships, duties, nor responsibilities of the parties in Contract nor those of Architect shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.05 TESTING AND INSPECTION AGENCIES

- A. Owner will employ and pay for services of an independent testing agency to perform specified testing and inspection.
- B. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.
- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Have Work performed by persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.02 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

3.03 TESTING AND INSPECTION

- A. Testing Agency Duties:
 - 1. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
 - 2. Perform specified sampling and testing of products in accordance with specified standards.
 - 3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 - 4. Promptly notify Architect and Contractor of observed irregularities or non-conformance of Work or products.
 - 5. Perform additional tests and inspections required by Architect.
 - 6. Submit reports of all tests/inspections specified.
- B. Limits on Testing/Inspection Agency Authority:
 - 1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 - 2. Agency may not approve or accept any portion of the Work.
 - 3. Agency may not assume any duties of Contractor.
 - 4. Agency has no authority to stop the Work.
- C. Contractor Responsibilities:
 - 1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
 - 2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
 - 3. Provide incidental labor and facilities:
 - a. To provide access to Work to be tested/inspected.
 - b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
 - c. To facilitate tests/inspections.
 - d. To provide storage and curing of test samples.

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4. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
 5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
 6. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
- D. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency on instructions by Architect.
- E. Re-testing required because of non-conformance to specified requirements shall be paid for by Contractor.

3.04 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment as applicable, and to initiate instructions when necessary.
- B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

3.05 DEFECT ASSESSMENT

- A. Replace Work or portions of the Work not conforming to specified requirements.
- B. If, in the opinion of Architect, it is not practical to remove and replace the Work, Architect will direct an appropriate remedy or adjust payment.

END OF SECTION

SECTION 01 41 00 REGULATORY REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY OF REFERENCE STANDARDS

- A. Regulatory requirements applicable to this project are the following:
- B. 28 CFR 36 - Nondiscrimination by Public Accommodations and in Commercial Facilities; Final Rule; Department of Justice; current edition.
- C. 36 CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines; current edition.
- D. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- E. TDLR Standards - Texas Department of Licensing and Regulation; 2012 and updates.
- F. 29 CFR 1910 - Occupational Safety and Health Standards; current edition.
- G. ICC (IFC) - International Fire Code; 2012.
- H. NFPA 101 - Life Safety Code, 2012.
- I. ICC (IBC) - ICC International Building Code, 2012.
- J. ICC (IPC) - International Plumbing Code; 2012.
- K. ICC (IMC) - International Mechanical Code; 2012.
- L. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- M. ICC (IECC) - International Energy Conservation Code; 2012.

1.02 RELATED REQUIREMENTS

- A. Section 01 40 00 - Quality Requirements.

1.03 QUALITY ASSURANCE

- A. Designer Qualifications: Where delegated engineering design is to be performed under the construction contract provide the direct supervision of a Professional Engineer experienced in design of this type of work and licensed in Texas.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 50 00 TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Temporary utilities.
- B. Temporary telecommunications services.
- C. Temporary sanitary facilities.
- D. Temporary Controls: Barriers.
- E. Security requirements.
- F. Vehicular access and parking.
- G. Waste removal facilities and services.
- H. Project identification sign.

1.02 TEMPORARY UTILITIES

- A. Owner will provide the following:
 - 1. Electrical power, consisting of connection to existing facilities.
 - 2. Water supply, consisting of connection to existing facilities.

1.03 TELECOMMUNICATIONS SERVICES

- A. Provide, maintain, and pay for telecommunications services to field office at time of project mobilization.

1.04 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.
- B. Use of existing facilities is not permitted.
- C. New permanent facilities may not be used during construction operations.
- D. Maintain daily in clean and sanitary condition.
- E. At end of construction, return facilities to same or better condition as originally found.

1.05 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- B. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.06 SECURITY

- A. Provide security and facilities to protect Work, existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.

1.07 VEHICULAR ACCESS AND PARKING

- A. Coordinate access and haul routes with governing authorities and Owner.
- B. Provide and maintain access to fire hydrants, free of obstructions.
- C. Existing parking areas may be used for construction parking.

1.08 WASTE REMOVAL

- A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
- B. Provide containers with lids. Remove trash from site weekly.
- C. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.

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1.09 PROJECT IDENTIFICATION

- A. Provide project identification sign of design and construction indicated on Drawings.
- B. Erect on site at location established by Architect.
- C. No other signs are allowed without Owner permission except those required by law.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 60 00 PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. General product requirements.
- B. Transportation, handling, storage and protection.
- C. Product option requirements.
- D. Substitution limitations and procedures.
- E. Maintenance materials, including extra materials, spare parts, tools, and software.

1.02 RELATED REQUIREMENTS

- A. Section 01 40 00 - Quality Requirements: Product quality monitoring.

1.03 SUBMITTALS

- A. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- B. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- C. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
 - 1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

PART 2 PRODUCTS

2.01 NEW PRODUCTS

- A. Provide new products unless specifically required or permitted by the Contract Documents.
- B. DO NOT USE products having any of the following characteristics:
 - 1. Made using or containing CFC's or HCFC's.
 - 2. Made of wood from newly cut old growth timber.
- C. Where all other criteria are met, Contractor shall give preference to products that:
 - 1. If used on interior, have lower emissions.
 - 2. If wet-applied, have lower VOC content.
 - 3. Are extracted, harvested, and/or manufactured closer to the location of the project.
 - 4. Result in less construction waste.
 - 5. Have a published GreenScreen Chemical Hazard Analysis.

2.02 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.
- C. Products specified by brand name establish the level of quality desired but are in no way intended to limit competition unless substitutions is specifically excluded with a statement similar to "NO SUBSTITUTIONS ALLOWED."

2.03 HAZARDOUS MATERIALS

- A. PCB or items containing PCB shall not be used or incorporated into the Work.
- B. Asbestos containing materials shall not be incorporated into the Work. Asbestos containing materials shall be defined as materials containing asbestos fibers in an amount greater than 1%, as defined by the asbestos National Emission Standards for Hazardous Air Pollutants

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(asbestos NESHAP), 40 Code of Federal Regulations (CFR) pt. 61, subp. M, which has been incorporated into Minnesota Rule 7011.9920.

- C. Urea formaldehyde or materials containing urea formaldehyde shall not be incorporated into the Work, except that plywood and particleboard materials containing urea formaldehyde may be used, providing said materials do not give gaseous emissions in excess of the following levels, as defined by the United States Department of Housing and Urban Development standards for testing these products under controlled air chamber conditions and HUD-specified pressures.
 - 1. Plywood - 0.2 ppm
 - 2. Particleboard - 0.3 ppm
- D. Dispose of excess or unused hazardous materials and waste products resulting from work of Subcontract in compliance with governmental regulations. Hazardous materials may not be placed in Contractor's trash facilities.

PART 3 EXECUTION

3.01 SUBSTITUTION PROCEDURES

- A. Instructions to Bidders specify time restrictions for submitting requests for substitutions during the bidding period. Comply with requirements specified in this section.
- B. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.
- C. A request for substitution constitutes a representation that the submitter:
 - 1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
 - 2. Will provide the same warranty for the substitution as for the specified product.
 - 3. Will coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner.
 - 4. Waives claims for additional costs or time extension that may subsequently become apparent.
 - 5. Will reimburse Owner and Architect for review or redesign services associated with re-approval by authorities.
 - 6. Agrees that, should a substitution be accepted and this substitution prove within the Warranty Period, the Contractor's standard one-year warranty or the product's warranty beyond one year whichever is greater, to be defective or otherwise unsatisfactory for service for which it was intended, the Contractor shall replace defective material with material originally specified at no additional cost.
- D. Substitution Submittal Procedure:
 - 1. Complete the Request for Substitution form (Attachment C)
 - 2. Submit three copies of request for substitution for consideration. Limit each request to one proposed substitution.
 - 3. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence. Burden of proof is on proposer.
 - 4. The Architect will notify Contractor in writing of decision to accept or reject request.

3.02 TRANSPORTATION AND HANDLING

- A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.
- B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.
- C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
- D. Transport and handle products in accordance with manufacturer's instructions.
- E. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.

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- F. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- G. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.
- H. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.03 STORAGE AND PROTECTION

- A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.
- B. Store and protect products in accordance with manufacturers' instructions.
- C. Store with seals and labels intact and legible.
- D. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.
- E. For exterior storage of fabricated products, place on sloped supports above ground.
- F. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.
- G. Comply with manufacturer's warranty conditions, if any.
- H. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- I. Prevent contact with material that may cause corrosion, discoloration, or staining.
- J. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- K. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION

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SECTION 01 60 00.1 - ATTACHMENT C – REQUEST FOR SUBSTITUTION REVIEW

OWNER
ARCHITECT GRG
CONTRACTOR
CONSULTANT
CONSULTANT
CONSULTANT

PROJECT: New Administration Building Renovation
3103 Ave. G

Hondo, Texas
OWNER: Medina Healthcare System, Inc.

INITIATION DATE:
ARCHITECT: GRG
ARCHITECT'S PROJECT NO: 240224

CONTRACT FOR: General Construction

CONTRACT DATE:

The Contractor is requesting a substitution which requires the Architect and/or Engineer to review it to determine its acceptability for use on the project. The cost of this review will be paid to the Architect and/or Engineer by the Owner as an additional service. An equal amount will be deducted from the Contract sum by subsequent change order, the Contractor thereby reimbursing the Owner for the expense. The Architect and/or Engineer shall proceed with this service promptly. No time extension will be granted for substitutions except where specified material is no longer available due to no fault of the Contractor.

Specification Section:

Description:

The final review cost will be determined by the actual time required to provide the service based on the Architect's and/or Engineer's hourly billing rates in effect at the time the work is performed. Based on the Architect/Engineer's present knowledge of the anticipated review effort, the cost is expected to amount to at least \$ _____ but will probably be less than \$ _____ and will probably require _____ days to complete.

Agreed to:

Agreed to:

Agreed to:

ARCHITECT:
Edward A. Garza, AIA, LEED AP
GRG

CONTRACTOR:

OWNER:

Date: _____

Date: _____

Date: _____

SECTION 01 70 00 EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Examination, preparation, and general installation procedures.
- B. Requirements for alterations work, including selective demolition, except removal, disposal, and/or remediation of hazardous materials and toxic substances.
- C. Pre-installation meetings.
- D. Cutting and patching.
- E. Cleaning and protection.
- F. Starting of systems and equipment.
- G. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.

1.02 COORDINATION

- A. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- B. Notify affected utility companies and comply with their requirements.
- C. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- D. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- E. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- F. Coordinate completion and clean-up of work of separate sections.
- G. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

- A. New Materials: As specified in product sections; match existing products and work for patching and extending work.
- B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.
- C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 60 00 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Take field measurements before confirming product orders or beginning fabrication, to minimize

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waste due to over-ordering or misfabrication.

- E. Verify that utility services are available, of the correct characteristics, and in the correct locations.
- F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 PREINSTALLATION MEETINGS

- A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.
- B. Require attendance of parties directly affecting, or affected by, work of the specific section.
- C. Notify Architect four days in advance of meeting date.
- D. Prepare agenda and preside at meeting:
 - 1. Review conditions of examination, preparation and installation procedures.
 - 2. Review coordination with related work.
- E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.04 GENERAL INSTALLATION REQUIREMENTS

- A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
- B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
- C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- E. Make neat transitions between different surfaces, maintaining texture and appearance.

3.05 ALTERATIONS

- A. Drawings showing existing construction and utilities are based on casual field observation only.
 - 1. Verify that construction and utility arrangements are as shown.
 - 2. Report discrepancies to Architect before disturbing existing installation.
 - 3. Beginning of alterations work constitutes acceptance of existing conditions.
- B. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.
 - 1. Where openings in exterior enclosure exist, provide construction to make exterior enclosure weatherproof.
 - 2. Insulate existing ducts or pipes that are exposed to outdoor ambient temperatures by alterations work.
- C. Remove existing work as indicated and as required to accomplish new work.
 - 1. Remove items indicated on drawings.
 - 2. Relocate items indicated on drawings.
 - 3. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new finish; remove existing finish if necessary for successful application of new finish.
 - 4. Where new surface finishes are not specified or indicated, patch holes and damaged

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surfaces to match adjacent finished surfaces as closely as possible.

- D. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove, relocate, and extend existing systems to accommodate new construction.
 - 1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components; if necessary, modify installation to allow access or provide access panel.
 - 2. Where existing systems or equipment are not active and Contract Documents require reactivation, put back into operational condition; repair supply, distribution, and equipment as required.
 - 3. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
 - a. Disable existing systems only to make switchovers and connections; minimize duration of outages.
 - b. Provide temporary connections as required to maintain existing systems in service.
 - 4. Verify that abandoned services serve only abandoned facilities.
 - 5. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification; patch holes left by removal using materials specified for new construction.
- E. Protect existing work to remain.
 - 1. Prevent movement of structure; provide shoring and bracing if necessary.
 - 2. Perform cutting to accomplish removals neatly and as specified for cutting newwork.
 - 3. Repair adjacent construction and finishes damaged during removal work.
- F. Adapt existing work to fit new work: Make as neat and smooth transition as possible.
 - 1. When existing finished surfaces are cut so that a smooth transition with new work is not possible, terminate existing surface along a straight line at a natural line of division and make recommendation to Architect.
 - 2. Where removal of partitions or walls results in adjacent spaces becoming one, rework floors, walls, and ceilings to a smooth plane without breaks, steps, or bulkheads.
 - 3. Where a change of plane of 1/4 inch or more occurs in existing work, submit recommendation for providing a smooth transition for Architect review and request instructions.
- G. Patching: Where the existing surface is not indicated to be refinished, patch to match the surface finish that existed prior to cutting. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.
- H. Refinish existing surfaces as indicated:
 - 1. Where rooms or spaces are indicated to be refinished, refinish all visible existing surfaces to remain to the specified condition for each material, with a neat transition to adjacent finishes.
 - 2. If mechanical or electrical work is exposed accidentally during the work, re-cover and refinish to match.
- I. Clean existing systems and equipment.
- J. Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.
- K. Do not begin new construction in alterations areas before demolition is complete.
- L. Comply with all other applicable requirements of this section.

3.06 CUTTING AND PATCHING

- A. Whenever possible, execute the work by methods that avoid cutting or patching.
- B. See Alterations article above for additional requirements.

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- C. Perform whatever cutting and patching is necessary to:
 - 1. Complete the work.
 - 2. Fit products together to integrate with other work.
 - 3. Provide openings for penetration of mechanical, electrical, and other services.
 - 4. Match work that has been cut to adjacent work.
 - 5. Repair areas adjacent to cuts to required condition.
 - 6. Repair new work damaged by subsequent work.
 - 7. Remove samples of installed work for testing when requested.
 - 8. Remove and replace defective and non-conforming work.
- D. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.
- E. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
- F. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
- G. Restore work with new products in accordance with requirements of Contract Documents.
- H. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- I. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material , to full thickness of the penetrated element.
- J. Patching:
 - 1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
 - 2. Match color, texture, and appearance.
 - 3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.07 PROGRESS CLEANING

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.08 PROTECTION OF INSTALLED WORK

- A. Protect installed work from damage by construction operations.
- B. Provide special protection where specified in individual specification sections.
- C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- G. Remove protective coverings when no longer needed; reuse or recycle plastic coverings if

possible.

3.09 SYSTEM STARTUP

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.
- C. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- D. Verify that wiring and support components for equipment are complete and tested.
- E. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.
- F. Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.10 ADJUSTING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.11 FINAL CLEANING

- A. Use cleaning materials that are nonhazardous.
- B. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- C. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
- D. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- E. Clean filters of operating equipment.
- F. Clean debris from roofs, gutters, downspouts, scuppers, overflow drains, area drains, and drainage systems.
- G. Clean site; sweep paved areas, rake clean landscaped surfaces.
- H. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.12 CLOSEOUT PROCEDURES

- A. Make submittals that are required by governing or other authorities.
- B. Accompany all sub-contractors on preliminary inspection to determine items to be listed for completion or correction in the Contractor's Correction Punch List for Contractor's Notice of Substantial Completion.
- C. Notify Architect when work is considered ready for Architect's Substantial Completion inspection.
- D. Submit written certification that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect's Substantial Completion review.
 - 1. Submit Contractor's Substantial Completion inspection punch list listing all items to be repaired or completed after Substantial Completion. Organize list by room, in walking order, to allow for ease of verification.
 - 2. Upon Notice of Substantial Completion, if the Architect deems that work is not ready for punch list inspection, the Owner will be notified of the status. Architect is only obligated to perform one final review, and if Architect is required to re-visit project multiple times to complete the lists, Architect will bill the Owner for the additional time and expense, and Owner will back charge the Contractor or reduce the Final Pay Application accordingly.
 - 3. After Substantial Completion review by the Architect and Owner, add any additional item

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to the Contractor's punch list. Add additional items under the appropriate room for ease of verification. Architect will provide his punch list, including consultants under his purview, by electronic means for Contractor's convenience in combining said list into one document.

- E. Correct items of work listed in Final Correction Punch List and comply with requirements for access to Owner-occupied areas.
- F. Complete items of work determined by Architect listed in executed Certificate of Substantial Completion.
- G. Submit a final liquidated damages settlement statement; generally \$500.00 per day or as agreed to at time of Owner/General Contractor negotiations given the estimated project cost and timeline.
- H. The date of Substantial Completion shall represent day one (1) of the thirty (30) day period to complete all work and correct all deficiencies contained in the Punch List and the sixty (60) day period allowed for complete Contract Close-Out a

END OF SECTION

SECTION 01 78 00 CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Project Record Documents.
- B. Operation and Maintenance Data.
- C. Warranties and bonds.

1.02 RELATED REQUIREMENTS

- A. Section 01 30 00 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.
- B. Section 01 70 00 - Execution and Closeout Requirements: Contract closeout procedures.
- C. Individual Product Sections: Specific requirements for operation and maintenance data.
- D. Individual Product Sections: Warranties required for specific products or Work.

1.03 SUBMITTALS

- A. Project Record Documents: Submit documents to Architect with claim for final Application for Payment.
- B. Operation and Maintenance Data:
 - 1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect will review draft and return one copy with comments.
 - 2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
 - 3. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect comments. Revise content of all document sets as required prior to final submission.
 - 4. Submit two sets of revised final documents in final form within 10 days after final inspection.
- C. Warranties and Bonds:
 - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
 - 2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
 - 3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modifications to the Contract.
 - 5. Reviewed shop drawings, product data, and samples.
- B. Ensure entries are complete and accurate, enabling future reference by Owner.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress.
- E. Specifications: Legibly mark and record at each product section description of actual products

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installed, including the following:

1. Changes made by Addenda and modifications.
- F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
1. Field changes of dimension and detail.
 2. Details not on original Contract drawings.

3.02 OPERATION AND MAINTENANCE DATA

- A. Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
- B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.
- D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

- A. For Each Product, Applied Material, and Finish:
- B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.
- C. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

3.04 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS

- A. Assemble operation and maintenance data into durable manuals for Owner's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.
- B. Where systems involve more than one specification section, provide separate tabbed divider for each system.
- C. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
- D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.
- E. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Architect, Consultants, Contractor and subcontractors, with names of responsible parties.
- F. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.
- G. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.
- H. Text: Manufacturers' printed data, or typewritten data on 24 pound paper.
- I. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- J. Arrangement of Contents: Organize each volume in parts as follows:
 1. Project Directory.
 2. Table of Contents, of all volumes, and of this volume.

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3. Operation and Maintenance Data: Arranged by system, then by product category.
 - a. Source data.
 - b. Operation and maintenance data.
 - c. Field quality control data.
 - d. Photocopies of warranties and bonds.
- K. Arrange content by systems under section numbers, including subdivisions within each section, and sequence of Table of Contents of this Project Manual.

3.05 WARRANTIES AND BONDS

- A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.
- B. Verify that documents are in proper form, contain full information, and are notarized.
- C. Co-execute submittals when required.
- D. Retain warranties and bonds until time specified for submittal.

END OF SECTION

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SECTION 02 41 20 – SELECTIVE BUILDING DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Removal of designated building construction, equipment, and fixtures.
 - 2. Identification of utilities.
- B. Related Sections:
 - 1. Division 01 - Administrative, procedural, and temporary work requirements.

1.2 REGULATORY REQUIREMENTS

- A. Conform to applicable code for demolition work, safety of structure, and dust control.
- B. Obtain required permits from authorities.
- C. Notify affected utility companies before starting work and comply with their requirements.
- D. Conform to applicable codes when hazardous or contaminated materials are discovered.
- E. Do not disable or disrupt building fire or life safety systems without 3 days prior written notice to Owner.

1.3 PROJECT CONDITIONS

- A. Minimize interference with streets, walks, public right-of-ways, and adjacent facilities.
- B. If hazardous materials are discovered, notify Architect/Owner and await instructions.
- C. If any of the following conditions are encountered, cease work immediately, notify Architect/Owner and await instructions:
 - 1. Structure is in danger of movement or collapse.
 - 2. Materials or conditions encountered differ from those designated in the Contract Documents.

1.4 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Site Plan: Showing:
 - 1. Areas for temporary construction and field offices.
 - 2. Areas for temporary and permanent placement of removed materials.
- C. Selective Demolition Plan: Submit Selective demolition plan as specified by OSHA and local authorities.

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1. Indicate extent of demolition, removal sequence, bracing and shoring, and location and construction of barricades and fences.
 2. Identify demolition firm and submit qualifications.
 3. Include a summary of safety procedures.
- D. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.
- 1.5 QUALITY ASSURANCE
- A. Demolition Firm Qualifications: Company specializing in the type of work required.
1. Minimum of five (5) years of documented experience.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Materials be new materials appropriate to the use.

2.2 WEATHER RESISTANT AND SECURE TEMPORARY CONSTRUCTION

- A. Contractor shall provide temporary weather resistant and secure building perimeter.
1. Maintain a secure building throughout the course of construction.
 2. Temporary construction shall be insulated with air/water barrier, code compliant for required exits and fully functional for the duration of the exposure to the exterior.

2.3 TEMPORARY SEPARATION

- A. Temporary Partitions.
1. Provide temporary interior partitions to separate Owner occupied areas from construction areas.
- B. Utility Modifications.
1. All utilities shall remain uninterrupted for all Owner occupied areas.
 2. Temporary utilities required for renovation areas shall be arranged by the Contractor for the work of this project.
 3. Where air handling equipment is used for construction areas, it is the responsibility of this contract to change all filters each day work is performed on the project. This includes all filters on all equipment used for the affected area of construction/renovation.

2.4 DUST BARRIERS - "ZIPWALL" - CONTRACTORS OPTION

- A. Dust Partitions
1. Provide polyethylene barrier floor to ceiling. All seams shall be continuously taped to allow no openings.
 2. Provide continuous tight seal at ceiling, walls and floor at each application.
 3. Accessories
 - a. Supports: ZipWall "ZipPoles" spring loaded poles as manufactured by ZipWall, 37 Broadway, Arlington, MA 02474; T:800.718.2255; F:781.648.8806; www.zipwall.com.
 - b. Slip disks: Provide for use at slippery flooring

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- c. Sealing bars: ZipWall "Foam Rails" for tight ceiling seal
- d. Provide pass-through with Heavy Duty ZipWall Zipper.
- e. Manufacturer of above mentioned Products: ZipWall, 37 Broadway, Arlington, MA 02474; T:800.718.2255; F:781.648.8806; www.zipwall.com. Dealers include:
 - i. Lynwood Building Materials,
 - 1. 1146 West Laurel, San Antonio, TX, 78201; T:(210) 477-3000 & (210) 477-3000; www.lynwoodsa.com.
 - 2. 15262 Capital Port, San Antonio, TX, 78249; T:(210) 408-9052.
 - ii. White Cap Industries,
 - 1. 4215 Factory Hill, San Antonio, TX, 78219; T: (210) 212-4880.
 - 2. 10500 Broadway Ste. 200, San Antonio, TX, 78217; T: 210-590-9444.
 - iii. Ram Tool & Supply,
 - 1. 610 Lanark Dr. Suite 150, San Antonio, TX, 78218; T: (210) 659-5859; www.ram-tool.com.
 - iv. Service Products - an Interlink Affiliate
 - 1. 10903 A/B Wye Drive, San Antonio, TX, 78217; T:(210) 590-1622.

B. Dust barrier doors

- 1. Provide polyethylene door barrier at door openings. All seams shall be continuously taped to allow no openings along door frame perimeter.
 - a. Provide ZipWall "ZipDoor"
 - i. Standard ZipDoor for doorways up to 3'-0" x 7'-0"
 - ii. 8'-0", flame retardant.

PART 3 - EXECUTION

3.1 SCOPE

- 1. Remove portions of existing building in sequence compatible with the Phasing of the project.
- 2. Remove paving and curbs as required to accomplish new work.
- 3. Outside area of new construction, remove foundation walls and footings to a minimum of 2 feet (600 mm) below finished grade.
- 4. Remove fences and gates where noted and as required to allow for new construction.
- 5. Provide temporary fencing and gates to secure site. This includes fencing & gates for construction and fencing and gates for school property. Temporary fencing & gates securing school property shall remain in place until permanent fencing is installed and operable.
- 6. Remove other items indicated, for salvage, relocation, and recycling.
- 7. Fill excavations, open pits, and holes in ground areas generated as result of removals, using specified fill; compact fill as specified in Section 31 2200.

3.2 GENERAL PROCEDURES AND PROJECT CONDITIONS

- A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.

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1. Obtain required permits.
 2. Comply with applicable requirements of NFPA 241.
 3. Use of explosives is not permitted.
 4. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
 5. Provide, erect, and maintain temporary barriers and security devices.
 6. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
 7. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
 8. Do not close or obstruct roadways or sidewalks without permit.
 9. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
 10. Obtain written permission from owners of adjacent properties when demolition equipment upon or limit access to their property.
- B.** Do not begin removal until receipt of notification to proceed from the Owner. **Owner has first rights to all items to be salvaged or removed.**
- C.** Do not begin removal until vegetation to be relocated has been removed and specified measures have been taken to protect vegetation to remain.
- D.** Protect existing structures and other elements that are not to be removed.
1. Provide bracing and shoring.
 2. Prevent movement or settlement of adjacent structures.
 3. Stop work immediately if adjacent structures appear to be in danger.
- E.** Minimize production of dust due to demolition operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.
- F.** If hazardous materials are discovered during removal operations, stop work and notify Architect and the Owner; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury.
- G.** Partial Removal of Paving and Curbs: Neatly saw cut at right angle to surface.

3.3 SELECTIVE DEMOLITION FOR ALTERATIONS

- A.** Drawings showing existing construction and in-field observation and existing record documents only.
1. Verify that construction and utility arrangements are as shown.
 2. Report discrepancies to Architect before disturbing existing installation.
 3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.
- B.** Remove existing work as indicated and as required to accomplish new work.
1. Remove items indicated on drawings.
- C.** Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove existing systems and equipment as indicated.

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1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components.
 2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
 3. Verify that abandoned services serve only abandoned facilities before removal.
 4. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification.
- D. Protect existing work to remain.
1. Prevent movement of structure; provide shoring and bracing if necessary.
 2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
 3. Repair adjacent construction and finishes damaged during removal work.
 4. Patch as specified for patching new work.
- 3.4 DEBRIS AND WASTE REMOVAL
- A. Remove debris, junk, and trash
 - B. Leave site in clean condition, ready for subsequent work.
 - C. Clean up spillage and wind-blown debris from public areas.

END OF SECTION

SECTION 04 21 13 BRICK MASONRY

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Non-load bearing face brick for veneer wall construction.
 - 2. Build-in steel angle lintels and shelf angles, control joints, reinforcement, flashings and building-in items supplied by other trades.
- B. Related Sections:
 - 1. Section 04 43 01 Stone Masonry Veneer.

1.2 REFERENCES

- A. American Society for Testing and Materials:
 - 1. ASTM C 67 - Sampling and Testing Brick and Structural Clay Tile.
 - 2. ASTM C 144 - Aggregate for Masonry Mortar.
 - 3. ASTM C 216 - Facing Brick.
- B. Masonry Society (The), American Concrete Institute, and American Society of Civil Engineers:
 - 1. TMS 402/ACI 530/ASCE 5: Building Code Requirements for Masonry Structures
 - 2. TMS 602/ACI 530.1/ASCE 6: Specification for Masonry Structures

1.3 SUBMITTALS

- A. Product Data: Provide data for each different masonry unit, accessory and other manufactured products indicated.
- B. Samples: Masonry: Furnish two sets of individual samples of each size, shape and type of brick masonry units as requested by Architect.
- C. Certificates: Submit manufacturer's certificates and acceptable laboratory test reports attesting that materials furnished meet specified requirements.

1.4 QUALITY ASSURANCE

- A. Mock-Up:
 - 1. (Optional) Construct 8'-0" wide x 4'-0" high panel, in configuration indicated on drawings, showing proposed color range, texture, bond, mortar, jointing, reinforcement, ties, and workmanship, coordinate with Owner and Architect acceptable alternative.
 - 2. Saturate brick masonry unit panel five days after laid and observe if panel effloresce. Recommend cleaning procedures if necessary.
 - 3. Use panel as standard of comparison for masonry work built of same materials.
 - 4. Do not destroy or move panel until work is complete or as otherwise directed by Architect.

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5. If substitutions are proposed construct one panel of approved specified brick and one panel for each proposed substitution for a side by side comparison and approval by Architect and Owner.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver masonry materials to project in undamaged condition.
- B. Store and handle masonry units off the ground, under cover, and in a dry location to prevent their deterioration or damage due to moisture, temperature changes, contaminants, corrosion, and other causes. If units become wet, do not place until units are in an air-dried condition.

1.6 PROJECT/SITE CONDITIONS

- A. Environmental Requirements:
 1. Cold Weather Protection: When temperature of outside air is below 40 degrees F, pre-condition material and finish work in accordance with "Recommended Practices for Cold Weather Masonry Construction", as published by International Masonry Industry All- Weather Council.
 2. Hot Weather Protection: Protect masonry construction from direct exposure to wind and sun when erected in ambient air temperature of 99 degrees F in shade with relative humidity less than 50 percent.

1.7 MAINTENANCE

- A. Extra Material: Provide 500 bricks of each color on site in location as determined by the Architect for owner's use at the end of the construction project.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. Approved Brick – Refer to Drawings:
 1. Approved Manufacturer: D'Hanis Brick and Tile Company.
 2. Approved Product: Face Brick to match existing adjacent Campus Buildings.
- B. Other Acceptable Brick Manufacturers:
 1. None.
- C. Substitutions:
 1. None.

2.2 MATERIALS

- A. Face Brick: ASTM C 216, Type FBS Grade SW. Refer to Finish Schedule.
- B. Special Shapes: Provide special shapes where indicated or required and units without core holes where core holes would be exposed to view when in final position.
- C. Cleaning Agents:

1. Combination of surface acting agents and wetting agent for general purpose cleaning of new masonry surfaces.
2. Verify reaction of cleaning agents on mock-up prior to application on building masonry. Consult with product manufacturer for alternate product selection if adverse reactions encountered.
3. Acceptable Products as listed below:

Substrate	Color/Type	Cleaning Solution
Brick	Red	Sure Klean® 600 Detergent
	Light	Sure Klean® Vana Trol®
	Dark	Sure Klean® Vana Trol®
	Pavers	Sure Klean® 600 Detergent
	Glazed	Sure Klean® Vana Trol®

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify items built-in by other trades for this work are properly located and sized.

3.2 PREPARATION

- A. Establish lines, levels and coursing. Protect from disturbance.
- B. Determine brick absorption rates in accordance with ASTM C 67. Wet brick sufficiently when necessary to provide absorption rate of less than 0.025 oz./sq.in./min.

3.3 INSTALLATION

- A. Thickness: Build cavity and composite walls and other masonry to the full thickness shown.
- B. Apply compatible sealant or self-adhered sheet membrane strip, as recommended by air barrier manufacturer behind masonry anchors to seal penetrations made by fasteners through sheathing.
- C. Anchor masonry veneers to wall framing with masonry-veneer anchors to comply with the following requirements:
 1. Fasten screw-attached anchors through sheathing to wall framing with metal fasteners of type and quantity required for type of anchor indicated.
 2. Embed tie sections in masonry joints. Provide not less than 1-1/2 inches of air space between back of masonry veneer and face of sheathing or rigid board insulation.
 3. Locate anchor sections to allow maximum vertical differential movement of ties up and down.
 4. Space anchors not more than 18 inches o.c. vertically and 24 inches o.c. horizontally, with not less than one anchor for each 2.67 sq. ft. of wall area. Install additional anchors within 12 inches of openings and at intervals, not exceeding 36 inches, around perimeter.
 5. Space anchors not more than 18 inches o.c. vertically and horizontally. Install additional anchors within 12 inches of openings and at intervals, not exceeding 24 inches, around perimeter.
- E. Place brick veneer masonry in accordance with lines and levels indicated.

- F. Fully bond external and internal corners and intersections.
- G. Isolate masonry partitions from vertical structural framing members with a control joint.
- H. Buttering corners of joints and deep or excessive furrowing of mortar joints is not permitted.
- I. Do not shift or tap masonry after mortar has taken initial set. Where adjustment must be made, remove mortar and replace.
- J. Perform jobsite cutting with proper power tools to provide straight and true, unchipped edges.
- K. Ensure masonry courses are of uniform height. Make vertical and horizontal joints equal and of uniform thickness. Lay in full bed of mortar, properly jointed with other work.
- L. Keep expansion joint and cavity wall voids clear of mortar.
- M. When mortar is thumbprint hard, tool joints concave.
- N. Install weeps at 24" on center horizontally above wall flashing, shelf angles, and at bottom of walls. Keep free of debris or mortar. Weeps shall sit on flashing below and not on mortar.
- O. If necessary to stop-off a horizontal run of masonry, rack back one half length in each course. Tothing will not be permitted.
- P. Mortar Pointing: The old mortar should be cut out, by means of a tothing chisel or a special pointer's grinder, to a uniform depth of 3/4", or until sound mortar is reached.

3.4 TOLERANCES

- A. Dimensions and Locations of Elements:
 - 1. For dimensions in cross section or elevation do not vary by more than plus 1/2 inch or minus 1/4 inch.
 - 2. For location of elements in plan do not vary from that indicated by more than plus or minus 1/2 inch.
 - 3. For location of elements in elevation do not vary from that indicated by more than plus or minus 1/4 inch in a story height or 1/2 inch total.
- B. Lines and Levels:
 - 1. For bed joints and top surfaces of bearing walls do not vary from level by more than 1/4 inch in 10 feet, or 1/2 inch maximum.
 - 2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.
 - 3. For vertical lines and surfaces do not vary from plumb by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2 inch maximum.
 - 4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.
 - 5. For lines and surfaces do not vary from straight by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2 inch maximum.
 - 6. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in

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10 feet, or 1/2 inch maximum.

7. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch except due to warpage of masonry units within tolerances specified for warpage of units.

C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch; do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.
2. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch.
3. For exposed bed joints and head joints of stacked bond, do not vary from a straight line by more than 1/16 inch from one masonry unit to the next.

3.5 CONTROL JOINTS

- A. Provide control joints in brick veneer masonry work. Do not continue horizontal masonry reinforcing across joints.
- B. Install Control Joints at Following Locations:
 1. Changes in thickness, height and direction.
 2. Within 4'-0" of corners and offsets.
 3. At structure control joints or expansion joints.
 4. At foundation walls, shelf angles, setbacks and at materials expanding at different rates.
 5. Maximum 30'-0" on center vertical control joints in uninterrupted walls.
- C. Seal expansion and control joints as specified in Section 07 92 00.

3.6 BUILT-IN WORK

- A. As work progresses, build-in steel angle lintels anchor bolts, plates and other items supplied by other trades.
- B. Build-in items plumb, and true to lines and levels.
- C. Do not build-in organic materials which will be subjected to decomposition or deterioration.

3.7 CUTTING AND FITTING

- A. Do not cut or fit any area which is not indicated on drawings or which may impair appearance or strength of brick veneer masonry work.

3.8 CLEANING

- A. Remove excess mortar and smears. Dry brush at end of each day's work.
- B. Point or replace defective mortar to match adjacent work.
- C. Clean brick surfaces as recommended by cleaning material manufacturer.

3.9 FIELD QUALITY CONTROL

- A. Provide informal water test on cavity after approximately 4 courses of masonry have been laid above flashing.

3.10 PROTECTION

- A. Maintain protective boards at exposed external corners which may be damaged by construction activities. Provide such protection without damaging completed work.
- B. Keep tops of walls covered with non-staining waterproof coverings when work is not in progress. To prevent entry of moisture, overlap walls minimum two feet with waterproof covering.
- C. Maintain waterproof coverings at areas of existing buildings where masonry repair or patching is underway.
- D. Protect masonry materials during storage and construction from wetting by rain, snow or ground water from soilage or intermixture with earth or other materials.
- E. Do not use metal reinforcing or ties having loose rust or other coatings, including ice, which will reduce or destroy bond.
- F. In exposed work, do not use masonry units with chips, cracks, voids, discolorations or other defects which might be visible or cause staining in finished work.
- G. Comply with governing codes and with "Construction and Protection Recommendations for Cold Weather Brick Masonry Construction" of Technical Notes of Brick Institute of America.

END OF SECTION

SECTION 04 43 01 STONE MASONRY VENEER

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Field stone veneer at exterior porch columns.
- B. Metal anchors and accessories.
- C. Setting mortar and pointing mortar.

1.02 REFERENCE STANDARDS

- A. A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2012.
- B. B. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2010.
- C. C. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2012.
- D. D. ASTM C568 - Standard Specification for Limestone Dimension Stone; 2010.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene one week before starting work of this section.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on stone units, mortar, and reinforcement / wall ties.
- C. Samples: Submit two stone samples illustrating color range, texture, and markings.
- D. Samples: Submit mortar color samples.

1.05 MOCK-UP

- A. Construct stone column mock-up; include metal stud backup, sheathing, waterproofing and veneer wall ties in mock-up.
- B. Mock-up may remain as part of the Work.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Protect stone from discoloration during storage on site.

1.07 FIELD CONDITIONS

- A. Maintain materials and ambient air at minimum of 40 degrees F (5 degrees C) prior to, during, and for 48 hours after completion of work.

PART 2 PRODUCTS

2.01 STONE

- A. Stone: Native Texas Limestone type, Salado Quarry / Sonoma Blend variety.
- B. Surface Texture: Split face.

2.02 MORTAR

- A. Setting Mortar: ASTM C270, Type N, using the Proportion Method.
- B. B. Pointing Mortar: Type N as specified in Section 04 0511, and using the Property Method in ASTM C270.
- C. C. Portland Cement: ASTM C150, Type I.
 - 1. Not more than 0.60 percent alkali.
 - 2. Color: White cement
- D. Hydrated Lime: ASTM C207, Type S.
- E. Mortar Aggregate: ASTM C144.

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1. 1. A-1 Best sand.

F. Mortar Color: Match mock-up approved by the architect.

2.03 ACCESSORIES

A. Wall Ties: Formed steel wire, at least 0.1438 inch diameter, hot dip galvanized per ASTM .

B. Wall Ties: Formed steel wire, 9 gage minimum diameter, hot dip galvanized per ASTM A123/A123M, eye and pintle type, with provision for vertical adjustment after attachment.

1. Product: Hohman and Barnard; DW-10 or approved equivalent.

C. Other Anchors in Direct Contact with Stone: ASTM A666, Type 304, stainless steel, of sizes and configurations required for support of stone and applicable superimposed loads.

D. Flashings: Flexible type as specified in Section 07 62 00.

E. Weep/Cavity Vents: Polyethylene tubing with cotton rope wick.

F. Cleaning Solution: Type that will not harm stone, joint materials, or adjacent surfaces.

2.04 STONE FABRICATION

A. Nominal Thickness: 4 inch.

B. Face Size: 4 inch minimum to 8 inch height x random lengths.

C. Pattern and Coursing: Random ashlar.

D. Fabricate for 3/8 inch beds and joints.

E. Bed and Joint Surfaces:

1. Roughly chopped square.

F. Slope exposed top surfaces of stone and horizontal sill surfaces for shedding water.

G. Cut drip slot in bottom surface of work projecting more than 1/2 inch over window frame. Size slot not less than 3/8 inch wide and 1/4 inch deep for full width of projection.

H. Cut reglet for flashing receiver in the top of stone as detailed.

PART 3 EXECUTION

3.01 PREPARATION

A. Establish lines, levels, and coursing. Protect from disturbance.

B. Clean stone prior to erection. Do not use wire brushes or implements that mark or damage exposed surfaces.

C. Clean sawn surfaces of rust stains and iron particles.

3.02 INSTALLATION

A. Chop or split stone at site to produce clean faces.

B. Arrange stone pattern to provide color uniformity and minimize visual variations, and provide a uniform blend of stone unit sizes.

C. Arrange stone coursing in random ashlar bond with consistent joint width.

D. Set stone in full mortar setting bed to fully support stone over bearing surface. Use setting buttons or shims to maintain correct joint width.

E. Install weep/cavity vents in vertical stone joints at 24 inches on center horizontally; immediately above horizontal flashings, above shelf angles and supports, and at top of each cavity space; do not permit mortar accumulation in cavity space.

3.03 REINFORCEMENT AND ANCHORAGE

A. Anchor masonry veneers to wall framing with masonry-veneer anchors to comply with the following requirements:

1. Fasten screw-attached anchors through sheathing to wall framing with metal fasteners of type and quantity required for type of anchor indicated.

2. Embed tie sections in masonry joints. Provide not less than 1-1/2 inches of air space between back of masonry veneer and face of sheathing or rigid board insulation.

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3. Locate anchor sections to allow maximum vertical differential movement of ties up and down.
4. Space anchors as indicated on Drawings, but not more than 18 inches o.c. vertically and 24 inches o.c. horizontally, with not less than one anchor for each 2.67 sq. ft. of wall area. Install additional anchors within 12 inches of openings and at intervals, not exceeding 36 inches, around perimeter.
5. Space anchors not more than 18 inches o.c. vertically and horizontally. Install additional anchors within 12 inches of openings and at intervals, not exceeding 24 inches, around perimeter.

3.04 JOINTS

- A. Leave the following joints open for sealant:
 1. Head joints in top courses, including copings, parapets, cornices, sills, and steps.
 2. Joints in projecting units.
 3. Joints between rigidly anchored units, including soffits, panels, and column covers.
 4. Joints below lugged sills and stair treads.
 5. Joints below ledge and relieving angles.
 6. Joints labeled "expansion joint".
- B. Mortar joints to have a "smeared" look to match the approved mock-up.
- C. At joints to be sealed, clean mortar out of joint before it sets. Brush joints clean.

3.05 CLEANING

- A. Remove excess mortar as work progresses, and upon completion of work.
- B. Clean soiled surfaces with cleaning solution.
- C. Use non-metallic tools in cleaning operations.

3.06 PROTECTION

- A. During temporary storage on site, at the end of working day, and during rainy weather, cover stone work exposed to weather with non-staining waterproof coverings, securely anchored.

END OF SECTION

SECTION 05 40 00 COLD-FORMED METAL FRAMING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Formed steel stud exterior wall framing.

1.02 RELATED REQUIREMENTS

- A. Section 09 21 16 - Gypsum Board Assemblies: Gypsum-based sheathing.

1.03 REFERENCE STANDARDS

- A. AISI S100-12 - North American Specification for the Design of Cold-Formed Steel Structural Members; American Iron and Steel Institute; 2012.
- B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2009.
- C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015.
- D. ASTM C955 - Standard Specification for Load-Bearing (Transverse and Axial) Steel Studs, Runners (Tracks), and Bracing or Bridging for Screw Application of Gypsum Panel Products and Metal Plaster Bases; 2011c.
- E. ASTM C1007 - Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories; 2011a.
- F. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); 2002 (Ed. 2004).

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate with work of other sections that is to be installed in or adjacent to the metal framing system, including but not limited to structural anchors, cladding anchors, utilities, insulation, and firestopping.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on standard framing members; describe materials and finish, product criteria, limitations.
- C. Product Data: Provide manufacturer's data on factory-made framing connectors, showing compliance with requirements.
- D. Shop Drawings: Indicate component details, loading, welds, and type and location of fasteners, and accessories or items required of related work.
 - 1. Provide design engineer's stamp on shop drawings.
- E. Manufacturer's Installation Instructions: Indicate special procedures, conditions requiring special attention.

1.06 QUALITY ASSURANCE

- A. Designer Qualifications: Design framing system under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in Texas.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Metal Framing:
 - 1. CEMCO: www.cemcosteel.com.
 - 2. Clarkwestern Dietrich Building Systems LLC: www.clarkdietrich.com.
 - 3. Marino: www.marinoware.com.
 - 4. The Steel Network, Inc: www.SteelNetwork.com.
 - 5. Substitutions: See Section 01 60 00 - Product Requirements.

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B. Framing Connectors and Accessories:

2.02 FRAMING SYSTEM

- A. Provide primary and secondary framing members, bridging, bracing, plates, gussets, clips, fittings, reinforcement, and fastenings as required to provide a complete framing system.
- B. Design Criteria: Provide completed framing system having the following characteristics:
 - 1. Design: Calculate structural characteristics of cold-formed steel framing members according to AISI S100-12.
 - 2. Structural Performance: Design, engineer, fabricate, and erect to withstand specified design loads for project conditions within required limits.
 - 3. Design Loads: In accordance with applicable codes.
 - 4. Live load deflection meeting the following, unless otherwise indicated:
 - a. Exterior Walls: Maximum horizontal deflection under wind load of 1/360 of span.
 - b. Design non-axial loadbearing framing to accommodate not less than 1/2 in vertical deflection.
 - 5. Able to tolerate movement of components without damage, failure of joint seals, undue stress on fasteners, or other detrimental effects when subject to seasonal or cyclic day/night temperature ranges.
 - 6. Able to accommodate construction tolerances, deflection of building structural members, and clearances of intended openings.

2.03 FRAMING MATERIALS

- A. Studs and Track: ASTM C955; studs formed to channel, "C", or "Sigma" shape with punched web; U-shaped track in matching nominal width and compatible height.
 - 1. Gage: As required to meet specified performance levels.
 - 2. Stud Depth: 6 inch.
 - 3. Galvanized in accordance with ASTM A653/A653M, G90/Z275 coating.
- B. Framing Connectors: Factory-made, formed steel sheet.
 - 1. Material: ASTM A653/A653M SS Grade 33 and 40 (minimum), with G90/Z275 hot dipped galvanized coating for base metal thickness less than 10 gage, 0.1345 inch, and factory punched holes and slots.
 - 2. Structural Performance: Maintain load and movement capacity required by applicable code, when evaluated in accordance with AISI S100-12.
 - 3. Movement Connections: Provide mechanical anchorage devices that accommodate movement using slotted holes, shouldered screws or screws and anti-friction or stepped bushings, while maintaining structural performance of framing. Provide movement connections where indicated on drawings.
 - 4. Fixed Connections: Provide non-movement connections for tie-down to foundation, floor-to-floor tie-down, roof-to-wall tie-down, joist hangers, gusset plates, and stiffeners.
 - 5. Wall Stud Bridging Connections: Provide mechanical load-transferring devices that accommodate wind load torsion and weak axis buckling induced by axial compression loads. Provide bridging connections where indicated on the drawings.

2.04 ACCESSORIES

- A. Bracing, Furring, Bridging: Formed sheet steel, thickness determined for conditions encountered; finish to match framing components.
- B. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

2.05 FASTENERS

- A. Self-Drilling, Self-Tapping Screws, Bolts, Nuts and Washers: Hot dip galvanized per ASTM A153/A153M.
- B. Anchorage Devices: Powder actuated.

PART 3 EXECUTION

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3.01 INSTALLATION OF STUDS

- A. Install components in accordance with manufacturers' instructions and ASTM C1007 requirements.
- B. Construct corners using minimum of three studs. Install double studs at wall openings, door and window jambs.
- C. Install load bearing studs, brace, and reinforce to develop full strength and achieve design requirements.

END OF SECTION

SECTION 06 10 00 ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Sheathing.
- B. Roofing nailers.
- C. Preservative treated wood materials.
- D. Fire retardant treated wood materials.
- E. Communications and electrical room mounting boards.
- F. Concealed wood blocking, nailers, and supports.

1.02 REFERENCE STANDARDS

- A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2009.
- B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2015a.
- C. AWPA U1 - Use Category System: User Specification for Treated Wood; 2012.
- D. PS 1 - Structural Plywood; 2009.
- E. PS 2 - Performance Standard for Wood-Based Structural-Use Panels; 2010.
- F. PS 20 - American Softwood Lumber Standard; 2010.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide technical data on insulated sheathing, wood preservative materials, and application instructions.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.
- B. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, or installation.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
 - 1. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.
 - 2. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.
- B. Lumber fabricated from old growth timber is not permitted.

2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

- A. Sizes: Nominal sizes as indicated on drawings, S4S.
- B. Moisture Content: S-dry or MC19.
- C. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
 - 1. Lumber: S4S, No. 2 or Standard Grade.
 - 2. Boards: Standard or No. 3.

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2.03 CONSTRUCTION PANELS

- A. Roof Sheathing: Any PS 2 type, rated Structural I Sheathing.
 - 1. Bond Classification: Exterior.
 - 2. Span Rating: 60.
 - 3. Performance Category: 3/4 PERF CAT.
- B. Wall Sheathing: Oriented strand board wood structural panel; PS 2.
 - 1. Grade: Sheathing.
 - 2. Bond Classification: Exposure 1.
 - 3. Performance Category: 1/2 PERF CAT.
 - 4. Edges: Square.
- C. Communications and Electrical Room Mounting Boards: PS 1 A-D plywood, or medium density fiberboard; 3/4 inch thick; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84.

2.04 ACCESSORIES

- A. Fasteners and Anchors:
 - 1. Metal and Finish: Hot-dipped galvanized steel complying with ASTM A153/A153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
 - 2. Drywall Screws: Bugle head, hardened steel, power driven type, length threetimes thickness of sheathing.
 - 3. Anchors: Toggle bolt type for anchorage to hollow masonry.
- B. Separation membrane: Vinyl-coated polyethylene fabric tape, 13 mil thickness; 3M Duct Tape or equivalent.
- C. Subfloor Glue: Waterproof, air cure type, cartridge dispensed.

2.05 FACTORY WOOD TREATMENT

- A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
 - 1. Fire-Retardant Treated Wood: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.
 - 2. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.
- B. Fire Retardant Treatment:
 - 1. Interior Type A: AWPA U1, Use Category UCFA, Commodity Specification H, low temperature (low hygroscopic) type, chemically treated and pressure impregnated; capable of providing a maximum flame spread index of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes.
 - a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
 - b. Treat rough carpentry items as indicated .
 - c. Do not use treated wood in applications exposed to weather or where the wood may become wet.
- C. Preservative Treatment:
 - 1. Preservative Pressure Treatment of Lumber Above Grade: AWPA U1, Use Category UC3B, Commodity Specification A using waterborne preservative.
 - a. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
 - b. Treat lumber in contact with roofing, flashing, or waterproofing.
 - c. Treat lumber in contact with masonry or concrete.

PART 3 EXECUTION

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3.01 INSTALLATION - GENERAL

- A. Select material sizes to minimize waste.
- B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.
- C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.02 BLOCKING, NAILERS, AND SUPPORTS

- A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.
- B. In framed assemblies that have concealed spaces, provide solid wood fireblocking as required by applicable local code, to close concealed draft openings between floors and between top story and roof/attic space; other material acceptable to code authorities may be used in lieu of solid wood blocking.
- C. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.
- D. Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.

3.03 ROOF-RELATED CARPENTRY

- A. Coordinate installation of roofing carpentry with deck construction, framing of roof openings, and roofing assembly installation.
- B. Install separation membrane/tape between any preservative treated blocking and galvanized metal roof deck.

3.04 INSTALLATION OF CONSTRUCTION PANELS

- A. Roof Sheathing: Secure panels with long dimension perpendicular to framing members, with ends staggered and over firm bearing.
 - 1. Screw panels to framing; staples are not permitted.
- B. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches on center on all edges and into studs in field of board.
 - 1. At fire-rated walls, install board over wall board indicated as part of the fire-rated assembly.
 - 2. Where boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.
 - 3. Install adjacent boards without gaps.

END OF SECTION

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SECTION 06 41 00 – ARCHITECTURAL WOOD CASEWORK

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Countertops.
- B. Cabinet hardware.
- C. Preparation for installing utilities.

1.02 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Support framing, grounds, and concealed blocking. B. Section 06 6510- Solid Surface Fabrications

1.03 REFERENCE STANDARDS

- A. ANSI A135.4 - American National Standard for Basic Hardboard; 2012.
- B. ANSI A208.2 - American National Standard for Medium Density Fiberboard for Interior Use; 2009.
- C. AWI (QCP) - Quality Certification Program, www.awiqcp.org; current edition at www.awiqcp.org.
- D. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014.
- C. NEMA LD 3 - High-Pressure Decorative Laminates; National Electrical Manufacturers Association; 2005.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene a preinstallation meeting not less than two weeks before starting work of this section; require attendance by all affected installers.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
- C. Product Data: Provide data for hardware accessories.
- D. Samples: Submit actual samples of architectural cabinet construction, minimum 12 inches (300 mm) square, illustrating proposed cabinet, countertop, and shelf unit substrate and finish.
- E. Samples: Submit actual sample items of proposed pulls, hinges, shelf standards, and locksets, demonstrating hardware design, quality, and finish.

1.06 QUALITY ASSURANCE

- A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum ten years of documented experience.
 - 1. Accredited participant in the specified certification program prior to the commencement of fabrication and throughout the duration of the project.
- B. Quality Certification: Provide AWI Quality Certification Program (QCP) inspection report and quality certification of completed work.

1.07 MOCK-UP

- A. Provide mock-up of typical base cabinet, wall cabinet, and countertop, including hardware, finishes, and plumbing accessories.

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- B. Locate where directed.
 - C. Mock-up may remain as part of the Work.
- 1.08 DELIVERY, STORAGE, AND HANDLING
- A. Protect units from moisture damage.
- 1.09 FIELD CONDITIONS
- A. During and after installation of custom cabinets, maintain temperature and humidity conditions in building spaces at same levels planned for occupancy.
- 1.10 COORDINATION
- A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that interior architectural woodwork can be supported and installed as indicated.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers who are in good standing of the Architectural Woodwork Institute (AWI) and are familiar with this Standard..

2.02 CABINETS

- A. Quality Grade: Unless otherwise indicated provide products of quality specified by AWI//AWMAC/WI (AWS) for Custom Grade.
- B. Cabinets:
 - 1. Finish - Exposed Exterior Surfaces: Decorative laminate.
 - 2. Finish - Exposed Interior Surfaces: Decorative laminate.
 - 3. Finish for all: White Melamine on all interior exposed surfaces except Conference Rooms and Bookshelves.
 - 4. Patterned Face Layout for Cabinet and Door Fronts: Flush panel.
 - a. Custom Grade: Doors, drawer fronts and false fronts pattern face to run and match vertically within each cabinet unit.
 - 5. Cabinet Style: Flush overlay.
 - 6. Cabinet Doors and Drawer Fronts: Flush style.
 - 7. Drawer Construction Technique: Dovetail joints.
- C. Floating Shelves
 - 1. Finish - Decorative laminate.
 - 2. Shelves shall be 12" depth.
 - 3. Shelves shall be 3/4" thick.

2.03 WOOD-BASED COMPONENTS

- A. Wood fabricated from old growth timber is not permitted.

2.04 LAMINATE MATERIALS

- A. Manufacturers:
 - 1. Formica Corporation: www.formica.com.
 - 2. Panolam Industries International, Inc\Nevamar : www.nevamar.com.
 - 3. Wilsonart, LLC: www.wilsonart.com.
 - 4. Substitutions: See Section 01 6000 - Product Requirements.
- B. High Pressure Decorative Laminate (HPDL): NEMA LD 3, types as recommended for specific

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applications.

- C. Provide specific types as scheduled.
 - 1. Horizontal Surfaces: HGS, 0.048 inch (1.22 mm) nominal thickness, through color, colors as scheduled, finish as scheduled.
 - 2. Vertical Surfaces: VGS, 0.028 inch (0.71 mm) nominal thickness, through color, colors as scheduled, finish as scheduled.
 - 3. Post-Formed Horizontal Surfaces: HGP, 0.039 inch (1.0 mm) nominal thickness, through color, colors as scheduled, finish as scheduled.
 - 4. Cabinet Liner: CLS, 0.020 inch (0.51 mm) nominal thickness, through color, colors as scheduled, finish as scheduled.
 - 5. Laminate Backer: BKL, 0.020 inch (0.51 mm) nominal thickness, undecorated; for application to concealed backside of panels faced with high pressure decorative laminate.2.05 COUNTERTOPS
- A. Plastic Laminate Countertops: 3/4" Plywood substrate covered with HPDL, post-formed, 1/4" bull nose edge..
- B. Solid Surface Fabrication: Specified in Section 06 65 10

2.06 ACCESSORIES

- A. Adhesive: Type recommended by fabricator to suit application. B. Fasteners: Size and type to suit application.
- C. Bolts, Nuts, Washers, Lags, Pins, and Screws: Of size and type to suit application; galvanized finish in concealed locations and steel with satin finish in exposed locations.
- D. Concealed Joint Fasteners: Threaded steel.
- E. Grommets: Standard plastic grommets for cut-outs, in color to match adjacent surface.
 - 1. Product: "XG Series" manufactured by Doug Mockett & Company, Inc.
 - 2. Substitutions: See Section 01 6000 - Product Requirements.

2.07 HARDWARE

- A. Adjustable Shelf Supports: BHMA No. A156.9, B04071, Standard side-mounted system using recessed metal shelf standards and coordinated shelf rests, steel with satin finish, for nominal 1 inch (25 mm) spacing adjustments.
 - 1. Product: Mortised 255 Series Pilaster Standards and 256 Support Clips. manufactured by Knappe & Vogt.
 - 2. Substitutions: See Section 01 6000 - Product Requirements.
- B. Drawer and Door Pulls: "U" shaped wire pull, steel with satin finish, 4 inch centers ("U" shaped wire pull, steel with satin finish, 100 mm centers).
 - 1. Product: Model #116.05.922 manufactured by Hafele.
 - 2. Substitutions: See Section 01 6000 - Product Requirements.
- C. Cabinet Locks: BMHA No. A156.11, E07121, Keyed cylinder, two keys per lock, master keyed, steel with satin finish.
 - 1. Product: No. 987 manufactured by Knappe & Vogt.
 - 2. Product: No. 9660 manufactured by Yale
 - 3. Substitutions: See Section 01 6000 - Product Requirements.
- D. Drawer Slides: BHMA No. A156.9, B05091.
 - 1. Type: Full extension with overtravel.
 - 2. Static Load Capacity: Commerical grade. 100# rating..
 - 3. Mounting: Side mounted.

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4. Stops: Integral type.
5. Products:
 - a. Accuride International, Inc: www accuride.com.
 - b. Grass America Inc: www.grassusa.com.
 - c. Knappe & Vogt Manufacturing Company: www.knappeandvogt.com.
 - d. Substitutions: See Section 01 6000 - Product Requirements.
- E. Drawer Locks: BHMA No. A156.9, E07041
- F. Hinges: Frameless concealed, self-closing type, BHMA No. A156.9, B01602.
 1. Products:
 - a. Basis of Design: Hafele; Concealed Hinges: Fabricate hinges with minimum 2 mm (0.072 inch) thick plated leaves. Hinges shall be steel with stain finish, 270 degree, self-closing Institutional Grade Aximat Hinges. Hinges shall include a built in integrated catch to eliminate the need for magnetic catches or strike plates and adjustment up to 2 mm horizontally and vertically. Hinge strength and durability to meet requirements of ANSI/BHMA Grade 1. This type and size of hinge shall be used in all cabinets. 1. Hinges shall be soft closing.
 - b. Grass America Inc: www.grassusa.com.
 - c. Julius Blum, Inc: www.blum.com.
 - d. Substitutions: See Section 01 6000 - Product Requirements.
- G. Prefabricated Metal Brackets:
 1. Product: Rakks EH series support brackets, sized for counter depth and load.
 2. Product: Rakks Suspended Shelf Bracket. Finishes to be clear anodized aluminum.
 3. Substitutions: See Section 01 6000 - Product Requirements.

2.08 FABRICATION

- A. Assembly: Shop assemble cabinets for delivery to site in units easily handled and to permit passage through building openings.
- B. Fitting: When necessary to cut and fit on site, provide materials with ample allowance for cutting.
Provide matching trim for scribing and site cutting.
- C. Plastic Laminate: Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Slightly bevel arises. Locate counter butt joints minimum 2 feet (600 mm) from sink cut-outs.
 1. Apply laminate backing sheet to reverse side of plastic laminate finished surfaces.
 2. Cap exposed plastic laminate finish edges with material of same finish and pattern.
- D. Mechanically fasten back splash to countertops with steel brackets at 16 inches (400 mm) on center.
- E. Provide cutouts for plumbing fixtures. Verify locations of cutouts from on-site dimensions. Prime paint cut edges.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify adequacy of backing and support framing.
- B. Verify location and sizes of utility rough-in associated with work of this section.

3.02 INSTALLATION

- A. Set and secure custom cabinets in place, assuring that they are rigid, plumb, and level. B.

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Use fixture attachments in concealed locations for wall mounted components.

- C. Use concealed joint fasteners to align and secure adjoining cabinet units and countertops..
- D. Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch (1 mm). Do not use additional overlay trim for this purpose.
- E. Secure cabinets to floor using appropriate angles and anchorages.

3.03 ADJUSTING

- A. Adjust installed work.
- B. Adjust moving or operating parts to function smoothly and correctly.

3.04 CLEANING

- A. Clean casework, counters, shelves, hardware, fittings, and fixtures.

END OF SECTION

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SECTION 06 65 10 – SOLID SURFACE FABRICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the contract, including general and supplementary conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following horizontal and trim solid surface product types:

1. Countertops with and without sinks.
2. Casework panels and in-fill
3. Window sills
4. Partition wall caps

- B. Related Sections include the following:

1. Section 06 10 00 - Rough Carpentry
2. Section 06 41 00 - Architectural Wood Casework

1.3 DEFINITION

- A. Solid surface is defined as nonporous, homogeneous material maintaining the same composition throughout the part with a composition of acrylic polymer, aluminum tri-hydrate filler and pigment.

1.4 SUBMITTALS

- A. Product data:

1. For each type of product indicated.
2. Product data for the following:
 - a. Chemical-resistant tops

- B. Shop drawings:

1. Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices and other components.
 - a. Show full-size details, edge details, thermoforming requirements, attachments, etc.
 - b. Show locations and sizes of furring, blocking, including concealed blocking and reinforcement specified in other Sections.
 - c. Show locations and sizes of cutouts and holes for plumbing fixtures, faucets, soap dispensers, waste receptacle and other items installed in solid surface.

- C. Samples:

1. For each type of product indicated.
 - a. Submit minimum 6-inch by 6-inch sample in specified gloss.
 - b. Cut sample and seam together for representation of inconspicuous seam.
 - c. Indicate full range of color and pattern variation.

Approved samples will be retained as a standard for work.

- D. Product data:

1. Indicate product description, fabrication information and compliance with specified performance requirements.

- E. Fabricator/installer qualifications:

1. Provide copy of certification number.

- F. Manufacturer certificates:

1. Signed by manufacturers certifying that they comply with requirements.

1.5 QUALITY ASSURANCE

- A. Qualifications:

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1. Shop that employs skilled workers who custom fabricate products similar to those required for this project and whose products have a record of successful in-service performance.
 - B. Fabricator/installer qualifications:

Work of this section shall be by a certified fabricator/installer, certified in writing by the manufacturer.
 - C. Applicable standards:
 1. Standards of the following, as referenced herein:
 - a. American National Standards Institute (ANSI)
 - b. American Society for Testing and Materials (ASTM)
 - c. National Electrical Manufacturers Association (NEMA)
 - d. NSF International
 2. Fire test response characteristics:
 - a. Provide with the following Class A (Class I) surface burning characteristics as determined by testing identical products per UL 723 (ASTM E84) or another testing and inspecting agency acceptable to authorities having jurisdiction:
 - 1) Flame Spread Index: 25 or less.
 - 2) Smoke Developed Index: 450 or less.
 - D. Pre-installation conference:
 1. Conduct conference at project site to comply with requirements in Division 1.
- 1.6 DELIVERY, STORAGE AND HANDLING
- A. Deliver no components to project site until areas are ready for installation.
 - B. Store components indoors prior to installation.
 - C. Handle materials to prevent damage to finished surfaces.
 1. Provide protective coverings to prevent physical damage or staining following installation for duration of project.
- 1.7 WARRANTY
- A. Provide manufacturer's warranty against defects in materials.
 1. Warranty shall provide material and labor to repair or replace defective materials.
 2. Damage caused by physical or chemical abuse or damage from excessive heat will not be warranted.
- 1.8 MAINTENANCE
- A. Provide maintenance requirements as specified by the manufacturer.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers: Subject to compliance with requirements, provide products by one of the following
 1. Formica Corporation; Formica Solid Surfacing (basis of design)
 2. Corian® surfaces from the DuPont Company
 3. Swan Corporation
 4. Sta-Care, Inc with Surface Guard
 5. Wilsonart International, Wilsonart Solid Surface

2.2 MATERIALS

- A. Solid polymer components
 1. Cast, nonporous, filled polymer, not coated, laminated or of composite construction with through body colors meeting ANSI Z124.3 or ANSI Z124.6, having minimum physical and performance properties specified.

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- 2. Superficial damage to a depth of 0.010 inch (.25 mm) shall be repairable by sanding and/or polishing.
- B. Thickness:
 - 1. 1/2 inch
 - 2. 1/4 inch is for vertical only.
- C. Edge treatment: 1/4 inch Bullnose Edges.
- D. Backsplash: Applied. E. Sidesplash: Applied.
- F. Performance characteristics:

Property	Typical Result	Test
Tensile Strength	6,000 psi	ASTM D 638
Tensile Modulus	1.5×10^{-6} psi	ASTM D 638
Tensile Elongation	0.4% min.	ASTM D 638
Flexural Strength	10,000 psi	ASTM D 790
Flexural Modulus	1.2×10^{-6} psi	ASTM D 790
Hardness	>85	Rockwell "M"
Wear and Cleanability	Passes	ANSI Z124.3 & Z124.6
Stain Resistance: Sheets	Passes	ANSI Z124.3 & Z124.6
Fungus and Bacteria	Does not support microbial growth	ASTM G21& G22
Ball Impact	No fracture—1/2 lb. ball:	NEMA LD 3-2000
Resistance: Sheets	1/4" slab—36" drop 1/2" slab—144" drop	Method 3.8
Water Absorption	Long-term 0.4% (3/4") 0.6% (1/2") 0.8% (1/4")	ASTM D 570
Flammability	All colors (Class I and Class A)	ASTM E 84, NFPA 255 & UL 723
Flame Spread Index	<25	
Smoke Developed Index	<25	

2.3 ACCESSORIES

- A. Joint adhesive: Manufacturer's standard one- or two-part adhesive kit to create inconspicuous, nonporous joints.
- B. Sealant: Manufacturer's standard mildew-resistant, UL-listed silicone sealant in colors matching components.

2.4 FACTORY FABRICATION

- A. Shop assembly
 - 1. Fabricate components to greatest extent practical to sizes and shapes indicated, in accordance with approved shop drawings and manufacturer's printed instructions and technical bulletins.
 - 2. Form joints between components using manufacturer's standard joint adhesive without conspicuous joints.
 - a. Reinforce with strip of solid polymer material, 2" wide.
 - 3. Provide factory cutouts for plumbing fittings and bath accessories as indicated on the drawings.
 - 4. Rout and finish component edges with clean, sharp returns.

2.5 FINISHES

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- A. SS-1: Corian, Color: Antarctica, 1/2 inch, Matte Finish at Reception Areas and Pharmacy Areas
- B. SS-2: Corian, Color: Medea, 1/4 inch and 1/2 inch, Matte Finish at Reception Areas.
- C. SS-3: Corian, Color: Glacier White, 1/2 inch, Matte Finish at Reception Areas, Pharmacy Areas, Exam Room Wing Walls, and Window Sills.

PART 3 — EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with fabricator present for compliance with requirements for installation tolerances and other conditions affecting performance of work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install components plumb, level and rigid, scribed to adjacent finishes, in accordance with approved shop drawings and product data.
 - 1. Provide product in the largest pieces available.
 - 2. Form field joints using manufacturer's recommended adhesive, with joints inconspicuous in finished work.
 - a. Exposed joints/seams shall not be allowed.
 - 3. Reinforce field joints with solid surface strips extending a minimum of 1 inch on either side of the seam with the strip being the same thickness as the top.
 - 4. Cut and finish component edges with clean, sharp returns.
 - 5. Rout radii and contours to template.
 - 6. Anchor securely to base cabinets or other supports.
 - 7. Align adjacent countertops and form seams to comply with manufacturer's written recommendations using adhesive in color to match countertop.
 - 8. Carefully dress joints smooth, remove surface scratches and clean entire surface.
 - 9. Install countertops with no more than 1/8-inch (3 mm) sag, bow or other variation from a straight line.
- B. Applied back splashes and applied side splashes:
 - 1. Install applied back and side splashes using manufacturer's standard color-matched silicone sealant.
 - 2. Adhere applied back and side splashes to countertops using manufacturer's standard color- matched silicone sealant.

3.4 CLEANING AND PROTECTION

- A. Keep components clean during installation.
- B. Remove adhesives, sealants and other stains.

END OF SECTION

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SECTION 07 19 16 – CONCRETE FLOOR SEALER AND FINISH

PART 1 - GENERAL

1.1 SUMMARY

- A Section Includes:
 - 1. Water-based sealer and finish for interior concrete floors to remain exposed.
- B Related Sections:
 - 1. Section 03 30 00 - Cast-In-Place Concrete: Concrete slab-on-grade surfaces and curing agents.
 - 2. Section 07 90 00 - Joint Protection: Sealants

1.2 SYSTEM DESCRIPTION

- A Applied Finish: Material to restrict moisture absorption and provide slip-resistant and abrasion-resistant finished appearance for interior concrete flooring indicated to remain exposed.

1.3 SUBMITTALS

- A Section 01 33 00 - Submittal Procedures: Submittal procedures.
- B Product Data: Submit details of product description, tests performed, limitations to coating, and chemical properties including percentage of solids.
- C Samples: Of each substrate indicated to receive water repellent, 12 inches square, with specified repellent treatment applied to half of each sample.
- D Manufacturer's Installation Instructions: Submit special procedures and conditions requiring special attention, and cautionary procedures required during application.
- E Manufacturer's Certificate: Certify products meet or exceed specified requirements, including local requirements controlling the emission of VOCs.

1.4 QUALIFICATIONS

- A Manufacturer: Company specializing in manufacturing products specified in this section for a minimum of three years.
- B Applicator: Company specializing in performing Work of this section with minimum three years' experience and approved by manufacturer for this application.

1.5 PRE-INSTALLATION MEETINGS

- A Section 01 30 00 - Administrative Requirements: Pre-installation meeting.
- B Convene minimum one week prior to commencing work of this section.

1.6 DELIVERY, STORAGE, AND HANDLING

- A Section 01 60 00 - Product Requirements: Product storage and handling requirements.
- B Protect product from freezing.

1.7 ENVIRONMENTAL REQUIREMENTS

- A Section 01 60 00 - Product Requirements.
- B Do not apply coating when ambient or surface temperature is lower than 40 degrees F

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or higher than 100 degrees F.

1.8 WARRANTY

- A Section 01 70 00 - Execution and Closeout Requirements: Product warranties and product bonds.
- B Furnish manufacturer's written warranty for sealer/finish for a minimum of two-years after Substantial Completion of Project.

PART 2 - PRODUCTS

3.2 Manufacturers:

- A. Euclid Chemical Company, www.euclidchemical.com.
- B. L.M. Scofield Company, www.scofield.com
- C. W.R. Meadows, www.wrmeadows.com
- D. Substitutions: Section 01 60 00 - Product Requirements.

3.3 MATERIALS

- A. Concrete Sealer: Water-based clear and colorless high solids type sealer and finish that is VOC-compliant.
 - 1. Basis-of-Design: *Selectseal Plus* as manufactured by Scofield.
 - 2. VOC Content: less than 100 g/L.
 - 3. Semi-Gloss or Gloss finish.
 - 4. High solids content; low odor.
 - 5. Certified wet-slip resistant per UL 410.
 - 6. Abrasion-resistant.
 - 7. Apply at interior concrete floors scheduled to remain exposed.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify joint sealants are installed and cured.
- C. Verify surfaces to be coated are dry, clean, and free of efflorescence, oil, or other matter detrimental to application of coating.
- D. Obtain product information from Contractor for curing agent that was used on floors scheduled to receive a clear finish coat to ensure that the proposed finish coat is compatible.
- E. Test the surface of concrete before applying sealer/finish to ensure it absorbs drops of water within 20-30 seconds. Verify with the sealer/finish manufacturer whether a non-absorbing surface will require mild acid-etching prior to sealer/finish application.

3.2 PREPARATION

- A. Delay Work until concrete substrate is cured minimum of 60 days, and all other trades have completed work in the affected areas.
- B. Remove loose particles and foreign matter. Remove oil or foreign substances that may interfere with appearance or performance of sealer/finish. Remove drywall compound and paint drips by scraping.
- C. Remove curing agents remaining on surface of affected slabs. Ensure compatibility of curing agent and any installed joint sealants with proposed sealer/finish product.
- D. Scrub and rinse surfaces with water and let dry while restricting foot traffic. Vacuum

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dry surface just prior to application of sealer/finish.

- E Test for pH level of substrate before applying. Do not apply to substrates with pH level outside of manufacturer's recommended limits.
- F Protect adjoining work, including sealant bond surfaces at joints. Mask-off wall bases and adjoining surfaces of aluminum and glass if there is the possibility of water repellent being deposited on surfaces.
- G Coordination with Sealants:
 - 1.1 Coordinate with sealant manufacturer to determine whether sealer/finish should be applied prior to or after installation of any joint sealants in concrete slab. Sealant joints installed prior to application of sealer/finish shall be fully cured.
 - 1.2 Sealer/finish application may precede joint sealant installation only if sealant adhesion and compatibility have been tested and verified.

3.3 APPLICATION

- A. Apply in accordance with manufacturer's instructions.
- B. Apply a saturation coating of clear sealer/finish on indicated surfaces using foam, microfiber, or lamb's wood applicators. Cover all surfaces to remain exposed.
- C. Apply second coat in accordance with manufacturer's directions for drying and scuffing of first coat. Final coat shall be free of lap or brush marks.

3.4 PROTECTION OF INSTALLED CONSTRUCTION

- A. Section 01 70 00 - Execution and Closeout Requirements: Protecting installed construction.
- B. Immediately remove sealer/finish from adjacent surfaces by methods as instructed by coating manufacturer. Repair damage to surfaces not indicated to receive sealer/finish.

END OF SECTION

SECTION 07 21 00 THERMAL INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Batt insulation in exterior wall and roof construction.

1.02 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Supporting construction for batt insulation.
- B. Section 09 2116 - Gypsum Board Assemblies: Acoustic insulation inside walls and partitions.

1.03 REFERENCE STANDARDS

- A. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2015a.
- B. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2012.
- C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2015a.
- D. ASTM E136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace At 750 Degrees C; 2016.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.
- C. Manufacturer's Installation Instructions: Include information on special environmental conditions required for installation and installation techniques.

1.05 FIELD CONDITIONS

- A. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

1.06 SEQUENCING

- A. Sequence work to ensure fireproofing and firestop materials are in place before beginning work of this section.

1.07 COORDINATION

- A. Coordinate the work with Section 07 2500 for installation of vapor retarder.

PART 2 PRODUCTS

2.01 APPLICATIONS

- A. Insulation in Metal Framed Walls: Batt insulation with no vapor retarder.
- B. Insulation under Metal Framed Roof Structure: Batt insulation encapsulated in a vapor-permeable poly sheeting.

2.02 FOAM BOARD INSULATION MATERIALS

- A. Extruded Polystyrene Board Insulation: Extruded polystyrene board; ASTM C578; with either natural skin or cut cell surfaces, and the following characteristics:
 - 1. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
 - 2. Flame Spread Index: 75 or less, when tested in accordance with ASTM E84.

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3. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
4. R-value; 1 inch of material at 72 degrees F: 5, minimum.
5. Board Size: 48 x 96 inch.
6. Board Thickness: 1 or 2" depending on wall assembly and ass indicated on drawings.
7. Board Edges: Square.
8. Thermal Conductivity (k factor) at 25 degrees F: 0.18.
9. Compressive Resistance: 15 psi.
10. Board Density: 1.3 lb/cu ft.
11. Water Absorption, Maximum: 0.3 percent, by volume.
12. Manufacturers:
 - a. Dow Chemical Company: www.dow.com.
 - b. Owens Corning Corp: www.owenscorning.com.
 - c. Kingspan Insulation LLC; GreenGuard XPS TYPE IV 25 PSI: www.trustgreenguard.com.
13. Substitutions: See Section 01 6000 - Product Requirements.

2.03 BATT INSULATION MATERIALS

- A. Glass Fiber Batt Insulation: Flexible preformed batt or blanket, complying with ASTM C665; friction fit.
 1. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
 2. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
 3. Combustibility: Non-combustible, when tested in accordance with ASTM E136, except for facing, if any.
 4. Formaldehyde Content: Zero
 5. Thermal Resistance: R-value of 13 at exterior wall.
 6. Thickness: nominal 4 inch at walls and 6 inch at plumbing walls.
 7. Width: 16 inch at walls.
 8. Facing: Unfaced.
 9. Manufacturers:
 - a. CertainTeed Corporation; CertaPro Thermal Batt Insulation: www.certainteed.com.
 - b. Owens Corning Corporation; EcoTouch PINK FIBERGLAS Insulation: www.ocbuildingspec.com.
 10. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Glass Fiber Batt Insulation: Flexible preformed batt or blanket, complying with ASTM C665; friction fit.
 1. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
 2. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
 3. Combustibility: Non-combustible, when tested in accordance with ASTM E136.
 4. Thermal Resistance: R-value of 19.
 5. Thickness: 6.25 inch.
 6. Facing: Encapsulated in poly sheeting.
 7. Manufacturers:
 - a. CertainTeed Corporation; EasyTouch Encapsulated Insulation: www.certainteed.com.
 - b. Johns Manville: www.jm.com.
 - c. Owens Corning Corporation: www.ocbuildingspec.com.
 8. Substitutions: See Section 01 60 00 - Product Requirements.

2.04 ACCESSORIES

- A. Nylon Plastic Straps: 3/4 inch wide, .040 inch thick woven nylon plastic.
- B. Adhesive: Type recommended by insulation manufacturer for application.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.
- B. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.

3.02 BOARD INSTALLATION AT EXTERIOR WALLS

- A. Adhere a 6 inch wide strip of polyethylene sheet over expansion joints with double beads of adhesive each side of joint.
 - 1. Tape seal joints between sheets.
 - 2. Extend sheet full height of joint.
- B. Apply mfg. recommended adhesive to back of boards:
 - 1. Three continuous beads per board length.
- C. Install boards horizontally on walls.
 - 1. Place boards to maximize adhesive contact.
 - 2. Install in running bond pattern.
 - 3. Butt edges and ends tightly to adjacent boards and to protrusions.
- D. Extend boards over expansion joints, unbonded to wall on one side of joint.
- E. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.
- F. Place 6 inch wide waterproof membrane sheet at perimeter of wall openings, from adhesive vapor retarder bed to window and door frames. Tape seal in place to ensure continuity of vaporretarder and air seal.
- G. Tape insulation board joints.

3.03 BOARD INSTALLATION AT CAVITY WALLS

- A. Apply adhesive to back of boards:
 - 1. Three continuous beads per board length.
 - 2. Full bed 1/8 inch thick.
- B. Install boards to fit snugly between wall ties.
 - 1. Place membrane surface against adhesive.
 - 2. Place membrane surface facing out, and tape seal board joints.
- C. Install boards horizontally on walls.
 - 1. Place boards to maximize adhesive contact.
 - 2. Install in running bond pattern.
 - 3. Butt edges and ends tightly to adjacent boards and to protrusions.
- D. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

3.04 BATT INSTALLATION

- A. Install insulation and vapor retarder in accordance with manufacturer's instructions.
- B. Install in exterior wall and roof spaces without gaps or voids. Do not compress insulation.
- C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.
- D. Fit insulation tightly in cavities and tightly to exterior side of mechanical and electrical services within the plane of the insulation.
- E. Install with factory applied vapor retarder membrane facing warm side of building spaces. Lap ends and side flanges of membrane over framing members.

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- F. Friction fit or tape insulation batts in place.
- G. Tape seal butt ends, lapped flanges, and tears or cuts in membrane.
- H. At wood framing, place vapor retarder on warm side of insulation by stapling at 6 inches on center. Lap and seal sheet retarder joints over member face.
- I. At metal framing, place vapor retarder on warm side of insulation; lap and seal sheet retarder joints over member face.
- J. Tape seal tears or cuts in vapor retarder.
- K. Extend vapor retarder tightly to full perimeter of adjacent window and door frames and other items interrupting the plane of the membrane. Tape seal in place.

3.05 RIGID INSTALLATION

- A. Apply single layer of insulation to produce thickness indicated, unless multiple layers are otherwise shown or required to make up total thickness.
- B. Seal joints between closed-cell (nonbreathing) insulation units by applying adhesive, mastic, or sealant to edges of each unit to form a tight seal as units are shoved into place. Fill voids in completed installation with adhesive, mastic, or sealant as recommended by insulation manufacturer.

3.06 PROTECTION

- A. Do not permit installed insulation to be damaged prior to its concealment.

END OF SECTION

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SECTION 07 21 13 – CONTINUOUS INSULATION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Board Faced Insulation and SI Structural Insulation:
 - 1. Nail base insulating sheathing.
 - a. ThermaBase-CI (TS).
- B. Accessories:
 - 1. Insulation fastener components.
 - 2. Insulation joint and flashing components.

1.2 RELATED SECTIONS

- A. Section 04 21 13 – Brick Masonry
- B. Section 04 43 01 – Stone Masonry
- C. Section 05 40 00 - Cold-Formed Metal Framing.
- D. Section 06 10 00 - Rough Carpentry.
- E. Section 07 25 00 - Weather Barriers.
- F. Section 07 54 03 – Thermoplastic Membrane Roofing.

1.3 REFERENCES

- A. American Architectural Manufacturers Association (AAMA):
 - 1. AAMA 711 - Voluntary Specification for Self-Adhering Flashing Used for Installation of Exterior Wall Fenestration Products.
 - 2. AAMA 714 - Voluntary Specification for Liquid Applied Flashing Used to Create a Water-Resistive Seal around Exterior Wall Openings in Buildings.
- B. Air Barrier Association of America (ABAA).
- C. American National Standards Institute (ANSI):
 - 1. ANSI/SBCA FS 100-2012 - Standard Requirements for Wind Pressure Resistance of Foam Plastic Insulating Sheathing Used in Exterior Wall Covering Assemblies.
- D. ASTM International (ASTM):
 - 1. ASTM C272 - Standard Test Method for Water Absorption of Core Materials for Sandwich Construction.
 - 2. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
 - 3. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.
 - 4. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
 - 5. ASTM C1763 - Standard Test Method for Water Absorption by Immersion of Thermal Insulation Materials.
 - 6. Materials.
 - 7. ASTM E96 - Standard Test Methods for Water Vapor Transmission of Materials.
 - 8. Resistance of Vertical Elements of the Lateral Force Resisting Systems for Buildings.

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9. ASTM E2178 - Standard Test Method for Air Permeance of Building Materials.
 10. ASTM E2357 - Standard Test Method for Determining Air Leakage of Air Barrier Assemblies.
- E. International Code Council (ICC):
1. ICC-ES AC71 - Acceptance Criteria for Foam Plastic Sheathing Panels Used as Weather-resistive Barriers.
- F. National Fire Protection Association (NFPA):
1. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components.
 2. NFPA 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth.
- G. Underwriters Laboratories (UL): USA.
1. UL 263 - Fire Tests of Building Construction and Materials.
 2. UL 723 - Standard for Test for surface Burning Characteristics of Building Materials.
 3. UL 1715 - Fire Test of Interior Finish Material.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01 30 00 - Administrative Requirements.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
1. Preparation instructions and recommendations.
 2. Storage and handling requirements and recommendations.
- C. Shop Drawings: Show fabrication and installation layouts of metal wall panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
1. Accessories: Include details of all integral panel components and their interface with adjacent materials.
 2. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- D. Verification Samples: For each finish product specified, two samples, minimum size 4 x 6 inches (102 x 150 mm).
- E. Manufacturer Qualifications: All primary products specified in this section shall be supplied by a single manufacturer with a minimum ten years' experience.
- F. Installer Qualifications: All products listed in this section shall be installed by a single installer with a minimum of five (5) years demonstrated experience in installing products of the same type and scope as specified.
- G. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
1. Finish areas designated by Architect.
 2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
 3. Remodel mock-up area as required to produce acceptable work.
- H. Pre-installation Meeting: Conduct pre-installation meeting to verify project requirements, foundation/structural system/substrate conditions, and insulation manufacturer's installation instructions.

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1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store and handle products per manufacturer's instructions until ready for installation.

1.6 SEQUENCING

- A. Ensure that locating templates and other information required for installation of products of this section are furnished to affected trades in time to prevent interruption of construction progress.
- B. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.7 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.8 WARRANTY

- A. Insulation Warranty: At project closeout, provide to Owner an executed copy of the manufacturer's standard limited warranty against manufacturing defect, outlining its terms, conditions, and exclusions from coverage.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Rmax, A Business Unit of Sika Corporation, located at 2075 Midway Road, Lewisville, TX 75056; Tel: 800-527-0890; Email: rmax@rmax.com; Technical Support Tel: 972-850-3604; Technical Support Email: rmax.technical@us.sika.com; Web: www.rmax.com.
 - 1. Manufacturing plant locations in Dallas, TX, Greer, SC, and Fernley, NV, to serve multiple regions.
- B. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

2.2 BOARD FACED INSULATION AND STRUCTURAL INSULATION

- A. Nail Base Insulating Sheathing, Consisting of Aluminum Faced, Polyisocyanurate Foam Insulating Sheathing bonded to OSB or Plywood: ASTM C1289, Type V with Type I, Class 1 or Class 2, rigid, cellular, polyisocyanurate thermal insulation.
 - 1. Basis of Design: ThermaBase-CI (TS) from Rmax, A Business Unit of Sika Corporation.
 - 2. Flame Spread Index and Smoke Contribution Index per ASTM E84:
 - a. Flame: 75 or less.
 - b. Flame: 75 or less for plywood or OSB component.
 - c. Smoke: 450 or less.
 - 3. Water Vapor Permeability per ASTM E96 desiccant method: 0.1 perm or less.
 - 4. Air Permeability per ASTM E2178: 0.004 cfm per sq ft (1.2192 L per min per sq m) or less.
 - 5. Compressive Strength per ASTM D1621: 20 psi (138 kPa).
 - 6. Compressive Strength per ASTM D1621: 25 psi (172 kPa).
 - 7. Aged R-Value per ASTM C518: R-6.0 minimum at thickness of 1 inch (25 mm), R-10 minimum at thickness of 1.55 inches (39 mm) and R-13.1 minimum at thickness of 2 inches (51 mm).

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8. Required Insulation Thickness and R-Value: As indicated on the Drawings.
9. Nailable Material and Thickness:
 - a. Oriented-Strand-Board Nominal Thickness: 7/16 inch (11 mm).
 - b. Oriented-Strand-Board Nominal Thickness: 1/2 inch (13 mm).
 - c. Oriented-Strand-Board Nominal Thickness: 5/8 inch (16 mm).
 - d. Oriented-Strand-Board Nominal Thickness: 3/4 inch (19 mm).
 - e. Plywood Nominal Thickness, Exposure 1: 1/2 inch (13 mm).
 - f. Plywood Nominal Thickness, Exposure 1: 5/8 inch (16 mm).
 - g. Plywood Nominal Thickness, Exposure 1: 3/4 inch (19 mm).

2.3 ACCESSORIES

A. Insulation Fastener Components:

1. General - Fasteners for Fastening Polyisocyanurate Wall Insulation to Wood Framing Components, Light Gauge Metal Wall Framing Components and Wood and Metal Roof Decks:
 - a. Steel drill screws, in type and length recommended by insulating sheathing manufacturer for thickness of insulating sheathing to be attached, with organic-polymer or other corrosion-protective coating having a salt-spray resistance of more than 800 hours according to ASTM B117. Fasteners in contact with fire-retardant-treated wood shall be of suitable material or provided with coating suitable for such use.
 - b. Provide washers or plates if recommended by insulating sheathing manufacturer. Washers shall be compatible with screw fasteners.
2. Fasteners for Fastening Polyisocyanurate Wall Insulation to metal stud framed wall surfaces:
 - a. Self-drilling ceramic coated screw.
 - 1) Product: Grip-Deck screws or comparable products as manufactured by TRUFAST Walls or comparable product.
3. Nail Board Fasteners: Engineered for attaching nail base wall and roof panels walls and wall framing and structural roof decks.
 - a. Large-diameter, low profile 5/8 inch (16 mm) diameter head with No. 14 shaft diameter, epoxy e-coat to comply with governing standards for use with treated wood including fire-retardant-treated wood.
 - 1) Product: Nail Board Fasteners, as manufactured by TRUFAST Walls, or comparable product.
 - b. Thread Style and Point:
 - 1) SIP TP Screws: Thread-point for attaching nail board panels to wood and timber substrates.
 - 2) SIP LD Screws: Light-duty drill point for attaching nail board panels to wood, masonry, concrete, light gauge metal framing of 16 to 20 gauge, and corrugated steel deck substrates.
 - 3) SIP HD Screws: Heavy-duty drill point for attaching nail board panels to 12 to 16 gauge steel substrates.
4. Washers: Self-sealing for use with Self-drilling screws:
 - a. Self-sealing 2 inches (51 mm) diameter polymer washer, UV stabilized, tested, and approved to provide air and water-resistive seal, in combination with compatible self-drilling screw.
 - 1) Product: Thermal-Grip ci prong washers as manufactured by TRUFAST Walls or comparable product.
 - 2) Walls or comparable product.

B. Insulation Joint and Flashing Components:

1. General - Joint Treatment and Flashing Components:
 - a. Material Standards:
 - 1) AAMA 711: For self-adhered flashing and joint materials.

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- 2) AAMA 714: For liquid applied flashing and joint materials.
2. Joint Sealant Tape for Stationary Joint Treatment of Foil Faced Polyisocyanurate Insulation:
 - a. Product: R-SEAL 3000 tape from Rmax, A Business Unit of Sika Corporation or comparable product.
 - 1) Dead soft aluminum foil coated with acrylic pressure-sensitive adhesive.
 - 2) Width: 4 inches (102 mm).

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION, GENERAL

- A. Install in accordance with manufacturer's instructions and in proper relationship with adjacent construction.

3.4 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair, or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 07 25 00 WEATHER BARRIERS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Air Barriers: Materials that form a system to stop passage of air through exterior walls, joints between exterior walls and roof, and joints around frames of openings in exterior walls.

1.02 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-in-Place Concrete: Vapor retarder under concrete slabs on grade.
- B. Section 05 40 00 - Cold-Formed Metal Framing: Water-resistive barrier under exterior cladding.
- C. Section 07 21 00 - Insulation: Vapor retarder installed in conjunction with batt insulation.
- D. Section 07 54 00 - Thermoplastic Membrane Roofing: Vapor retarder installed as part of roofing system.
- E. Section 07 42 13 - Metal Wall and Soffit Panels: Metal panels installed in conjunction with weather barriers.
- F. Section 07 9005 - Joint Sealers: Sealant materials and installation techniques.
- G. Section 09 2116 - Gypsum Board Assemblies: Water-resistive barrier under exterior cladding.

1.03 DEFINITIONS

- A. Weather Barrier: Assemblies that form either water-resistive barriers, air barriers, or vapor retarders.
- B. Air Barrier: Air tight barrier made of material that is relatively air impermeable but water vapor permeable, both to the degree specified, with sealed seams and with sealed joints to adjacent surfaces. Note: For the purposes of this specification, vapor impermeable air barriers are classified as vapor retarders.

1.04 REFERENCE STANDARDS

- A. ASTM C836/C836M - Standard Specification for High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course; 2012.
- B. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension; 2006a (Reapproved 2013).
- C. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection; 2013.
- D. ASTM D 4586 - Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers; 2009.
- E. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2014.
- F. ASTM E 283 - Air Rate Leakage thru Cured Film; 2011.
- G. ASTM E2178 - Standard Test Method for Air Permeance of Building Materials; 2013.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on material characteristics.
- C. Manufacturer's Installation Instructions: Indicate preparation.

1.06 MOCK-UP

- A. Install air barrier, vapor retarder, and water-resistive barrier materials in mock-up specified in Section 04 2100.
- B. Install air barrier materials in mock-up specified in Section 04810.

1.07 FIELD CONDITIONS

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- A. Maintain temperature and humidity recommended by the materials manufacturers before, during and after installation.

PART 2 PRODUCTS

2.01 WEATHER BARRIER ASSEMBLIES

- A. Air Barrier:
 - 1. On outside surface of inside wythe of exterior masonry cavity walls use air barrier coating.
 - 2. On outside surface of sheathing of exterior walls use air barrier coating.

2.02 AIR BARRIER MATERIALS (WATER VAPOR PERMEABLE AND WATER-RESISTIVE)

- A. Air Barrier, Fluid Applied: Vapor permeable, elastomeric waterproofing.
- B. Air Barrier Coating:
 - 1. Material: Water-based acrylic or polymer-modified bitumen, with VOC content of zero.
 - 2. Acceptable Substrates: Stated by manufacturer as suitable for installation on visibly damp surfaces and concrete that has hardened but is not fully cured ("green" concrete) without requiring a primer.
 - 3. Air Permeance: 0.004 cubic feet per minute per square foot, maximum, when tested in accordance with ASTM E2178.
 - 4. Water Vapor Permeance: 5 perms, minimum, when tested in accordance with ASTM E96/E96M, Procedure B.
 - 5. Dry Film Thickness: 40 mils (0.040 inch), minimum.
 - 6. Products:
 - a. Grace Construction Products; Perm-A-Barrier VP: www.na.graceconstruction.com.
 - b. Henry Company; Air-Bloc 31: www.henry.com.
 - c. Tremco Global Sealants; ExoAir 220R: www.tremcosealants.com.

2.03 SEALANTS

- A. Polyurethane Sealant: as specified in Section 07 92 00.
- B. Sealant Backers: As specified in Section 07 92 00.
- C. Primers, Cleaners, and Other Sealant Materials: As recommended by sealant manufacturer, appropriate to application, and compatible with adjacent materials.

2.04 ADHESIVES

- A. Mastic Adhesive : Compatible with sheet seal and substrate, thick mastic of uniform knife grade consistency .

2.05 ACCESSORIES

- A. Flexible Flashing: Self-adhesive sheet flashing complying with ASTM D1970/D1970M, except slip resistance requirement is waived if not installed on a roof.
 - 1. Thickness: 40 mil (0.040 inch), nominal.
 - 2. Width: 12 inches, 18 inches, 24 inches, and 36 inches.
 - 3. Water Vapor Permeance: 0.05 perm, maximum, when tested in accordance with ASTM E96/E96M.
 - 4. Products:
 - a. Carlisle Coatings and Waterproofing, Inc.; CCW-705 TFW: www.carlisle-ccw.com.
- B. Self-Adhesive Sheet Flashing: ASTM D 1970.
- C. Thinners and Cleaners: As recommended by material manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces and conditions are ready to accept the work of this section.

3.02 PREPARATION

- A. Remove projections, protruding fasteners, and loose or foreign matter that might interfere with

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proper installation.

- B. Clean and prime substrate surfaces to receive adhesives in accordance with manufacturer's instructions.

3.03 INSTALLATION

- A. Install materials in accordance with manufacturer's instructions.
- B. Air Barriers: Install continuous air tight barrier over surfaces indicated, with sealed seams and with sealed joints to adjacent surfaces.
- C. Coatings:
 - 1. Prepare substrate in manner recommended by coating manufacturer; treat joints in substrate and between dissimilar materials as recommended by manufacturer.
 - 2. Where exterior masonry veneer is to be installed, install masonry anchors before installing weather barrier over masonry; seal around anchors air tight.
 - 3. Use flashing to seal to adjacent construction and to bridge joints.
 - 4. Sprayed Coating: Install to thickness recommended by manufacturer.
 - 5. Use self-adhesive sheet flashing to seal to adjacent construction and to bridge joints.
- D. Openings and Penetrations in Exterior Weather Barriers:
 - 1. Install flashing over sills, covering entire sill frame member, extending at least 5 inches onto weather barrier and at least 6 inches up jambs; mechanically fasten stretched edges.
 - 2. At openings to be filled with frames having nailing flanges, seal head and jamb flanges using a continuous bead of sealant compressed by flange and cover flanges with at least 4 inches wide; do not seal sill flange.
 - 3. At openings to be filled with non-flanged frames, seal weather barrier to all sides of opening framing, using flashing at least 9 inches wide, covering entire depth of framing.
 - 4. At head of openings, install flashing under weather barrier extending at least 2 inches beyond face of jambs; seal weather barrier to flashing.
 - 5. At interior face of openings, seal gap between window/door frame and rough framing, using joint sealant over backer rod.
 - 6. Service and Other Penetrations: Form flashing around penetrating item and seal to weather barrier surface.

3.04 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.
- B. Obtain approval of installation procedures by the weather barrier manufacturer based on a mock-up installed in place, prior to proceeding with remainder of installation.
- C. Take digital photographs of each portion of the installation prior to covering up.

3.05 PROTECTION

- A. Do not leave materials exposed to weather longer than recommended by manufacturer.

END OF SECTION

SECTION 07 42 13 METAL WALL PANELS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Manufactured metal panels for walls and soffits, with accessory components.

1.02 REFERENCE STANDARDS

- A. ASTM A792/A792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process; 2021.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate dimensions, layout, joints, construction details, methods of anchorage.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Protect panels from accelerated weathering by removing or venting sheet plastic shipping wrap.
- B. Store prefinished material off ground and protected from weather. Prevent twisting, bending, or abrasion, and provide ventilation to stored materials. Slope metal sheets to ensure drainage.
- C. Prevent contact with materials that may cause discoloration or staining of products.

PART 2 PRODUCTS

2.01 MANUFACTURED METAL PANELS

- A. Wall Panel System: Factory fabricated prefinished metal panel system, site assembled.
 - 1. Provide exterior panels and subgirt framing assembly.
 - 2. Design and size components to withstand dead and live loads caused by positive and negative wind pressure acting normal to plane of wall.
 - 3. Maximum Allowable Deflection of Panel: 1/90 of span.
 - 4. Fabrication: Formed true to shape, accurate in size, square, and free from distortion or defects; pieces of longest practical lengths.
 - 5. Exterior Finish: Panel manufacturer's standard acrylic coating, top coat over epoxy primer.
- B. Exterior Wall Panels:
 - 1. Profile: Horizontal.
 - 2. Side Seams: Double-interlocked, tight-fitting, sealed with continuous bead of sealant.
 - 3. Material: Precoated steel sheet, 22 gage, 0.0299 inch minimum thickness.
 - 4. Panel Width: 16 inches.
 - 5. Product: **Berridge Vee-Panel**, concealed fasteners, or equivalent.
- C. Exterior Soffit Panels:
 - 1. Profile: Horizontal.
 - 2. Side Seams: Double-interlocked, tight-fitting, sealed with continuous bead of sealant.
 - 3. Material: Precoated steel sheet, 24 gage, 0.0299 inch minimum thickness.
 - 4. Panel Width: 12 inches.
 - 5. Product: **Berridge Vee-Panel Vented**, concealed fasteners, or equivalent.
- D. Trim: Same material, thickness and finish as exterior sheets; brake formed to required profiles.
- E. Anchors: Galvanized steel.

2.02 MATERIALS

- A. Precoated Steel Sheet: Aluminum-zinc alloy-coated steel sheet, ASTM A792/A792M, Commercial Steel (CS) or Forming Steel (FS), with AZ50/AZM150 coating; continuous-coil-coated on exposed surfaces with specified finish coating and on panel back with specified panel back coating.

2.03 ACCESSORIES

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- A. Sealants:
 - 1. Exposed Sealant: Elastomeric; silicone, polyurethane, or silyl-terminated polyether/polyurethane.
 - 2. Concealed Sealant: Non-curing butyl sealant or tape sealant.
- B. Fasteners: Manufacturer's standard type to suit application; steel, hot dip galvanized.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install panels on walls and soffits in accordance with manufacturer's instructions.
- B. Fasten panels to structural supports; aligned, level, and plumb.

END OF SECTION

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SECTION 07 54 03 - THERMOPLASTIC MEMBRANE ROOFING - FULLY ADHERED

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes:
 - 1. Fully adhered TPO roof membrane over insulating concrete roof fill on metal deck.
 - 2. Walkway pads.
- B. Related Sections:
 - 1. Section 06 10 53 - Rough Carpentry: Wood nailers.
 - 2. Section 07 62 00 - Sheet Metal Flashing and Trim: Sheet metal flashing and counterflashing.
 - 3. Section 07 72 33 - Roof Hatches.

1.2 REFERENCES

- A. American Society of Civil Engineers:
 - 1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.
- B. ASTM International:
 - 1. ASTM C1371 - Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emisometers.
 - 2. ASTM C1549 - Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer.
 - 3. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers -Tension.
 - 4. ASTM D624 - Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers.
 - 5. ASTM D1004 - Standard Test Method for Initial Tear Resistance of Plastic Film and Sheeting.
 - 6. ASTM D4434 - Standard Specification for Poly(Vinyl Chloride) Sheet Roofing.
 - 7. ASTM E108 - Standard Test Methods for Fire Tests of Roof Coverings.
 - 8. ASTM E408 - Standard Test Methods for Total Normal Emittance of Surfaces Using Inspection-Meter Techniques.
 - 9. ASTM E903 - Standard Test Method for Solar Absorptance, Reflectance, and Transmittance of Materials Using Integrating Spheres.
 - 10. ASTM E1918 - Standard Test Method for Measuring Solar Reflectance of Horizontal and Low-Sloped Surfaces in the Field.
- C. National Roofing Contractors Association:
 - 1. NRCA - The NRCA Roofing and Waterproofing Manual.
- D. Single Ply Roofing Institute:
 - 1. SPRI ES-1 - Wind Design Standard for Edge Systems used for Low Slope Roofing Systems.
- E. Underwriters Laboratories Inc.:
 - 1. UL - Fire Resistance Directory.
 - 2. UL 790 - Tests for Fire Resistance of Roof Covering Materials.

1.3 SYSTEM DESCRIPTION

- A. Thermoplastic Sheet Membrane Roofing System: One ply adhered TPO membrane system with base flashing.
- B. Roof Deck: Lightweight insulating concrete.

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- C. NRCA Specification Plate: Lightweight insulating concrete deck - TP-N-A-S.

1.4 PERFORMANCE REQUIREMENTS

- A. Wind Uplift: In accordance with ASCE-7 requirements. Refer to Structural Drawings for wind design criteria.
- B. Flashings and Fastening: Comply with requirements of Section 07 62 00 - Sheet Metal Flashing and Trim. Provide base flashings, perimeter flashings, detail flashings and component materials and installation techniques that comply with requirements and recommendations of the following:
 - 1. ANSI/SPRI ES-1 for Perimeter detail, metal edges and copings.
 - 2. NRCA Roofing and Waterproofing Manual for construction details and recommendations.
 - 3. SMACNA Architectural Sheet Metal Manual for construction details.
- C. Roof Surface: Minimum total solar reflectance of .70 and thermal emittance of .75 when tested in accordance with the following:
 - 1. Reflectance: Measured in accordance with ASTM C1549, ASTM E903, ASTM E1175, or ASTM E1918.
 - 2. Emittance: Measured in accordance with ASTM C835, ASTM C1371, or ASTM E408

1.5 SUBMITTALS

- A. Section 01 30 00 – Administrative Requirements: Submittal procedures.
- B. Shop Drawings: Indicate joint and termination detail conditions for membrane and base flashing. Indicate membrane layout and seam locations.
- C. Product Data: Submit characteristics on membrane materials, adhesives, seaming materials, flashing materials, walkway pads, and any other roofing products specified.
- D. Samples:
 - 1. Submit two samples of roof membrane, 12 x 12 inch in size, including lap seam.
 - 2. Submit 6 fasteners of each type, length, and finish.
- E. Manufacturer's Installation Instructions: Submit special precautions required for seaming membrane.
- F. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.
- G. Installer Certificates: Signed by roofing system manufacturer certifying that Installer is approved, authorized, or licensed by manufacturer to install specified roofing system.
- H. Research/Evaluation Reports: Evidence of roofing system's compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.
- I. Inspection Report: Copy of roofing system manufacturer's inspection report of completed roofing installation.

1.6 QUALITY ASSURANCE

- A. Perform Work in accordance with NRCA Roofing and Waterproofing Manual and manufacturer's instructions.
- B. Fire Rated Roof Construction: Rating as indicated on Drawings.
 - 1. Tested Rating: Determined in accordance with ASTM E119.
- C. Roof Assembly Fire Classification: Class A when tested in accordance with ASTM E108 or

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UL 790.

- D. Apply label from agency approved by authority having jurisdiction to identify each roof assembly component.

1.7 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years' experience.
- B. Installer: Experienced and specialized in installing roofing similar to that required for this Project and who is approved, authorized, or licensed by the roofing system manufacturer to install manufacturer's product.

1.8 PRE-INSTALLATION MEETINGS

- A. Section 01 30 00 - Administrative Requirements: Preinstallation meetings.
- B. Preliminary Roofing Conference: Before starting roof deck construction, conduct conference at Project site. Meet with the same participants and review the same items listed for the preinstallation conference. In addition, review status of submittals and coordination of work related to roof construction. Notify participants at least 5 working days before conference.
- C. Preinstallation Conference: Before installing roofing system, conduct meeting at Project site. Notify participants at least 5 working days before meeting.
 - 1. Meet with Owner; Architect; Owner's insurer, if applicable; testing and inspecting agency representative; roofing Installer; roofing system manufacturer's representative; deck Installer; and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
 - 2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
 - 3. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
 - 4. Review loading limitations of deck during and after roofing.
 - 5. Review flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing.
 - 6. Review governing regulations and requirements for insurance, certificates, and inspection and testing, if applicable.
 - 7. Review temporary protection requirements for roofing system during and after installation.
 - 8. Review roof observation and repair procedures after roofing installation.
 - 9. Document proceedings, including corrective measures or actions required, and furnish copy of record to each participant.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Deliver products in manufacturer's original containers, dry, undamaged, with seals and labels intact.
- C. Store products in weather protected environment, clear of ground and moisture.
- D. Protect foam insulation from direct exposure to sunlight.

1.10 ENVIRONMENTAL REQUIREMENTS

- A. Section 01 60 00 - Product Requirements: Environmental conditions affecting products on site.

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- B. Do not apply roofing membrane during inclement weather without proper weather protection.
- C. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.
- D. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed during same day.

1.11 COORDINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Coordinate Work with installation of associated roof penetrations and metal flashings, as Work of this section proceeds.

1.12 WARRANTY

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for warranties.
- B. Manufacturer's Warranty: Furnish 15 year manufacturer's no dollar limit, full system warranty including coverage of materials and installation resulting from failure to resist penetration of moisture.
- C. Special Project Warranty: Submit roofing Installer's warranty, on warranty form at end of this Section, signed by Installer, covering Work of this Section, including membrane roofing, sheet flashing, roof insulation, fasteners, and vapor retarders, if any, for the following warranty period:
 - 1. Warranty Period: 2 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SINGLE PLY ROOFING - FULLY ADHERED

- A. Manufacturers:
 - 1. EverGuard TPO, GAF, www.gaf.com.
 - 2. JM TPO, Johns Manville, www.specjm.com
 - 3. SureWeld TPO, Carlisle, www.carlisle-syntec.com.
 - 4. Ultra-Ply TPO, Firestone.
 - 5. Substitutions: Section 01 60 00 - Product Requirements.

2.2 COMPONENTS

- A. Fleece-Back Membrane: TPO, polyester-reinforced, **60 mils thick**; white color; conforming to the following criteria:

Properties	Test	Results
Breaking Strength	ASTM D751	330 lbf
Elongation	ASTM D412	30 percent
Seam Strength	ASTM D638	120 lbf
Tear Strength	ASTM D624 ASTM D1004	70 lbf
Permeance	ASTM D96	0.01 Perms
Water Absorption	ASTM D570	0.7 percent

- B. Membrane Backing: Polyester fabric, 9 oz per sy.
- C. Roof Surface: Minimum total solar reflectance of .70 and thermal emittance of .75 when tested in accordance with the following:

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1. Reflectance: Measured in accordance with ASTM C1549, ASTM E903, ASTM E1175, or ASTM E1918.
 2. Emittance: Measured in accordance with ASTM C835, ASTM C1371, or ASTM E408
- D. Base Flashings: Reinforced or non-reinforced TPO sheet, 60 mils thick, same color as membrane, without fabric backing.
- E. Seaming Materials: As recommended by membrane manufacturer.
- F. Adhesive Materials:
1. Membrane Adhesives: As recommended by membrane manufacturer.
 2. Flashing Adhesives: As recommended by membrane manufacturer.
- G. Fasteners: As recommended by membrane manufacturer; hot-dip galvanized, aluminum, or stainless steel.
- H. Termination Bars: Aluminum bars, 1 inch wide, pre-punched for fasteners 6 inches oc.
- I. Parapet Caps: Prefinished metal, as specified in Section 07 62 00.
- J. Gravelstop, Fascia, and Edge Flashings: Prefinished metal, as specified in Section 07 62 00.
- K. Counterflashings: Stainless steel, as specified in Section 07 62 00.
- L. Prefabricated Roof Specialties: As specified in Section 07 71 00.
- M. Walkway Pads: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway pads, approximately 3/32 inch thick, of materials acceptable to roofing system manufacturer. Provide at the top and bottom of all roof ladders, around the front and sides all roof hatches, around all serviceable rooftop equipment, and along the full width of all doors leading onto roof areas.
- N. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, seam calk, termination reglets, and other accessories recommended by roofing system manufacturer for intended use.

2.3 ROOF INSULATION

- A. General: Provide preformed roof insulation boards that comply with requirements and referenced standards, selected from manufacturer's standard sizes and of thicknesses indicated.
- B. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, felt or glass-fiber mat facer on both major surfaces; 20 psi compression strength, minimum; aged (LTTR) r-value of 6.0; thicknesses and R values as indicated.
- C. Tapered Insulation: Provide factory-tapered insulation boards fabricated to slope of 1/4 inch per 12 inches (1:48), unless otherwise indicated. Tapered insulation boards shall be of material that matches the primary roof insulation boards. Perlite or wood fiberboard insulations are not acceptable.
- D. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.

2.4 INSULATION ACCESSORIES

- A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatible with membrane roofing.
- B. Cover Board: Manufacturer's rigid, fiberglass-faced, water resistant protection board designed for installation between roof insulation and roof membrane, 1/4 inch thick.

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- C. Fasteners: Factory-coated steel fasteners and metal plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening roof insulation to substrate, and acceptable to roofing system manufacturer.
- D. Wood Nailer Strips: Comply with requirements in Division 6 Section "Rough Carpentry."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify surfaces and site conditions are ready to receive Work.
- C. Verify deck is supported and secure.
- D. Verify deck is clean and smooth, free of depressions, waves, or projections, properly sloped to drains or eaves, and suitable for installation of roof system.
- E. Verify deck surfaces are dry and free of snow or ice.
- F. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, and wood nailers are in place.
- G. Verify that minimum concrete drying period recommended by roofing system manufacturer has passed.
 - 1. Conduct fastener pull-out tests to verify that lightweight insulating concrete meets membrane manufacturer's requirements.
 - 2. Roofing contractor shall provide to the owners testing laboratory the roofing system manufacturer's requirements for dryness, walkability, and compressive strength of installed lightweight insulating concrete prior to roofing installation.
- H. Verify that wood nailers have been anchored in accordance with SPRI ES-1 requirements and can resist a minimum force of 300 plf in any direction.
- I. Moisture Testing: Take moisture readings for the lightweight insulating concrete deck using moisture meter approved by the roofing manufacturer. Do not install roofing system over deck not meeting dryness requirements as determined by the roofing manufacturer.

3.2 PREPARATION

- A. Clean substrate of dust, debris, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.
- B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.
- C. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of the roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roof areas.

3.3 MEMBRANE INSTALLATION

- A. Membrane Application (All Roofs):
 - 1. Install roofing membrane over area to receive roofing according to roof manufacturer's written instructions. Unroll roofing membrane and allow to relax before installing.
 - 2. Start installation of roofing membrane in presence of roofing system manufacturer's technical personnel.

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3. Apply adhesive at rate recommended by membrane manufacturer.
4. Roll out membrane, free from air pockets, wrinkles, or tears. Firmly press sheet into place without stretching.
5. Accurately align roofing membranes and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.
6. Seams: Clean seam areas, overlap roofing membrane, and hot-air weld side and end laps of roofing membrane according to manufacturer's written instructions to ensure a watertight seam installation.
 - a. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of roofing membrane.
 - b. Verify field strength of seams a minimum of twice daily and repair seam sample areas.
 - c. Repair tears, voids, and lapped seams in roofing membrane that does not meet requirements.
7. Mechanically fasten membrane around all perimeters, at the base of walls, drains, curbs, vents, and other roof penetrations.
8. Spread sealant or mastic bed over deck drain flange at deck drains and securely seal roofing membrane in place with clamping ring.
9. Seal membrane around roof penetrations.
10. Install T-patches over all T-seams.

B. Base Flashing Installation:

1. Install sheet flashings and preformed flashing accessories and adhere to substrate according to roofing system manufacturer's written instructions.
2. Apply bonding adhesive to substrate and underside of flashing sheet at required rate and allow to partially dry. Do not apply bonding adhesive to seam area of flashing.
3. Flash penetrations and field-formed inside and outside corners with sheet flashing as recommended by manufacturer.
4. Clean seam areas, overlap sheets, and firmly roll flashings into the adhesive. Weld side and end laps to ensure a watertight seam installation.
5. Test lap edges with probe to verify seam weld continuity. Apply lap sealant and seal exposed edges of sheet flashing terminations.
6. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

C. Walkway Installation:

1. Install walkway pads in locations indicated. Heat weld or adhere walkway pads to substrate with compatible adhesive according to roofing system manufacturer's written instructions.
2. Hot air weld the entire perimeter of walkway pad.
3. Do not extend walkway pads over field membrane lap seams.

3.4 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Verify field strength of seams a minimum of twice daily, according to manufacturer's written instructions, and repair seam sample areas.
- C. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion and submit report to Architect.
 1. Notify Architect or Owner 48 hours in advance of the date and time of inspection

3.5 CLEANING

- A. Section 01 70 00 - Execution and Closeout Requirements: Final cleaning.
- B. In areas where finished surfaces are soiled by Work of this section, consult manufacturer of

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surfaces for cleaning advice and conform to their documented instructions.

- C. Repair or replace defaced or disfigured finishes caused by Work of this section.

3.6 PROTECTION OF INSTALLED CONSTRUCTION

- A. Section 01 70 00 - Execution and Closeout Requirements: Protecting installed construction.
- B. Protect building surfaces against damage from roofing work.
- C. Where traffic must continue over finished roof membrane, protect surfaces.

3.7 ROOFING INSTALLER'S WARRANTY

WHEREAS <NAME> of <ADDRESS>, herein called the "Roofing Installer," has performed roofing and associated work ("work") on the following project:

- Owner:
- Address:
- Building Name/Type:
- Address:
- Area of Work:
- Acceptance Date:
- Warranty Period:
- Expiration Date:

AND WHEREAS Roofing Installer has contracted (either directly with Owner or indirectly as a subcontractor) to warrant said work against leaks and faulty or defective materials and workmanship for designated Warranty Period,

NOW THEREFORE Roofing Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period he will, at his own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work and as are necessary to maintain said work in a watertight condition.

This Warranty is made subject to the following terms and conditions:

Specifically excluded from this Warranty are damages to work and other parts of the building, and to building contents, caused by:

- lightning; peak gust wind speed exceeding <INSERT WIND SPEED> mph (m/sec);fire;
- failure of roofing system substrate, including cracking, settlement, excessive deflection, deterioration, and decomposition;
- faulty construction of parapet walls, copings, chimneys, skylights, vents, equipmentsupports, and other edge conditions and penetrations of the work;
- vapor condensation on bottom of roofing; and activity on roofing by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner.

When work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Roofing Installer and until cost and expense thereof has been paid by Owner or by another responsible party so designated.

The Roofing Installer is responsible for damage to work covered by this Warranty but is not liable for consequential damages to building or building contents, resulting from leaks or faults or defects of work.

During Warranty Period, if Owner allows alteration of work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations,

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attachment of other work, and positioning of anything on roof, this Warranty shall become null and void on date of said alterations until work is corrected by roofing installer, but only to the extent said alterations affect work covered by this Warranty. If Owner engages Roofing Installer to perform said alterations, Warranty shall not become null and void, unless Roofing Installer, before starting said work, shall have notified Owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate work, thereby reasonably justifying a limitation or termination of this Warranty.

During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a promenade, work deck, spray-cooled surface, flooded basin, or other use or service more severe than originally specified, this Warranty shall become null and void on date of said change, but only to the extent said change affects work covered by this Warranty.

The Owner shall promptly notify Roofing Installer of observed, known, or suspected leaks, defects, or deterioration and shall afford reasonable opportunity for Roofing Installer to inspect work and to examine evidence of such leaks, defects, or deterioration.

This Warranty is recognized to be the only warranty of Roofing Installer on said work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of roofing failure. Specifically, this Warranty shall not operate to relieve Roofing Installer of responsibility for performance of original work according to requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

IN WITNESS THEREOF, this instrument has been duly executed this <DAY> day of <MONTH>, 20<YEAR>.

Authorized Signature:
Name:
Title:

END OF SECTION

SECTION 07 62 00 SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fabricated sheet metal items, including flashings, counterflashings, and parapet coping.
- B. Sealants for joints within sheet metal fabrications.

1.02 REFERENCE STANDARDS

- A. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels; 2013.
- B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015.
- C. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2014.
- D. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free; 2007 (Reapproved 2012).
- E. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.

1.04 QUALITY ASSURANCE

- A. Perform work in accordance with SMACNA (ASMM) requirements and standard details, except as otherwise indicated.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
- B. Prevent contact with materials that could cause discoloration or staining.

PART 2 PRODUCTS

2.01 SHEET MATERIALS

- A. Galvanized Steel: ASTM A653/A653M, with G90/Z275 zinc coating; minimum 24 gage (0.0239 inch) thick base metal.
- B. Pre-Finished Galvanized Steel: ASTM A653/A653M, with G90/Z275 zinc coating; minimum 24 gage (0.0239) inch thick base metal, shop pre-coated with PVDF coating.
 - 1. PVDF (Polyvinylidene Fluoride) Coating: Superior Performance Organic Finish, AAMA 2605; multiple coat, thermally cured fluoropolymer finish system.

2.02 ACCESSORIES

- A. Fasteners: Galvanized steel, with soft neoprene washers.
- B. Primer: Zinc chromate type.
- C. Sealant to be Concealed in Completed Work: Non-curing butyl sealant.
- D. Sealant to be Exposed in Completed Work: ASTM C920; elastomeric sealant, 100 percent silicone with minimum movement capability of plus/minus 25 percent and recommended by manufacturer for substrates to be sealed; See Section 07 92 00.
- E. Sealant: Type as required to be compatible with roof materials and as specified in Section 07 9005.
- F. Plastic Cement: ASTM D4586/D4586M, Type I.

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- G. Reglets: Surface mounted type, galvanized steel .
- H. Downspout boots: 20 gage material that matches downspout color, extend 4' above finish floor, size 1/4" larger than downspout on all 4 sides. Galvalume Finish.

2.03 FABRICATION

- A. Form sections true to shape, accurate in size, square, and free from distortion or defects; conform to SMACNA (ASMM) standards.
- B. Fabricate cleats of same material as sheet, minimum 6 inches wide, interlocking with sheet.
- C. Form pieces in longest possible lengths.
- D. Hem exposed edges on underside 1/2 inch; miter and seam corners.
- E. Form material with flat lock seams, except where otherwise indicated. At moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.
- F. Fabricate corners from one piece with minimum 18 inch long legs; seam for rigidity, seal with sealant.
- G. Fabricate vertical faces with bottom edge formed outward 1/4 inch (6 mm) and hemmed to form drip.
- H. Fabricate flashings to allow toe to extend 2 inches over roofing gravel. Return and brake edges.

2.04 GUTTER AND DOWNSPOUT FABRICATION

- A. Gutters: SMACNA (ASMM), Rectangular profile.
- B. Downspouts: Rectangular profile.
- C. Gutters and Downspouts: Size indicated.
- D. Accessories: Profiled to suit gutters and downspouts.
 - 1. Anchorage Devices: In accordance with SMACNA requirements.
 - 2. Gutter Supports: Straps.
 - 3. Downspout Supports: Brackets.
- E. Downspout Boots: 4' long, 20 gauge metal. Galvalume Finish.
- F. Seal metal joints.

2.05 ACCESSORIES

- A. Fasteners: Galvanized steel, with soft neoprene washers.
- B. Primer: Zinc chromate type.
- C. Concealed Sealants: Non-curing butyl sealant.
- D. Exposed Sealants: ASTM C920; elastomeric sealant, with minimum movement capability as recommended by manufacturer for substrates to be sealed; color to match adjacent material.
- E. Plastic Cement: ASTM D4586/D4586M, Type I.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.
- B. Verify roofing termination and base flashings are in place, sealed, and secure.

3.02 PREPARATION

- A. Install starter and edge strips, and cleats before starting installation.
- B. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil.

3.03 INSTALLATION

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- A. Conform to drawing details.
- B. Insert flashings into reglets to form tight fit. Secure in place with plastic wedges. Seal flashings into reglets with sealant.
- C. Secure flashings in place using concealed fasteners. Use exposed fasteners only where permitted.
- D. Apply plastic cement compound between metal flashings and felt flashings.
- E. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.
- F. Seal metal joints watertight.
- G. Secure gutters and downspouts in place using concealed fasteners.
- H. Slope gutters 1/4 inch per foot minimum.
- I. Connect downspouts to downspout boots. Grout connection watertight.

3.04 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for field inspection requirements.
- B. Inspection will involve surveillance of work during installation to ascertain compliance with specified requirements.

END OF SECTION

SECTION 07 92 00 JOINT SEALANTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Non-sag gunnable joint sealants.
- B. Self-leveling pourable joint sealants.
- C. Joint backings and accessories.

1.02 RELATED REQUIREMENTS

- A. Section 09 21 16 - Gypsum Board Assemblies: Sealing acoustical and sound-rated walls and ceilings.

1.03 REFERENCE STANDARDS

- A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer; 2006 (Reapproved 2011).
- B. ASTM C794 - Standard Test Method for Adhesion-In-Peel of Elastomeric Joint Sealants; 2015.
- C. ASTM C834 - Standard Specification for Latex Sealants; 2014.
- D. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications; 2012.
- E. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2014.
- F. ASTM C1087 - Standard Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems; 2000 (Reapproved 2011).
- G. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016.
- H. ASTM C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants; 2008 (Reapproved 2012).
- I. ASTM C1311 - Standard Specification for Solvent Release Sealants; 2014.
- J. ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants; 2002 (Reapproved 2013).
- K. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness; 2005 (Reapproved 2010).
- L. SWRI (VAL) - SWRI Institute Validated Products Directory; Current Listings at www.swrionline.org.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data for Sealants: Submit manufacturer's technical data sheets for each product to be used, that includes the following.
 - 1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
 - 2. List of backing materials approved for use with the specific product.
 - 3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
 - 4. Substrates the product should not be used on.
 - 5. Substrates for which use of primer is required.
 - 6. Installation instructions, including precautions, limitations, and recommended backing materials and tools.
 - 7. Sample product warranty.
 - 8. SWRI Validation: Provide currently available sealant product validations as listed by SWRI (VAL) for specified sealants.
- C. Product Data for Accessory Products: Submit manufacturer's technical data sheet for each product to be used, including physical characteristics, installation instructions, and

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recommended tools.

- D. Samples for Verification: Where custom sealant color is specified, obtain directions from Architect and submit at least two physical samples for verification of color of each required sealant.
- E. Preconstruction Laboratory Test Reports: Submit at least four weeks prior to start of installation.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing the work of this section and with at least three years of documented experience.
- B. Preconstruction Laboratory Testing: Arrange for sealant manufacturer(s) to test each combination of sealant, substrate, backing, and accessories.
 - 1. Adhesion Testing: In accordance with ASTM C794.
 - 2. Compatibility Testing: In accordance with ASTM C1087.
 - 3. Stain Testing: In accordance with ASTM C1248; required only for stone substrates.
 - 4. Allow sufficient time for testing to avoid delaying the work.
 - 5. Deliver to manufacturer sufficient samples for testing.
 - 6. Report manufacturer's recommended corrective measures, if any, including primers or techniques not indicated in product data submittals.
 - 7. Testing is not required if sealant manufacturer provides data showing previous testing, not older than 24 months, that shows satisfactory adhesion, lack of staining, and compatibility.

1.06 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective work within a five year period after Date of Substantial Completion.
- C. Warranty: Include coverage for installed sealants and accessories that fail to achieve watertight seal, exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Non-Sag Sealants: Permits application in joints on vertical surfaces without sagging or slumping.
 - 1. Dow Corning Corporation: www.dowcorning.com/construction.
 - 2. Pecora Corporation: www.pecora.com.
 - 3. Tremco Global Sealants: www.tremcosealants.com.
- B. Self-Leveling Sealants: Pourable or self-leveling sealant that has sufficient flow to form a smooth, level surface when applied in a horizontal joint.
 - 1. BASF Construction Chemicals-Building Systems: www.buildingsystems.basf.com.
 - 2. Dow Corning Corporation: www.dowcorning.com/construction.
 - 3. Tremco Global Sealants: www.tremcosealants.com.

2.02 JOINT SEALANT APPLICATIONS

- A. Scope:
 - 1. Exterior Joints: Seal open joints, whether or not the joint is indicated on the drawings, unless specifically indicated not to be sealed. Exterior joints to be sealed include, but are not limited to, the following items.
 - a. Wall expansion and control joints.
 - b. Joints between door, window, and other frames and adjacent construction.
 - c. Joints between different exposed materials.
 - d. Openings below ledge angles in masonry.
 - e. Other joints indicated below.
 - 2. Interior Joints: Do not seal interior joints unless specifically indicated to be sealed. Interior joints to be sealed include, but are not limited to, the following items.

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- a. Joints between door, window, and other frames and adjacent construction.
 - b. In sound-rated wall and ceiling assemblies, gaps at electrical outlets, wiring devices, piping, and other openings; between wall/ceiling and other construction; and other flanking sound paths.
 - 1) Exception: Such gaps and openings in gypsum board finished stud walls and suspended ceilings.
 - 2) Exception: Through-penetrations in sound-rated assemblies that are also fire-rated assemblies.
 - c. Other joints indicated below.
3. Do not seal the following types of joints.
- a. Intentional weepholes in masonry.
 - b. Joints indicated to be treated with manufactured expansion joint cover or some other type of sealing device.
 - c. Joints where sealant is specified to be provided by manufacturer of product to be sealed.
 - d. Joints where installation of sealant is specified in another section.
 - e. Joints between suspended panel ceilings/grid and walls.
- B. Exterior Joints: Use nonsag non-staining silicone sealant, Type 1, unless otherwise indicated.
1. Lap Joints in Sheet Metal Fabrications: Butyl rubber, non-curing; Type 6.
 2. Lap Joints between Manufactured Metal Panels: Butyl rubber, non-curing; Type 3.
 3. Control and Expansion Joints in Concrete Paving: Self-leveling polyurethane "traffic-grade" sealant; Type 7.
- C. Interior Joints: Use nonsag polyurethane sealant, Type 3, unless otherwise indicated.
1. Wall and Ceiling Joints in Non-Wet Areas: Acrylic emulsion latex sealant; Type 4.
 2. Joints between Fixtures in Wet Areas and Floors, Walls, and Ceilings: Mildew-resistant silicone sealant; clear; Type 2.
 3. In Sound-Rated Assemblies: Acrylic emulsion latex sealant; Type 5.
- D. Sound-Rated Assemblies: Walls and ceilings identified as "STC-rated", "sound-rated", or "acoustical".

2.03 NON-SAG JOINT SEALANTS

- A. Type 1 - Non-Staining Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
1. Movement Capability: Plus and minus 50 percent, minimum.
 2. Non-Staining To Porous Stone: Non-staining to light-colored natural stone when tested in accordance with ASTM C1248.
 3. Dirt Pick-Up: Reduced dirt pick-up compared to other silicone sealants.
 4. Hardness Range: 15 to 35, Shore A, when tested in accordance with ASTM C661.
 5. Color: To be selected by Architect from manufacturer's full range.
 6. Cure Type: Single-component, neutral moisture curing.
 7. Products:
 - a. Pecora Corporation; 864NST Low Modulus Architectural Silicone Sealant - Class 50: www.pecora.com.
 - b. Dow Corning Corporation; 795 Silicone Sealant: www.dowcorning.com.
- B. Type 2 - Mildew-Resistant Silicone Sealant: ASTM C920, Grade NS, Uses M and A; single component, mildew resistant; not expected to withstand continuous water immersion or traffic.
1. Color: Clear.
 2. Products:
 - a. Pecora Corporation; 898NST Sanitary Silicone Sealant - Class 50: www.pecora.com.
 - b. Dow Corning Corporation; 786 Silicone Sealant.
- C. Type 3 - Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single component; not expected to withstand continuous water immersion or traffic.

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1. Movement Capability: Plus and minus 25 percent, minimum.
 2. Hardness Range: 20 to 35, Shore A, when tested in accordance with ASTM C661.
 3. Color: To be selected by Architect from manufacturer's standard range.
 4. Products:
 - a. Pecora Corporation; DynaTrol I-XL General Purpose One Part Polyurethane Sealant: www.pecora.com.
 - b. Tremco Global Sealants; Tremco Dymonic 100: www.tremcosealants.com.
 - c. BASF Construction Chemicals; MasterSeal NP 1: www.master-builders-solutions.basf.us.
- D. Type 4 - Acrylic-Urethane Sealant: Water-based; ASTM C920, Grade NS, Uses M and A; single component; paintable; not expected to withstand continuous water immersion or traffic.
1. Movement Capability: Plus and minus 12-1/2 percent, minimum.
 2. Products:
 - a. Sherwin-Williams Company; Shermax Urethanized Elastomeric Sealant: www.sherwin-williams.com.
- E. Type 5 - Acrylic Emulsion Latex: Water-based; ASTM C834, single component, non-staining, non-bleeding, non-sagging; not intended for exterior use.
1. Grade: ASTM C834; Grade - Minus 18 Degrees C.
 2. Products:
 - a. Pecora Corporation; AC-20 FTR Acoustical and Insulation Sealant: www.pecora.com.
- F. Type 6 - Non-Curing Butyl Sealant: Solvent-based; ASTM C1311; single component, nonsag, non-skinning, non-hardening, non-bleeding; vapor-impermeable; intended for fully concealed applications.
1. Products:
 - a. Tremco Global Sealants; Tremco Butyl Sealant: www.tremcosealants.com.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.

2.04 SELF-LEVELING SEALANTS

- A. Type 7 - Self-Leveling Polyurethane Sealant: ASTM C920, Grade P, Uses M and A; single or multicomponent; explicitly approved by manufacturer for traffic exposure; not expected to withstand continuous water immersion.
1. Movement Capability: Plus and minus 25 percent, minimum.
 2. Hardness Range: 35 to 55, Shore A, when tested in accordance with ASTM C661.
 3. Color: Color as selected.
 4. Service Temperature Range: Minus 40 to 180 degrees F.
 5. Products:
 - a. Pecora Corporation; NR-200 Self-Leveling Traffic-Grade Polyurethane Sealant: www.pecora.com.
 - b. The QUIKRETE Companies; QUIKRETE® Polyurethane Self-Leveling Sealant: www.quikrete.com.
- B. Type 8 - Semi-Rigid Self-Leveling Epoxy Joint Filler: Epoxy or epoxy/polyurethane copolymer; intended for filling cracks and control joints not subject to significant movement; rigid enough to support concrete edges under traffic.
1. Composition: Multicomponent, 100 percent solids by weight.
 2. Hardness: Minimum of 85 (Shore A) or 35 (Shore D), when tested in accordance with ASTM D2240 after 7 days.
 3. Color: Concrete gray.
 4. Joint Width, Minimum: 1/8 inch.
 5. Joint Width, Maximum: 1/4 inch.
 6. Joint Depth: Provide product suitable for joints from 1/8 inch to 1 inches in depth including space for backer rod.
 7. Products:

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- a. Dayton Superior Corporation; Pro-Poxy P606: www.daytonsuperior.com.
- b. Nox-Crete; DynaFlex 502: www.nox-crete.com

2.05 ACCESSORIES

- A. Backer Rod: Cylindrical cellular foam rod with surface that sealant will not adhere to, compatible with specific sealant used, and recommended by backing and sealant manufacturers for specific application.
 1. Type for Joints Not Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type C - Closed Cell Polyethylene.
 2. Type for Joints Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type B - Bi-Cellular Polyethylene.
 3. Closed Cell and Bi-Cellular: 25 to 33 percent larger in diameter than joint width.
- B. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that joints are ready to receive work.
- B. Verify that backing materials are compatible with sealants.
- C. Verify that backer rods are of the correct size.

3.02 PREPARATION

- A. Remove loose materials and foreign matter that could impair adhesion of sealant.
- B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.
- C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.
- D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

3.03 INSTALLATION

- A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
- B. Perform installation in accordance with ASTM C1193.
- C. Perform acoustical sealant application work in accordance with ASTM C919.
- D. Install bond breaker backing tape where backer rod cannot be used.
- E. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.
- F. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.
- G. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.
- H. Concrete Floor Joint Filler: After full cure, shave joint filler flush with top of concrete slab.

3.04 POST-OCCUPANCY

- A. Post-Occupancy Inspection: Perform visual inspection of entire length of project sealant joints at a time that joints have opened to their greatest width; i.e. at the low temperature in the thermal cycle. Report failures immediately and repair.

END OF SECTION

SECTION 08 11 13 HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Non-fire-rated steel doors and frames.
- B. Thermally insulated steel doors.

1.02 RELATED REQUIREMENTS

- A. Section 08 71 00 - Door Hardware.
- B. Section 09 91 13 - Exterior Painting: Field painting.

1.03 REFERENCE STANDARDS

- A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- B. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100);2014.
- C. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 2011.
- D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015.
- E. BHMA A156.115 - American National Standard for Hardware Preparation in Steel Doors and Steel Frames; 2014.
- F. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2009.
- G. NAAMM HMMA 840 - Guide Specifications for Installation and Storage of Hollow Metal Doors and Frames; 2007.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes; and one copy of referenced grade standard.
- C. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and identifying location of different finishes, if any.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Store in accordance with NAAMM HMMA 840.
- B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Steel Doors and Frames:
 - 1. Assa Abloy Ceco or Curries: www.assaabloydss.com.
 - 2. Republic Doors: www.republicdoor.com.
 - 3. Steelcraft, an Ingersoll Rand brand: www.steelcraft.com.
 - 4. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 DOORS AND FRAMES

- A. Requirements for All Doors and Frames:
 - 1. Accessibility: Comply with ICC A117.1 and ADA Standards.
 - 2. Door Top Closures: Flush with top of faces and edges.
 - 3. Door Edge Profile: Beveled on both edges.
 - 4. Door Texture: Smooth faces.
 - 5. Hardware Preparation: In accordance with BHMA A156.115, with reinforcement welded in

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- place, in addition to other requirements specified in door grade standard.
6. Galvanizing for Exterior Units: Components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A653/A653M, with manufacturer's standard coating thickness
 7. Finish: Factory primed, for field finishing.

203 HOLLOW METAL DOORS

- A. Exterior Doors: Thermally insulated.
 1. Grade: ANSI/SDI A250.8 (SDI-100); Level 2 - Heavy-Duty, Physical Performance Level B, Model 1 - Full Flush.
 2. Core: Polyurethane.
 3. Door Thermal Resistance: R-Value of 8.7, minimum, for installed thickness of polyurethane.
 4. Thickness: 1-3/4 inch.
 5. Weatherstripping: Refer to Section 08 71 00.

204 HOLLOW METAL FRAMES

- A. Comply with standards and/or custom guidelines as indicated for corresponding door in accordance with applicable door frame requirements.
- B. Exterior Door Frames: Fully welded.
 1. Galvanizing: Components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A653/A653M, with A40/ZF120 coating.
 2. Frame Metal Thickness: 16 gage, 0.053 inch, minimum.
 3. Weatherstripping: Separate, see Section 08 71 00.

205 ACCESSORY MATERIALS

- A. Temporary Frame Spreaders: Provide for all factory- or shop-assembled frames.

206 FINISH MATERIALS

- A. Primer: Rust-inhibiting, complying with ANSI/SDI A250.10, door manufacturer's standard.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that opening sizes and tolerances are acceptable.
- C. Verify that finished walls are in plane to ensure proper door alignment.

3.02 INSTALLATION

- A. Install in accordance with the requirements of the specified door grade standard and NAAMM HMMA 840.
- B. Coordinate frame anchor placement with wall construction.
- C. Coordinate installation of hardware.

3.03 TOLERANCES

- A. Maximum Diagonal Distortion: 1/16 in measured with straight edge, corner to corner.

3.04 ADJUSTING

- A. Adjust for smooth and balanced door movement.

3.05 SCHEDULE - SEE DRAWINGS

END OF SECTION

SECTION 08 11 16 INTERIOR ALUMINUM DOORS AND FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Aluminum door frames for doors specified in other section(s).

1.02 RELATED REQUIREMENTS

- A. Section 08 14 16 - FLUSH WOOD DOORS: Wood doors to be installed in aluminum frames specified in this section.
- B. Section 08 80 00 - Glazing: Glazing materials for aluminum doors and frames.

1.03 REFERENCE STANDARDS

- A. AAMA 609 & 610 - Cleaning and Maintenance Guide for Architecturally Finished Aluminum (Combined Document); 2015.
- B. AAMA 701/702 - Combined Voluntary Specifications for Pile Weatherstrip and Replaceable Fenestration Weatherseals; 2011.
- C. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2015.
- D. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.
- E. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate [Metric]; 2014.
- F. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2014.
- G. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes [Metric]; 2013.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's descriptive literature for each type of door; include information on fabrication methods.
- C. Shop Drawings: Include elevations of each opening type.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver aluminum components in manufacturer's standard protective packaging, palletted, crated, or banded together.
- B. Inspect delivered components for damage and replace. Repaired components will not be accepted.
- C. Store components under cover in manufacturer's packaging until installation.

1.06 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a five year period after Date of Substantial Completion.
- C. Provide ten year manufacturer warranty for defects in workmanship and materials.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Aluminum Door Frames for Doors of Another Material:
 - 1. Frameworks Manufacturing: www.frameworks.com.
 - 2. RACO Interior Products: www.racointeriors.com
 - 3. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 DOORS AND FRAMES

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- A. Door, Sidelight, and Transom Frames: Extruded aluminum hollow or C-shaped sections; no steel components.
 - 1. Frame Depth: To fit wall thicknesses indicated.
 - 2. Finish: Colored anodized.
 - 3. Weatherstripping: Replaceable pile type; at jambs and head.
 - 4. Sidelight/Transom Glazing: As specified in Section 08 80 00 - Glazing.
- B. Dimensions and Shapes: As indicated on drawings; dimensions shown are nominal.
 - 1. Provide clearances as follows:
 - a. Hinge and Lock Stiles: 0.125 inch.
 - b. Between Meeting Stiles: 0.25 inch.
 - c. At Top Rail and Bottom Rail: 0.125 inch.

2.03 COMPONENTS

- A. Frames: Extruded aluminum shapes, not less than 0.062 inch thick, reinforced at hinge and strike locations.
 - 1. Corner Brackets: Extruded aluminum, fastened with stainless steel screws.
 - 2. Trim: Extruded aluminum, not less than 0.062 inch thick, removable snap-in type without exposed fasteners.

2.04 MATERIALS

- A. Aluminum Sheet: ASTM B209 (ASTM B209M), alloy 5005-H14, stretcher leveled.
- B. Extruded Aluminum: ASTM B221 (ASTM B221M), alloy 6063-T5 or alloy 6463-T5.

2.05 ACCESSORIES

- A. Replaceable Weatherstripping: AAMA 701/702 wool pile.
- B. Fasteners: Aluminum, non-magnetic stainless steel, or other material warranted by manufacturer as non-corrosive and compatible with aluminum components.
- C. Brackets and Reinforcements: Manufacturer's high-strength aluminum units where feasible, otherwise, non-magnetic stainless steel or steel hot-dip galvanized in compliance with ASTM A123/A123M.

PART 3 EXECUTION

3.01 PREPARATION

- A. Perform cutting, fitting, forming, drilling, and grinding of frames as required for project conditions.
- B. Replace components with damage to exposed finishes.
- C. Separate dissimilar metals to prevent electrolytic action between metals.

3.02 INSTALLATION

- A. Install doors and frames in accordance with manufacturer's instructions and approved shop drawings.
- B. Set frames plumb, square, level, and aligned to receive doors. Anchor frames to adjacent construction in strict accordance with manufacturer's recommendations and within specified tolerances.
- C. Where aluminum surfaces contact metals other than stainless steel, zinc, or small areas of white bronze, protect from direct contact by applying elastomeric sealant between the different metals.
- D. Hang doors and adjust hardware to achieve specified clearances and proper door operation.
- E. Comply with glazing installation requirements of Section 08 80 00.

3.03 CLEANING

- A. Upon completion of installation, thoroughly clean door and frame surfaces in accordance with AAMA 609 & 610.

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- B. Do not use abrasive, caustic, or acid cleaning agents.

3.04 PROTECTION

- A. Protect products of this section from damage caused by subsequent construction until substantial completion.
- B. Replace damaged or defective components that cannot be repaired to a condition indistinguishable from undamaged components.

END OF SECTION

SECTION 08 14 16 FLUSH WOOD DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Flush wood doors; flush configuration; non-rated and special function.

1.02 RELATED REQUIREMENTS

- A. 08 11 16 - Interior Aluminum Doors and Frames.
- B. Section 08 71 00 - Door Hardware.
- C. Section 08 80 00 - Glazing.

1.03 REFERENCE STANDARDS

- A. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.
- B. WDMA I.S. 1A - Interior Architectural Wood Flush Doors; 2013.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Indicate door core materials and construction; veneer species, type and characteristics.
- C. Shop Drawings: Show doors and frames, elevations, sizes, types, swings, undercuts, beveling, blocking for hardware, factory machining, factory finishing, cutouts for glazing and other details.
- D. Specimen warranty.
- E. Samples: Submit two samples of door veneer, 12 x 12 inch in size illustrating wood grain, stain color, and sheen.
- F. Manufacturer's Installation Instructions: Indicate special installation instructions.
- G. Warranty, executed in Owner's name.

1.05 QUALITY ASSURANCE

- A. Maintain one copy of the specified door quality standard on site for review during installation and finishing.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Package, deliver and store doors in accordance with specified quality standard.
- B. Accept doors on site in manufacturer's packaging. Inspect for damage.
- C. Protect doors with resilient packaging sealed with heat shrunk plastic. Do not store in damp or wet areas; or in areas where sunlight might bleach veneer. Seal top and bottom edges with tinted sealer if stored more than one week. Break seal on site to permit ventilation.

1.07 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Interior Doors: Provide manufacturer's warranty for the life of the installation.
- C. Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, and telegraphing core construction.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. High Pressure Decorative Laminate Faced Doors:
 - 1. Ampco Products, Inc: www.ampco.com.

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2. Poncraft Door Co: www.poncraft.com.
3. VT Industries, Inc: www.vtindustries.com.
4. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 DOORS AND PANELS

- A. All Doors: .
 1. Quality Level: Custom Grade, Standard Duty performance, in accordance with WDMA I.S. 1A.
 2. High Pressure Decorative Laminate Faced Doors: 5-ply unless otherwise indicated.
- B. Interior Doors: 1-3/4 inches thick unless otherwise indicated; flush construction.
 1. Provide solid core doors at all locations.
 2. Lead Lined (X-ray) Doors: Minimum 1/16 inch thick, 4 pound lead unless otherwise indicated.
 3. High pressure decorative laminate finish .

2.03 DOOR AND PANEL CORES

- A. Non-Rated Solid Core and 20 Minute Rated Doors: Type particleboard core (PC), plies and faces as indicated.

2.04 DOOR FACINGS

- A. High Pressure Decorative Laminate Facing for Non-Fire-Rated Doors: NEMA LD 3, HGS; color as selected; satin finish.

2.05 DOOR CONSTRUCTION

- A. Fabricate doors in accordance with door quality standard specified.
- B. Cores Constructed with stiles and rails:
- C. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.
- D. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.
- E. Provide edge clearances in accordance with the quality standard specified.

2.06 ACCESSORIES

- A. Glazing: As specified in Section 08 80 00.
- B. Glazing Stops: Wood, of same species as door facing, mitered corners; prepared for countersink style screws.
- C. Door Hardware: As specified in Section 08 71 00.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that 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.

3.02 INSTALLATION

- A. Install doors in accordance with manufacturer's instructions and specified quality standard.
- B. Factory-Finished Doors: Do not field cut or trim; if fit or clearance is not correct, replace door.
- C. Use machine tools to cut or drill for hardware.
- D. Coordinate installation of doors with installation of frames and hardware.
- E. Coordinate installation of glazing.

3.03 TOLERANCES

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- A. Conform to specified quality standard for fit and clearance tolerances.
- B. Conform to specified quality standard for telegraphing, warp, and squareness.

3.04 ADJUSTING

- A. Adjust doors for smooth and balanced door movement.
- B. Adjust closers for full closure.

3.05 SCHEDULE - SEE DRAWINGS

END OF SECTION

SECTION 08 31 00 ACCESS DOORS AND PANELS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Wall access door and frame units.
- B. Ceiling access door and frame units.

1.02 RELATED REQUIREMENTS

- A. Section 09 91 23 - Interior Painting: Field paint finish.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide sizes, types, finishes, hardware, scheduled locations, and details of adjoining work.
- C. Shop Drawings: Indicate exact position of all access door units.

PART 2 PRODUCTS

2.01 ACCESS DOOR AND PANEL APPLICATIONS

- A. Walls, Unless Otherwise Indicated:
 - 1. Material: Stainless steel.
 - 2. Size: 12 by 12 inch, unless otherwise indicated.
 - 3. Standard duty, hinged door.
 - 4. In Gypsum Board: Drywall bead frame with door surface flush with wall surface.
- B. Ceilings, Unless Otherwise Indicated: Same type as for walls.
 - 1. Material: Steel.
 - 2. Size in Lay-in Grid Ceilings: To match grid module.
 - 3. Size in Other Ceilings: 24 by 24 inch, unless otherwise indicated.
 - 4. Standard duty, hinged door.
 - 5. Tool-operated spring or cam lock; no handle.

2.02 WALL AND CEILING UNITS

- A. Manufacturers:
 - 1. Acudor Products Inc: www.acudor.com.
 - 2. Milcor by Commercial Products Group of Hart & Cooley, Inc: www.milcorinc.com.
 - 3. Larsens Manufacturing Company: www.larsensmfg.com.
 - 4. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Access Doors: Factory fabricated door and frame units, fully assembled units with corner joints welded, filled, and ground flush; square and without rack or warp; coordinate requirements with assemblies that units are to be installed in.
 - 1. Style: Exposed frame with door surface flush with frame surface.
 - a. In Gypsum Board: Use drywall bead type frame.
 - 2. Door Style: Single thickness with rolled or turned in edges.
 - 3. Frames: 16 gage, 0.0598 inch, minimum.
 - 4. Single Thickness Steel Door Panels: 1/16 inch, minimum.
 - 5. Primed and Factory Finish: Polyester powder coat; color as scheduled.
 - 6. Hardware:
 - a. Hinges for Non-Fire-Rated Units: Continuous piano hinge.
 - b. Latch/Lock: Tamperproof tool-operated cam latch.
 - c. Gasketing: Extruded neoprene, around the perimeter of the door panel.

PART 3 EXECUTION

3.01 INSTALLATION

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- A. Install units in accordance with manufacturer's instructions.
- B. Install frames plumb and level in openings. Secure rigidly in place.
- C. Position units to provide convenient access to the concealed work requiring access.

END OF SECTION

SECTION 08 43 13 ALUMINUM-FRAMED STOREFRONTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Aluminum-framed storefront, with vision glass.
- B. Aluminum doors .
- C. Weatherstripping.
- D. Door hardware.

1.02 RELATED REQUIREMENTS

- A. Section 08 42 29 - Automatic Entrances.
- B. Section 08 71 00 - Door Hardware: Hardware items other than specified in this section.
- C. Section 08 80 00 - Glazing: Glass and glazing accessories.

1.03 REFERENCE STANDARDS

- A. AAMA CW-10 - Care and Handling of Architectural Aluminum From Shop to Site; 2015.
- B. AAMA 501.2 - Field Check of Metal Storefronts, Curtain Walls, and Sloped Glazing Systems for Water Leakage; 2009.
- C. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; 2012.
- D. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.
- E. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate [Metric]; 2014.
- F. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2014.
- G. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes [Metric]; 2013.
- H. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2004 (Reapproved 2012).
- I. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014.
- J. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2009).

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate with installation of other components that comprise the exterior enclosure.
- B. Preinstallation Meeting: Conduct a preinstallation meeting one week before starting work of this section; require attendance by all affected installers.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, internal drainage details .
- C. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related Work, expansion and contraction joint location and details, and field welding required.
- D. Hardware Schedule: Complete itemization of each item of hardware to be provided for each door, cross-referenced to door identification numbers in Contract Documents.

1.06 QUALITY ASSURANCE

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- A. Manufacturer and Installer Qualifications: Company specializing in manufacturing aluminum glazing systems with minimum three years of documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Handle products of this section in accordance with AAMA CW-10.
- B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

1.08 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a five year period after the Date of Substantial Completion.
- C. Provide five year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Aluminum-Framed Storefront and Doors:
 - 1. Kawneer North America: www.kawneer.com.
 - 2. Oldcastle BuildingEnvelope: www.oldcastlebe.com.
 - 3. Trulite Glass & Aluminum Solutions, LLC: www.trulite.com.
 - 4. United States Aluminum Corp: www.usalum.com.
 - 5. YKK AP America Inc: www.ykkap.com.

2.02 STOREFRONT

- A. Aluminum-Framed Storefront: Factory fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage and attachment devices.
 - 1. Glazing Rabbet: For 1 inch insulating glazing.
 - 2. Glazing Position: Centered (front to back).
 - 3. Finish: Class I color anodized.
 - a. Factory finish all surfaces that will be exposed in completed assemblies.
 - 4. Finish Color: Dark bronze.
 - 5. Fabrication: Joints and corners flush, hairline, and weatherproof, accurately fitted and secured; prepared to receive anchors and hardware; fasteners and attachments concealed from view; reinforced as required for imposed loads.
 - 6. Construction: Eliminate noises caused by wind and thermal movement, prevent vibration harmonics, and prevent "stack effect" in internal spaces.
 - 7. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.
 - 8. Expansion/Contraction: Provide for expansion and contraction within system components caused by cycling temperature range of 170 degrees F over a 12 hour period without causing detrimental effect to system components, anchorages, and other building elements.
 - 9. Movement: Allow for movement between storefront and adjacent construction, without damage to components or deterioration of seals.
 - 10. Perimeter Clearance: Minimize space between framing members and adjacent construction while allowing expected movement.
- B. Performance Requirements:
 - 1. Wind Loads: Design and size components to withstand the specified load requirements without damage or permanent set, when tested in accordance with ASTM E330/E330M, using loads 1.5 times the design wind loads and 10 second duration of maximum load.
 - a. Member Deflection: Limit member deflection to flexure limit of glass in any direction, with full recovery of glazing materials.
 - 2. Water Penetration Resistance: No uncontrolled water on interior face, when tested in

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- accordance with ASTM E331 at pressure differential of 10 psf.
3. Air Leakage: Maximum of 0.06 cu ft/min sq ft of wall area, when tested in accordance with ASTM E283 at 6.27 psf pressure differential across assembly.

203 COMPONENTS

- A. Aluminum Framing Members: Tubular aluminum sections, thermally broken with interior section insulated from exterior, sub-sill with drainage holes and internal weep drainage system.
 1. Glazing stops: Flush.
 2. Cross-Section: 1-3/4 x 4 inch nominal dimension.
- B. Glazing: As specified in Section 08 80 00.
 1. For Exterior Framing: Type 1.
- C. Swing Doors: Glazed aluminum.
 1. Thickness: 1-3/4 inches.
 2. Top Rail: 4 inches wide.
 3. Vertical Stiles: 4-1/2 inches wide.
 4. Bottom Rail: 10 inches wide.
 5. Glazing Stops: Beveled.
 6. Finish: Same as storefront.

204 MATERIALS

- A. Extruded Aluminum: ASTM B221 (ASTM B221M).
- B. Sheet Aluminum: ASTM B209 (ASTM B209M).
- C. Fasteners: Stainless steel.
- D. Glazing Gaskets: Type to suit application to achieve weather, moisture, and air infiltration requirements.

205 FINISHES

- A. Class I Color Anodized Finish: AAMA 611 AA-M12C22A42 Integrally colored anodic coating not less than 0.7 mils thick.

206 HARDWARE

- A. For each door, include weatherstripping, sill sweep strip, and threshold.
- B. Weatherstripping: Wool pile, continuous and replaceable; provide on all exterior doors.
- C. Sill Sweep Strips: Resilient seal type, of vinyl; provide on all exterior doors; Pemko 3452 DV.
- D. Threshold: Extruded aluminum, one piece per door opening, ribbed surface; provide on all exterior doors; Pemko 2005DS.
- E. Hinges: Butt type; top, intermediate, and bottom.
 1. Hager BB1164 4-1/2x4-1/2xNRPxUS10B
- F. Push/Pull Set: Trimco 1745 pull with 1747-1 push bar mounted BTB; all US32.
- G. Deadlock: Adams Rite MS1850S x 313.
- H. Automatic Door Operators and Actuators: As specified in Section 08 42 29.
- I. Fabricate system free of exposed fasteners. Exposed fasteners are acceptable only in locations specifically indicated on shop drawings and individually accepted by Architect.
- J. Where exposed fasteners are required, locate to minimize aesthetic impact on project. Use only countersunk screws color to match background material.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install wall system in accordance with manufacturer's instructions.
- B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.

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- C. Do not expose fasteners except in conformance with requirements for FABRICATION, Part 2 of this specification.
- D. Provide alignment attachments and shims to permanently fasten system to building structure.
- E. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.
- F. Seal over fasteners subject to exposure to moisture with sealant.
- G. Provide thermal isolation where components penetrate or disrupt building insulation.
- H. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
- I. Set thresholds in bed of sealant and secure.
- J. Install hardware using templates provided.
 - 1. See Section 08 42 29 for operator and actuator installation requirements.
- K. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

3.02 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for independent testing and inspection requirements. Inspection will monitor quality of installation and glazing.
- B. Test installed storefront for water leakage in accordance with AAMA 501.2.

3.03 ADJUSTING

- A. Adjust operating hardware and sash for smooth operation.

3.04 PROTECTION

- A. Protect installed products from damage during subsequent construction.

3.05 HARDWARE SCHEDULE

- A. D101
 - 1. Hinges: 4
 - 2. Automatic door opener/closer: 1 (See Section 08 42 29)
 - 3. Push/pull set: 1
 - 4. Deadlock: 1
 - 5. Door bottom sweep: 1
 - 6. Threshold: 1

END OF SECTION

SECTION 08 71 00 - DOOR HARDWARE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Hardware for wood, aluminum, and hollow metal doors.
- B. Lock cylinders for doors with balance of hardware specified in other sections.
- C. Thresholds.
- D. Weatherstripping and gasketing.

1.02 RELATED REQUIREMENTS

- A. Section 081113 - Hollow Metal Doors and Frames.
- B. Section 081416 - Flush Wood Doors.

1.03 REFERENCE STANDARDS

- A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.
- B. BHMA A156.1 - Standard for Butts and Hinges; 2021.
- C. BHMA A156.2 - Bored and Preassembled Locks and Latches; 2022.
- D. BHMA A156.4 - Door Controls - Closers; 2019.
- E. BHMA A156.5 - Cylinders and Input Devices for Locks; 2020.
- F. BHMA A156.6 - Standard for Architectural Door Trim; 2021.
- G. BHMA A156.7 - Template Hinge Dimensions; 2016.
- H. BHMA A156.13 - Mortise Locks & Latches Series 1000; 2022.
- I. BHMA A156.16 - Auxiliary Hardware; 2018.
- J. BHMA A156.21 - Thresholds; 2019.
- K. BHMA A156.22 - Standard for Gasketing; 2021.
- L. BHMA A156.28 - Standard for Recommended Practices for Mechanical Keying Systems; 2018.
- M. BHMA A156.115 - Hardware Preparation in Steel Doors and Steel Frames; 2016.
- N. BHMA A156.115W - Hardware Preparation in Wood Doors with Wood or Steel Frames; 2006.
- O. DHI (H&S) - Sequence and Format for the Hardware Schedule; 2019.
- P. DHI (KSN) - Keying Systems and Nomenclature; 2019.
- Q. DHI (LOCS) - Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames; 2004.
- R. DHI WDHS.3 - Recommended Locations for Architectural Hardware for Flush Wood Doors; 1993; also in WDHS-1/WDHS-5 Series, 1996.
- S. ICC (IBC) - International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- T. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.
- U. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2022.
- V. NFPA 101 - Life Safety Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- W. NFPA 105 - Standard for Smoke Door Assemblies and Other Opening Protectives; 2022.
- X. UL (DIR) - Online Certifications Directory; Current Edition.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the manufacture, fabrication, and installation of products that door hardware is installed on.

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- B. Sequence installation to ensure facility services connections are achieved in an orderly and expeditious manner.
- C. Furnish templates for door and frame preparation to manufacturers and fabricators of products requiring internal reinforcement for door hardware.

1.05 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Manufacturer's catalog literature for each type of hardware, marked to clearly show products to be furnished for this project, and includes construction details, material descriptions, finishes, and dimensions and profiles of individual components.
- C. Shop Drawings - Door Hardware Schedule: A detailed listing that includes each item of hardware to be installed on each door.
 - 1. Prepared by or under supervision of Architectural Hardware Consultant (AHC).
 - 2. Comply with DHI (H&S) using door numbering scheme and hardware set numbers as indicated in Contract Documents.
 - a. Submit in vertical format.
 - 3. List groups and suffixes in proper sequence.
 - 4. Include complete description for each door listed.
 - 5. Include manufacturer and product names, and catalog numbers; include functions, types, styles, sizes and finishes of each item.
 - 6. Include account of abbreviations and symbols used in schedule.
- D. Samples for Verification:
 - 1. Submit minimum size of 2 by 4 inch (51 by 102 mm) for sheet samples, and minimum length of 4 inch (102 mm) for other products.
 - 2. Include product description with samples.
- E. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.
- F. Manufacturer's qualification statement.
- G. Installer's qualification statement.
- H. Supplier's qualification statement.
- I. Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.
- J. Keying Schedule:
 - 1. Submit three (3) copies of Keying Schedule in compliance with requirements established during Keying Requirements Meeting unless otherwise indicated.
- K. Warranty: Submit manufacturer's warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
- L. Project Record Documents: Record actual locations of concealed equipment, services, and conduit.
- M. Maintenance Materials and Tools: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 016000 - Product Requirements, for additional provisions.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years of documented experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified for commercial door hardware with at least three years of documented experience.
- C. Supplier Qualifications: Company with certified Architectural Hardware Consultant (AHC) to assist in work of this section.

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1.07 DELIVERY, STORAGE, AND HANDLING

- A. Package hardware items individually; label and identify each package with door opening code to match door hardware schedule.

1.08 WARRANTY

- A. See Section 017800 - Closeout Submittals for additional warranty requirements.
- B. Manufacturer Warranty: Provide manufacturer warranty against defects in material and workmanship for period indicated, from Date of Substantial Completion. Complete forms in Owner's name and register with manufacturer.
 - 1. Closers: Five years, minimum.
 - 2. Locksets and Cylinders: Three years, minimum.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Provide specified door hardware as required to make doors fully functional, compliant with applicable codes, and secure to extent indicated.
- B. Provide individual items of single type, of same model, and by same manufacturer.
- C. Closers:
 - 1. Provide door closer on each exterior door, unless otherwise indicated.
 - 2. Provide door closer on each fire-rated and smoke-rated door.
 - 3. Spring hinges are not an acceptable self-closing device, unless otherwise indicated.
- D. Weatherstripping and Gasketing:
 - 1. Provide weatherstripping on each exterior door at head, jambs, and meeting stiles of door pairs, unless otherwise indicated.
 - 2. Provide door bottom sweep on each exterior door, unless otherwise indicated.
- E. Fasteners:
 - 1. Provide fasteners of proper type, size, quantity, and finish that comply with commercially recognized standards for proposed applications.
 - a. Aluminum fasteners are not permitted.
 - b. Provide Phillips flat-head screws with heads finished to match door surface hardware unless otherwise indicated.
 - 2. Provide machine screws for attachment to reinforced hollow metal and aluminum frames.
 - a. Self-drilling (Tek) type screws are not permitted.
 - 3. Provide stainless steel machine screws and lead expansion shields for concrete and masonry substrates.
 - 4. Provide wall grip inserts for hollow wall construction.

2.02 PERFORMANCE REQUIREMENTS

- A. Provide door hardware products that comply with the following requirements:
 - 1. Applicable provisions of federal, state, and local codes.
 - a. ICC (IBC).
 - b. NFPA 101.
 - 2. Accessibility: ADA Standards and ICC A117.1.
 - 3. Hardware Preparation for Steel Doors and Steel Frames: BHMA A156.115.
 - 4. Hardware Preparation for Wood Doors with Wood or Steel Frames: BHMA A156.115W.

2.03 HINGES

- A. Manufacturers: Conventional butt hinges.
 - 1. BEST; dormakaba Group: www.bestaccess.com/#sle.
 - 2. Hager.
 - 3. McKinney; ASSA Abloy Group.
- B. Properties:

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1. Butt Hinges: As applicable to each item specified.
 - a. Standard Weight Hinges: Minimum of two (2) permanently lubricated non-detachable bearings.
 - b. Heavy Weight Hinges: Minimum of four (4) permanently lubricated bearings on heavy weight hinges.
 - c. Template screw hole locations.
 - d. Bearing assembly installed after plating.
 - e. Bearings: Exposed fully hardened bearings.
 - f. Bearing Shells: Shapes consistent with barrels.
 - g. Pins: Easily seated, non-rising pins.
 - 1) Fully plate hinge pins.
 - 2) Non-Removable Pins: Slotted stainless steel screws.
- C. Sizes: See Door Hardware Schedule.
 1. Hinge Widths: As required to clear surrounding trim.
 2. Sufficient size to allow 180 degree swing of door.
- D. Finishes: See Door Hardware Schedule.
 1. Fully polish hinges; front, back, and barrel.
- E. Grades:
 1. Butt Hinges: Comply with BHMA A156.1 and BHMA A156.7 for templated hinges.
- F. Material: Base metal as indicated for each item by BHMA material and finish designation.
- G. Types:
 1. Butt Hinges: Include full mortise hinges.
- H. Applications: At swinging doors.
 1. Provide non-removable pins at out-swinging doors with locking hardware.
- I. Products:
 1. Butt Hinges:
 - a. Ball Bearing, Five (5) Knuckle.

2.04 LOCK CYLINDERS

- A. Manufacturers:
 1. BEST, dormakaba Group: www.bestaccess.com/#sle.
- B. Properties:
 1. Lock Cylinders: Provide key access on outside of each lock, unless otherwise indicated.
 - a. Provide cylinders from same manufacturer as locking device.
 - b. Provide cams and/or tailpieces as required for locking devices.
 - c. Provide cylinders with appropriate format interchangeable cores where indicated.
- C. Grades:
 1. Standard Security Cylinders: Comply with BHMA A156.5.
- D. Material:
 1. Manufacturer's standard corrosion-resistant brass alloy.
- E. Types: As applicable to each item specified.
 1. Standard security small format interchangeable core (SFIC) type cylinders, with seven-pin, 1C - 7-pin cores.
- F. Products:
 1. Rim/mortise: 1E.

2.05 MORTISE LOCKS

- A. Manufacturers:
 1. BEST, dormakaba Group: www.bestaccess.com/#sle.
 2. Sargent; ASSA Abloy Group.

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3. Schlage; An Allegion Company.
- B. Properties:
 1. Mechanical Locks: Manufacturer's standard.
 - a. Fitting modified ANSI A115.1 door preparation.
 - b. Door Thickness Coordination Fitting 1-3/4 inch (44 mm) to 2-1/4 inch (57 mm) thick doors.
 - c. Latch: Solid, one-piece, anti-friction, self-lubricating stainless steel.
 - 1) Latchbolt Throw: 3/4 inch (19 mm), minimum.
 - d. Auxiliary Deadlatch: One piece stainless steel, permanently lubricated.
 - e. Backset: 2-3/4 inch (70 mm).
 - f. Lever Trim:
 - 1) Functionality: Allow the lever handle to move up to 45 degrees from horizontal position prior to engaging the latchbolt assembly.
 - 2) Strength: Locksets outside locked lever designed to withstand minimum 1,400 inch-lbs (158.2 Nm) of torque. In excess of that, a replaceable part will shear. Key from outside and/or inside lever will still operate lockset.
 - 3) Spindle: Designed to prevent forced entry from attacking of lever.
 - 4) Independent spring mechanism for each lever.
 - (a) Trim to be self-aligning and thru-bolted.
 - 5) Handles: Made of forged or cast brass, bronze, or stainless steel construction. Levers that contain a hollow cavity are not acceptable.
 - 6) Levers to operate a roller bearing spindle hub mechanism.
 - C. Finishes: See Door Hardware Schedule.
 - D. Grades:
 1. Comply with BHMA A156.13, Grade 1, Security; Grade 2.
 - E. Products: Mortise locks, including standard and electrified types.
 1. 40H.

2.06 CYLINDRICAL LOCKS

- A. Manufacturers:
 1. BEST, dormakaba Group: www.bestaccess.com/#sle.
 2. Sargent; ASSA Abloy Group.
 3. Schlage; An Allegion Company.
- B. Properties:
 1. Mechanical Locks:
 - a. Fitting modified ANSI A115.2 door preparation.
 - b. Door Thickness Fit: 1-3/8 inches (35 mm) to 2-1/4 inches (57 mm) thick doors.
 - c. Construction: Hub, side plate, shrouded rose, locking pin to be a one-piece casting with a shrouded locking lug.
 - 1) Through-bolted anti-rotational studs.
 - d. Cast stainless steel latch retractor with roller bearings for exceptionally smooth operation and superior strength and durability.
 - e. Bored Hole: 2-1/8 inch (54 mm) diameter.
 - f. Backset: 2-3/4 inches (70 mm) unless otherwise indicated.
 - g. Latch: Single piece tail-piece construction.
 - 1) Latchbolt Throw: 9/16 inch (14.3 mm), minimum.
 - h. Cylinders:
 - 1) Cylinder Core Types: Locks capable of supporting manufacturers' cores, as applicable.
 - (a) Small format interchangeable.
 - i. Lever Trim:
 - 1) Style: See Door Hardware Schedule.

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- 2) Functionality: Allow the lever handle to move up to 45 degrees from horizontal position prior to engaging the latchbolt assembly.
 - 3) Strength: Locksets outside locked lever designed to withstand minimum 1,400 inch-lbs (158.2 Nm) of torque. In excess of that, a replaceable part will shear. Key from outside and/or inside lever will still operate lockset.
 - 4) Independent spring mechanism for each lever.
 - (a) Contain lever springs in the main lock hub.
 - 5) Outside Lever Sleeve: Seamless one-piece construction.
 - 6) Keyed Levers: Removable only after core is removed by authorized control key.
- C. Finishes: See Door Hardware Schedule.
1. Core Faces: Match finish of lockset.
- D. Grades: Comply with BHMA A156.2, Grade 1, Series 4000, Operational Grade 1, Extra Heavy Duty.
1. Durability: Passing 50 million cycle tests verified by third party testing agency.
- E. Material: Manufacturer's standard for specified lock.
1. Critical Latch and Chassis Components: Brass or corrosion-resistance treated steel.
 2. Outside Lever Sleeve: Hardened steel alloy.
- F. Products: Cylindrical locks, including mechanical types.
1. Best: 9K (Grade 1).
 2. Sargent: 10 Line.
 3. Schlage: ND.

2.07 CLOSERS

- A. Manufacturers:
1. BEST, dormakaba Group www.bestaccess.com/#sle.
 2. dormakaba; dormakaba Group: www.dormakaba.com/us-en/#sle.
 3. LCN.
- B. Properties:
1. Surface Mounted Closers: Manufacturer's standard.
 - a. Construction: R14 high silicon aluminum alloy.
 - b. Maximum Projection from Face of Door: 2-7/16 inches (62 mm).
 - c. Mechanism: Separate tamper-resistant adjusting valves for closing and latching speeds.
 - 1) Include advanced backcheck feature.
 - 2) Include delayed action feature.
 - d. Hydraulic Fluid: All-weather type.
 - e. Arm Assembly: Standard for product specified.
 - 1) Include hold-open, integral stop, or spring-loaded stop feature, as specified in Door Hardware Schedule.
 - 2) Parallel arm to be a heavy-duty rigid arm.
 - 3) Where "IS" or "S-IS" arms are specified in hardware sets, if manufacturer does not offer this arm provide a regular arm mount closer in conjunction with a heavy-duty overhead stop equal to a dormakaba 900 Series.
 - f. Covers:
 - 1) Type: Standard for product selected.
 - (a) Full.
 - 2) Material: Plastic.
 - 3) Finish: Painted.
- C. Grades:
1. Closers: Comply with BHMA A156.4, Grade 1.
 - a. Underwriters Laboratories Compliance:
 - 1) Product Listing: UL (DIR) and ULC for use on fire-resistance-rated doors.

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- (a) UL 228 - Door Closers-Holders, With or Without Integral Smoke Detectors.
- D. Code Compliance: As required by authorities having jurisdiction in the State in which the Project is located.
1. Devices listed with California Department of Forestry and Fire Protection, Office of the State Fire Marshal.
- E. Types:
1. Rack-and-pinion, surface-mounted. 1-1/2 inches (38 mm) minimum bore.
- F. Installation:
1. Mounting: Includes surface mounted installations.
 2. Mount closers on non-public side of door and stair side of stair doors unless otherwise noted in hardware sets.
 3. At out swinging exterior doors, mount closer on interior side of door.
 4. Provide adapter plates, shim spacers, and blade stop spacers as required by frame and door conditions.
 5. Where an overlapping astragal is included on pairs of swinging doors, provide coordinator to ensure door leaves close in proper order.
- G. Products:
1. Surface Mounted:
 - a. Best: HD8000.
 - b. {CH#379868}
 - c. dormakaba: 8900.

2.08 PROTECTION PLATES

- A. Manufacturers:
1. Rockwood; ASSA Abloy Group.
 2. Ives; An Allegion Company.
- B. Properties:
1. Plates:
 - a. Kick Plates: Provide along bottom edge of push side of every wood door with closer, except aluminum storefront and glass entry doors, unless otherwise indicated.
 - b. Mop Plates: Provide along bottom edge of push side of doors to provide protection from cleaning liquids and equipment damage to door surface.
 - c. Edges: Beveled, on four (4) unless otherwise indicated.
- C. Grades: Comply with BHMA A156.6.
- D. Material: As indicated for each item by BHMA material and finish designation.
1. Metal Properties: Stainless steel.
 - a. Metal, Standard Duty: Thickness 0.050 inch (1.27 mm), minimum.
- E. Installation:
1. Fasteners: Countersunk screw fasteners

2.09 STOPS AND HOLDERS

- A. Manufacturers:
1. Trimco: www.trimcohardware.com/#sle.
 2. Rockwood; ASSA Abloy Group.
 3. Ives; An Allegion Company.
- B. General: Provide overhead stop/holder when wall or floor stop is not feasible.
- C. Grades:
1. Wall Bumpers and Floor Stops: Comply with BHMA A156.16 and Resilient Material Retention Test as described in this standard.
- D. Material: Base metal as indicated for each item by BHMA material and finish designation.

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- E. Types:
 - 1. Wall Bumpers: Bumper, concave, wall stop.
- F. Installation:
 - 1. Non-Masonry Walls: Confirm adequate wall reinforcement has been installed to allow lasting installation of wall bumpers.
- G. Products:
 - 1. Wall Bumpers.

2.10 THRESHOLDS

- A. Manufacturers:
 - 1. National Guard Products, Inc: www.ngpinc.com/#sle.
 - 2. Pemko; ASSA Abloy Group.
 - 3. Zero; An Allegion Company.
- B. Properties:
 - 1. Threshold Surface: Fluted horizontal grooves across full width.
- C. Grades: Thresholds: Comply with BHMA A156.21.
- D. Material: Base metal as indicated for each item by BHMA material and finish designation.
 - 1. Threshold Assemblies: Aluminum.
- E. Types: As applicable to project conditions. Provide barrier-free type at every location where specified.
 - 1. Saddle Thresholds: Without thermal break.

2.11 WEATHERSTRIPPING AND GASKETING

- A. Manufacturers:
 - 1. National Guard Products, Inc: www.ngpinc.com/#sle.
 - 2. Pemko; ASSA Abloy Group.
 - 3. Zero; An Allegion Company.
- B. Properties:
 - 1. Rigid, Housed, Perimeter Gasketing: Sponge silicone gasket material held in place by aluminum housing; fastened to frame stop with screws.
 - 2. Door Sweeps: Silicone gasket material held in place by flat aluminum housing or flange; surface mounted to face of door with screws.
 - 3. Door Shoes: Neoprene gasket material held in place by metal retainer; mounted to bottom edge of door with screws.
 - a. Mounting: Surface mounted on bottom edge of door.
- C. Grades: Comply with BHMA A156.22.
- D. Products:
 - 1. Weatherstripping: See Door Hardware Schedule.
 - 2. Door Bottom Seals:
 - a. Door Sweeps: See Door Hardware Schedule.
 - b. Door Bottoms: See Door Hardware Schedule.

2.12 KEYS AND CORES

- A. Manufacturers:
 - 1. BEST, dormakaba Group: www.bestaccess.com/#sle.
 - 2. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Properties: Complying with guidelines of BHMA A156.28.
 - 1. Provide small format interchangeable core.
 - 2. Provide Patented CORMAX keys and cores (basis of design).
 - 3. Provide keying information in compliance with DHI (KSN) standards.

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4. Keying Schedule: Arrange for a keying meeting, with Architect, Owner and hardware supplier, and other involved parties to ensure locksets and locking hardware, are functionally correct and keying complies with project requirements.
5. Keying: Master keyed.
6. Include construction keying and control keying with removable core cylinders.
7. Supply keys in following quantities:
 - a. Master Keys: 4 each.
 - b. Construction Master Keys: 6 each.
 - c. Construction Keys: 15 each.
 - d. Construction Control Keys: 2 each.
 - e. Control Keys if New System: 2 each.
 - f. Change Keys: 2 each for each keyed core.
8. Provide key collection envelopes, receipt cards, and index cards in quantity suitable to manage number of keys.
9. Deliver keys with identifying tags to Owner by security shipment direct from manufacturer.
10. Permanent Keys and Cores: Stamped with applicable key marking for identification. Do not include actual key cuts within visual key control marks or codes. Stamp permanent keys "Do Not Duplicate."
11. Include installation of permanent cores and return construction cores to hardware supplier. Construction cores and keys to remain property of hardware supplier.

C. Products:

1. Patented:
 - a. d CORMAX.
2. Substitutions: See Section 01 60 00 - Product Requirements.

2.13 FINISHES

- A. Finishes: Identified in Hardware Sets.

2.10 FIRE DEPARTMENT LOCK BOX

- A. Fire Department Lock Box: Heavy-duty, surface mounted, solid stainless-steel box with hinged door and interior gasket seal; single drill resistant lock with dust covers and tamper alarm.
1. Capacity: Holds 10 keys.
 2. Finish: Manufacturer's standard dark bronze.
 3. Manufacturers - Fire Department Lock Box:
 - a. Knox Company; Knox-Box Rapid Entry System: www.knoxbox.com.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that doors and frames are ready to receive this work; labeled, fire-rated doors and frames are properly installed, and dimensions are as indicated on shop drawings.
- B. Correct all defects prior to proceeding with installation.
- C. Verify that electric power is available to power operated devices and of correct characteristics.

3.02 INSTALLATION

- A. Install hardware in accordance with manufacturer's instructions and applicable codes.
- B. Install hardware using the manufacturer's fasteners provided. Drill and tap all screw holes located in metallic materials. Do not use "Riv-Nuts" or similar products.
- C. Install hardware on fire-rated doors and frames in accordance with applicable codes and NFPA 80.
- D. Install hardware for smoke and draft control doors in accordance with NFPA 105.
- E. Use templates provided by hardware item manufacturer.

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- F. Do not install surface mounted items until application of finishes to substrate are fully completed.
- G. Wash down masonry walls and complete painting or staining of doors and frames.
- H. Complete finish flooring prior to installation of thresholds.
- I. Door Hardware Mounting Heights: Distance from finished floor to center line of hardware item. As indicated in following list; unless noted otherwise in Door Hardware Schedule or on drawings.
 - 1. For Steel Doors and Frames: Install in compliance with DHI (LOCS) recommendations.
 - 2. For Steel Doors and Frames: See Section 081113.
 - 3. For Wood Doors: Install in compliance with DHI WDHS.3 recommendations.
 - 4. Flush Wood Doors: See Section 081416.
 - 5. Mounting heights in compliance with ADA Standards:
 - a. Locksets: 40-5/16 inch (1024 mm).
 - b. Push Plates/Pull Bars: 42 inch (1067 mm).
 - c. Deadlocks (Deadbolts): 48 inch (1219 mm).
 - d. Exit Devices: 40-5/16 inch (1024 mm).
 - e. Door Viewer: 43 inch (1092 mm); standard height 60 inch (1524 mm).
- J. Set exterior door thresholds with full-width bead of elastomeric sealant at each point of contact with floor providing a continuous weather seal; anchor thresholds with stainless steel countersunk screws.
- K. Include in installation for existing doors and frames any necessary field modification and field preparation of doors and frames for new hardware. Provide necessary fillers, reinforcements, and fasteners for mounting new hardware and to cover existing door and frame preparations.

3.03 FIELD QUALITY CONTROL

- A. Perform field inspection and testing under provisions of Section 014000 - Quality Requirements.

3.04 ADJUSTING

- A. Adjust work under provisions of Section 017000 - Execution and Closeout Requirements.
- B. Adjust hardware for smooth operation.
- C. Adjust gasketing for complete, continuous seal; replace if unable to make complete seal.

3.05 CLEANING

- A. Clean finished hardware in accordance with manufacturer's written instructions after final adjustments have been made.
- B. Clean adjacent surfaces soiled by hardware installation activities.
- C. Replace items that cannot be cleaned to manufacturer's level of finish quality at no additional cost.

3.06 PROTECTION

- A. Protect finished Work under provisions of Section 017000 - Execution and Closeout Requirements.
- B. Do not permit adjacent work to damage hardware or finish.

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3.07 HARDWARE SETS

Manufacturer List

Code	Name
BE	Best Access Systems
BY	By Related Section
NA	National Guard
ST	BEST Hinges and Sliding
TR	Trimco

Option List

Code	Description
CSK	COUNTER SINKING OF KICK and MOP PLATES
VIB	Double Visual Indicator Option

Finish List

Code	Description
26D	Satin Chrome
32D	Satin Stainless Steel
626	Satin Chromium Plated
626AM	Satin Chrome - Antimicrobial Coating
630	Satin Stainless Steel
689	Aluminum Painted
AL	Aluminum
GREY	Grey

Hardware Sets

Set #01

Doors: 100A, 101A

1	Rim or Mortise Cylinder	COORDINATE WITH ALUM. DOOR HARDWARE SUPPLIER	626	
1		BALANCE OF HARDWARE BY ALUM HARDWARE SUPPLIER		

Set #02

Doors: 122B

3	Hinges	FBB191 4.5" x 4.5"	32D	ST
1	Lockset - Storeroom	9K3-7D15D PATD	626	BE
1	Closer - Stop Arm	HD8016 SIS	689	BE
1	Gasketing	161 SA		NA
1	Door Bottom	15 NA		NA
1	Threshold	896 S	AL	NA

Set #03

Doors: 120A, 180A

3	Hinges	FBB191 4.5" x 4.5" NRP	32D	ST
1	Lockset - Storeroom	9K3-7D15D PATD	626	BE
1	Closer - Stop Arm	HD8016 SDS	689	BE
1	Lock Astragal	5002	630	TR
1	Gasketing	161 SA		NA
1	Door Sweep	200 SA		NA

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1	Saddle Threshold	427	AL	NA
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Set #04

Doors: 130

3	Butt Hinge	FBB179 4.5" x 4.5"	26D	ST
1	Lockset - Storeroom	9K3-7D15D PATD	626	BE
1	Closer	HD8016 AF80P	689	BE
1	Wall Bumper	1270WV	630	TR
3	Silencer	1229A	GREY	TR

Set #05

Doors: 122A, 123, 124, 126, 128, 142, 144, 162, 163, 164, 166, 168, 170, 172, 174

3	Butt Hinge	FBB179 4.5" x 4.5"	26D	ST
1	Lockset - Office	9K3-7AB15D PATD	626	BE
1	Wall Bumper	1270WV	630	TR
3	Silencer	1229A	GREY	TR

Set #06

Doors: 101B, 121, 121.A, 180B

3	Butt Hinge	FBB179 4.5" x 4.5"	26D	ST
1	Passage Set	9K3-0N15D	626	BE
1	Wall Bumper	1270WV	630	TR
3	Silencer	1229A	GREY	TR

Set #07

Doors: 100B

3	Butt Hinge	FBB179 4.5" x 4.5"	26D	ST
1	Passage Set	9K3-0N15D	626	BE
1	Closer - Stop Arm	HD8016 SDS	689	BE
1	Kick Plate	K0050 - 10" x 2" LDW CSK	630	TR
3	Silencer	1229A	GREY	TR

Set #08

Doors: 100C

3	Butt Hinge	FBB179 4.5" x 4.5"	26D	ST
1	Passage Set	9K3-0N15D	626	BE
1	Closer	HD8016 SPA	689	BE
1	Kick Plate	K0050 - 10" x 2" LDW CSK	630	TR
1	Wall Bumper	1270WV	630	TR
3	Silencer	1229A	GREY	TR

Set #09

Doors: 103, 141, 146

3	Butt Hinge	FBB179 4.5" x 4.5"	26D	ST
1	Privacy w/ Indicator	45H-0L15H VIB	626AM	BE
1	Kick Plate	K0050 - 10" x 2" LDW CSK	630	TR
1	Mop Plate	KM050 6" x 1" LDW CSK	630	TR
1	Wall Bumper	1270WV	630	TR
3	Silencer	1229A	GREY	TR

Set #10

Doors: 161A, 161B

1	CASED OPEN FRAME. NO HARDWARE			BY
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Opening List

Opening	Hardware Set
103	09
121	06
123	05
124	05
126	05
128	05
130	04
141	09
142	05
144	05
146	09
162	05
163	05
164	05
166	05
168	05
170	05
172	05
174	05
100A	01
100B	07
100C	08
101A	01
101B	06
120A	03
122A	05
122B	02
161A	10
161B	10
180A	03
180B	06
121.A	06

END OF SECTION

SECTION 08 80 00 GLAZING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Glazing units.
- B. Glazing compounds and accessories.

1.02 RELATED REQUIREMENTS

- A. Section 08 11 13 - Hollow Metal Doors and Frames: Glazed lites in doors.
- B. Section 08 14 16 - FLUSH WOOD DOORS: Glazed lites in doors.
- C. Section 08 43 13 - Aluminum-Framed Storefronts: Glazing furnished as part of storefront assembly.
- D. Section 08 56 59 - Service and Teller Window Units: Glazing furnished by window manufacturer.

1.03 REFERENCE STANDARDS

- A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; current edition.
- B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings, Safety Performance Specifications and Methods of Test; 2010.
- C. ASCE 7 - Minimum Design Loads for Buildings and Other Structures; 2010, with 2013 Supplements and Errata.
- D. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers; 2005 (Reapproved 2011).
- E. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2014.
- F. ASTM C1036 - Standard Specification for Flat Glass; 2011.
- G. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2012.
- H. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016.
- I. ASTM C1376 - Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Flat Glass; 2015.
- J. ASTM E1300 - Standard Practice for Determining Load Resistance of Glass in Buildings; 2012a.
- K. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation; 2010.
- L. GANA (GM) - GANA Glazing Manual; 2009.
- M. GANA (SM) - GANA Sealant Manual; 2008.
- N. NFRC 100 - Procedure for Determining Fenestration Product U-factors; 2014.
- O. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence; 2014.
- P. NFRC 300 - Test Method for Determining the Solar Optical Properties of Glazing Materials and Systems; 2014.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data on Glazing Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements. Identify available colors.
- C. Samples: Submit two samples 6 by 6 inch in size of glass units.

1.05 QUALITY ASSURANCE

- A. Perform Work in accordance with GANA (GM) for glazing installation methods.

1.06 FIELD CONDITIONS

- A. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Float Glass Manufacturers:
 1. AGC Glass Company North America, Inc: www.us.agc.com.
 2. Guardian Industries Corp: www.sunguardglass.com.
 3. PPG Industries, Inc: www.ppgideascape.com.
 4. Substitutions: Refer to Section 01 60 00 - Product Requirements.

2.02 PERFORMANCE REQUIREMENTS - EXTERIOR GLAZING ASSEMBLIES

- A. Select type and thickness of exterior glazing assemblies to withstand dead and live loads caused by positive and negative wind pressure acting normal to plane of glass.
 1. Design Pressure: Calculated in accordance with ASCE 7.
 2. Comply with ASTM E1300 for design load resistance of glass type, thickness, dimensions, and maximum lateral deflection of supported glass.
 3. Provide glass edge support system sufficiently stiff to limit the lateral deflection of supported glass edges to less than 1/175 of their lengths under specified design load.
 4. Glass thicknesses listed are minimum.
- B. Thermal and Optical Performance: Provide glass products with performance properties as indicated. Performance properties are in accordance with manufacturer's published data as determined with the following procedures and/or test methods:
 1. Center of Glass U-Value: Comply with NFRC 100 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 5.2/6.3 computer program.
 2. Center of Glass Solar Heat Gain Coefficient (SHGC): Comply with NFRC 200 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 5.2/6.3 computer program.
 3. Solar Optical Properties: Comply with NFRC 300 test method.

2.03 GLASS MATERIALS

- A. Float Glass: Provide float glass based glazing unless noted otherwise.
 1. Annealed Type: ASTM C1036, Type I - Transparent Flat, Class 1 - Clear, Quality-Q3.
 2. Heat-Strengthened and Fully Tempered Types: ASTM C1048, Kind HS and FT.
 3. Fully Tempered Safety Glass: Complies with ANSI Z97.1 and 16 CFR 1201 criteria.
 4. Tinted Type: ASTM C1036, Class 2 - Tinted, Quality-Q3, color and performance characteristics as indicated.
 5. Thicknesses: As indicated; provide greater thickness as required for exterior glazing wind load design.

2.04 INSULATING GLASS UNITS

- A. Manufacturers:
 1. Any of the manufacturers specified for float glass.
- B. Insulating Glass Units: Types as indicated.
 1. Durability: Certified by an independent testing agency to comply with ASTM E2190.
 2. Coated Glass: Comply with requirements of ASTM C1376 for pyrolytic (hard-coat) or magnetic sputter vapor deposition (soft-coat) type coatings on flat glass; coated vision glass, Kind CV; coated overhead glass, Kind CO; or coated spandrel glass, Kind CS.
 3. Metal Edge Spacers: Aluminum, bent and soldered corners.
 4. Spacer Color: Black.
 5. Edge Seal:

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- a. Single-Sealed System: Provide silicone, polysulfide, or polyurethane sealant as secondary seal applied around perimeter.
6. Color: Black.
7. Purge interpane space with dry air, hermetically sealed.

2.05 BASIS OF DESIGN - INSULATING GLASS UNITS

- A. Basis of Design - Insulating Glass Units: Vision glazing, with Low-E coating.
 1. Applications: Exterior insulating glass glazing unless otherwise indicated.
 2. Space between lites filled with air.
 3. Total Thickness: 1 inch.
 4. Thermal Transmittance (U-Value), Summer - Center of Glass: .28, nominal.
 5. Visible Light Transmittance (VLT): 35 percent, nominal.
 6. Solar Heat Gain Coefficient (SHGC): .25, nominal.
 7. Glazing Method: Dry glazing method, gasket glazing.
 8. Basis of Design - PPG Industries, Inc: www.ppgideascape.com.
 9. Outboard Lite: Heat-strengthened float glass, 1/4 inch thick, minimum.
 - a. Low-E Coating: PPG Solarban 60 on #2 surface.
 - b. Tint: Solargray (light-gray).
 10. Inboard Lite: Fully tempered float glass, 1/4 inch thick.
 - a. Coating: No coating on inboard lite.
 - b. Tint: Clear.

2.06 GLAZING UNITS

- A. Monolithic Interior Vision Glazing:
 1. Applications: Interior glazing unless otherwise indicated.
 2. Glass Type: Fully tempered float glass.
 3. Tint: Clear.
 4. Thickness: 1/4 inch, nominal.
- B. Monolithic Safety Glazing: Non-fire-rated.
 1. Applications:
 - a. Glazed lites in doors, except fire doors.
 - b. Glazed sidelights to doors, except in fire-rated walls and partitions.
 - c. Other locations required by applicable federal, state, and local codes and regulations.
 - d. Other locations indicated on the drawings.
 2. Glass Type: Fully tempered safety glass as specified.
 3. Tint: Clear.
 4. Thickness: 1/4 inch, nominal.

2.07 GLAZING COMPOUNDS

- A. Butyl Sealant: Single component; ASTM C920, Grade NS, Class 12-1/2, Uses M and A, Shore A hardness of 10 to 20; black color.

2.08 ACCESSORIES

- A. Setting Blocks: Silicone, with 80 to 90 Shore A durometer hardness; ASTM C864 Option II. Length of 0.1 inch for each square foot of glazing or minimum 4 inch x width of glazing rabbet space minus 1/16 inch x height to suit glazing method and pane weight and area.
- B. Glazing Tape, Back Bedding Mastic Type: Preformed, butyl-based, 100 percent solids compound with integral resilient spacer rod applicable to application indicated; 5 to 30 cured Shore A durometer hardness; coiled on release paper; black color.
- C. Glazing Gaskets: Resilient silicone extruded shape to suit glazing channel retaining slot; ASTM C864 Option II; color black.

PART 3 EXECUTION

3.01 PREPARATION

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- A. Clean contact surfaces with appropriate solvent and wipe dry within maximum of 24 hours before glazing. Remove coatings that are not tightly bonded to substrates.
- B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.
- C. Prime surfaces scheduled to receive sealant where required for proper sealant adhesion.

3.02 INSTALLATION, GENERAL

- A. Install glazing sealants in accordance with ASTM C1193, GANA Sealant Manual, and manufacturer's instructions.

3.03 INSTALLATION - DRY GLAZING METHOD (GASKET GLAZING)

- A. Application - Exterior and/or Interior Glazed: Set glazing infills from either the exterior or the interior of the building.
- B. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.
- C. Rest glazing on setting blocks and push against fixed stop with sufficient pressure on gasket to attain full contact.
- D. Install removable stops without displacing glazing gasket; exert pressure for full continuous contact.

3.04 INSTALLATION - DRY GLAZING METHOD (TAPE AND TAPE)

- A. Application - Interior Glazed: Set glazing infills from the interior of the building.
- B. Cut glazing tape to length and set against permanent stops, projecting 1/16 inch above sight line.
- C. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.
- D. Rest glazing on setting blocks and push against tape for full contact at perimeter of pane or unit.
- E. Place glazing tape on free perimeter of glazing in same manner described above.
- F. Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.
- G. Carefully trim protruding tape with knife.

3.05 CLEANING

- A. Remove excess glazing materials from finish surfaces immediately after application using solvents or cleaners recommended by manufacturers.
- B. Remove non-permanent labels immediately after glazing installation is complete.
- C. Clean glass and adjacent surfaces after sealants are fully cured.
- D. Clean glass on both exposed surfaces not more than 4 days prior to Date of Substantial Completion in accordance with glass manufacturer's written recommendations.

3.06 PROTECTION

- A. Remove and replace glass that is damaged during construction period prior to Date of Substantial Completion.

END OF SECTION

SECTION 08 87 00 ARCHITECTURAL WINDOW FILMS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Interior Window Film
- B. Privacy Window Film

1.2 RELATED SECTIONS

Note: Delete any section below not relevant to this project; add others as required.

- A. Section 08 11 16 – Interior Aluminum Doors and Frames: Windows to receive architectural window film
- B. Section 08 43 13 – Aluminum-Framed Storefronts: Windows to receive architectural window film
- C. Section 08 56 59 – Service and Teller Window Units: Windows to receive architectural window film
- D. Section 08 80 00 – Glazing: Windows to receive architectural window film

1.3 REFERENCES

- A. ASTM International (ASTM)
 - 1. ASTM E 903 - Standard Methods of Test for Solar Absorbance, Reflectance and Transmittance of Materials Using Integrating Spheres.
 - 2. ASTM E 308 - Standard Recommended Practice for Spectrophotometry and Description of Color in CIE 1931 System.

1.4 SUBMITTALS

- A. Manufacturer's Product Data for specified products.
- B. Submit shop drawings showing layout, profiles, and product components, including dimensions, anchorage, and accessories.
- C. Samples: 4 inch by 4 inch Samples of specified texture, color and/or pattern for verification.
- D. Submit operation and maintenance data for installed products, including precautions against harmful cleaning materials and methods.
- E. Mock ups: as required.

1.5 QUALITY ASSURANCE

- A. Obtain all products in this section from a single Manufacturer with a minimum of 10 years' experience.
- B. Installer: Installation shall be performed by a trained and qualified installer, specialized and experienced in work required for this project. A list of experienced installation integrators is available at 3M.com/AMD or 3M Commercial Solutions Division at 1-888-650-3497.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver products in manufacturer's original, unopened, undamaged containers with identification labels intact.
- B. Store products protected from weather, temperature, and other harmful conditions as recommended by supplier.
- C. Product must remain in original plastic bag and boxes and have storage conditions as follows:
 - 1. 40 °F – 90 °F (4 °C – 32 °C)
 - 2. Out of direct sunlight
 - 3. Clean dry area

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4. Original container
5. Do not stack boxes over six (6) units high. Excessive weight can damage the film
6. Products are not recommended for interior applications where condensation consistently occurs.
7. Handle products in accordance with manufacturer's instructions.
8. Shelf life: 1 year

1.7 PROJECT/SITE CONDITIONS

- A. Confirm appropriate substrate is suitable for mounting of glass finish components prior to start of installation.
- B. Apply materials when environmental conditions are within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits. Application temperature range is 60 °F – 100 °F (16 °C – 38 °C).
- C. Environmental Limitations: Do not install until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1.8 WARRANTY

- A. Manufacturer's Warranty: Submit manufacturer's standard warranty document by authorized manufacturer.
- B. Standard Product Warranty: Refer to the applicable 3M Technical Data Sheet for product warranty.

1.9 EXTRA MATERIALS

- A. Furnish 2 percent extra material at time of installation. Deliver in protective packaging for storage and label contents appropriately.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. 3M Company – Commercial Solutions Division [CSD]

3M Center, Building 0220-12-E-04
St. Paul, MN 55144-1000, USA
1-888-650-3497
- B. Substitutions per 01 60 00 Product Requirements.

2.2 MATERIAL STANDARD

- A. Design based upon 3M™ FASARA™ Glass Finishes

2.3 MATERIAL PROPERTIES

- A. General: Glass and plastic finishes field-applied application to glass or plastic material as visual opaque or decorative film.
 - B. Film: Polyester
 - C. Decorative Pattern: Printed
- Note: Please verify pattern of FASARA specified.
- D. Adhesive: Acrylic, Pressure Sensitive, Permanent
 - E. Liner: Silicone-coated Polyester
 - F. Thickness (Average) (Film and Adhesive without Liner): 3.2 mils (80 microns)

- G. Fire Performance: Surface burning characteristics when tested in accordance with ASTM E84: Class A
 - 1. Flame Spread: 25 maximum.
 - 2. Smoke Developed: 450 maximum.

2.4 OPTICAL PERFORMANCE

- A. FASARA – Lontano Decorative / Privacy Glazing Film applied to 3mm thick clear glass (ASTM E 903, ASTM E 308):
 - 1. Ultraviolet Transmittance: 0.1 percent.
 - 2. Visible Light Transmittance: 61 percent.
 - 3. Visible Light Reflectance - Interior: 22 percent.
 - 4. Solar Heat Transmittance: 57 percent.
 - 5. Solar Heat Reflectance: 20 percent.
 - 6. Shading Coefficient at 90 Degrees (Normal Incidence): 0.74.
 - 7. Visible Light Transmittance: 50 percent.
 - 8. Visible Light Reflectance - Interior: 20 percent.
 - 9. Solar Heat Transmittance: 53 percent.
 - 10. Solar Heat Reflectance: 17 percent.
 - 11. Shading Coefficient at 90 Degrees (Normal Incidence): 0.71.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrate(s) for compliance. Do not proceed with installation until unsatisfactory conditions have been corrected.
- B. Refer to the applicable 3M Technical Data Sheet to determine compatibility of finish to substrate.
- C. Do not proceed with installation until unsatisfactory conditions have been corrected.
- D. Responsibility for state of surfaces prior to installation to be pre-determined by installation specialist.
- E. Scheduling of installation by Owner or its representative implies that substrate and conditions are prepared and ready for product installation per the recommendations of the installation specialist.
- F. Proceeding with installation implies installer's acceptance of substrate and conditions.

3.2 SURFACE PREPARATION

- A. Comply with all manufacturer's instructions for surface preparation.
- B. Thoroughly clean substrate of substances that could impair the overlay's bond, including mold, mildew, oil, grease.
- C. Re-clean surfaces with appropriate surface prep solvent and remove any haze or surface contamination.

3.3 APPLICATION

- A. Refer to the applicable 3M Installation Guide for specific application instructions.
- B. Application must be performed by qualified installer.
- C. Do not proceed with installation until all finishing work has been completed in and around the work area.
- D. Verify pattern prior to material acquisition.
- E. Comply with manufacturer's installation instructions applicable to products and applications indicated,

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except where more stringent requirements apply.

- F. Remove the liner and wet the adhesive prior to installation.
- G. Form smooth, wrinkle-free, bubble-free surface for finished installation.
- H. Remove air bubbles, wrinkles, blisters and other defects. Use approved procedures to prevent the formation of air bubbles, wrinkles, blisters and other defects.
- I. Residual water phenomenon may cause small water bubbles or clouding in the film that disappears as the water evaporates.
- J. Refer to the applicable 3M Installation Guide for additional details.

3.4 CLEANING AND PROTECTION

- A. Use cleaning methods recommended by architectural surfacing manufacturer for applicable environment.
- B. Protect completed glass finish during remainder of construction period.
- C. Consult with authorized installation specialist for project specifics.

END OF SECTION

SECTION 09 21 16
GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Metal stud wall framing.
- B. Metal channel ceiling framing.
- C. Acoustic insulation.
- D. Gypsum sheathing.**
- E. Gypsum wallboard.

1.02 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry: Wood blocking product and execution requirements.
- B. Section 09 91 23 - Interior Painting: Joint treatment and accessories.

1.03 REFERENCE STANDARDS

- A. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members; 2014.
- B. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2012.
- C. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2015.
- D. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2013.
- E. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2015.
- F. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2014.
- G. ASTM C1047 - Standard Specification for Accessories For Gypsum Wallboard and Gypsum Veneer Base; 2014a.
- H. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2013.
- I. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2014.
- J. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2012.
- K. GA-216 - Application and Finishing of Gypsum Board; 2013.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on metal framing, gypsum board, accessories, and joint finishing system.
- C. Test Reports: For stud framing products that do not comply with ASTM C645 or ASTM C754, provide independent laboratory reports showing maximum stud heights at required spacings and deflections.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

- A. Provide completed assemblies complying with ASTM C840 and GA-216.

2.02 METAL FRAMING MATERIALS

- A. Manufacturers - Metal Framing, Connectors, and Accessories:
 - 1. Clarkwestern Dietrich Building Systems LLC: www.clarkdietrich.com.
 - 2. Marino: www.marinoware.com.
 - 3. Phillips Manufacturing Company: www.phillipsmfg.com.
 - 4. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Non-Loadbearing Framing System Components: ASTM C645; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/240 at 5 psf.
 - 1. Studs: "C" shaped with flat or formed webs with knurled faces.
 - 2. Runners: U shaped, sized to match studs.
 - 3. Ceiling Channels: C-shaped.
 - 4. Furring: Hat-shaped sections, minimum depth of 7/8 inch.
- C. Ceiling Hangers: Type and size as specified in ASTM C754 for spacing required.
- D. Partition Head To Structure Connections: Provide track fastened to structure with legs of sufficient length to accommodate deflection, for friction fit of studs cut short.

2.03 BOARD MATERIALS

- A. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
 - 1. Application: Use for vertical surfaces, unless otherwise indicated.
 - 2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
 - a. Mold-resistant board is required whenever board is being installed before the building is enclosed and conditioned.
 - 3. Thickness:
 - a. Vertical Surfaces: 5/8 inch.
 - 4. Mold Resistant Paper Faced Products:
 - a. American Gypsum Company; M-Bloc Type X.
 - b. Georgia-Pacific Gypsum; ToughRock Fireguard X Mold-Guard.
 - c. National Gypsum Company; Gold Bond XP Gypsum Board .
- B. Backing Board For Non-Wet Areas: Water-resistant gypsum backing board as defined in ASTM C1396/C1396M; sizes to minimum joints in place; ends square cut.
 - 1. Application: Vertical surfaces behind thinset tile, except in wet areas.
 - 2. Type X Thickness: 5/8 inch.
 - 3. Edges: Tapered.
 - 4. Products:
 - a. American Gypsum Company; M-Bloc Type X.
 - b. Georgia-Pacific Gypsum; DensArmor Plus.
 - c. National Gypsum Company; Gold Bond XP Gypsum Board.
 - d. Substitutions: See Section 01 60 00 - Product Requirements.
- C. Ceiling Board: Special sag resistant gypsum ceiling board as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
 - 1. Application: Ceilings, unless otherwise indicated.
 - 2. Thickness: 1/2 inch.
 - 3. Edges: Tapered.
 - 4. Products:
 - a. Georgia-Pacific Gypsum; ToughRock Span 24 Ceiling Board.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.

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- D. Exterior Sheathing Board: Sizes to minimize joints in place; ends square cut.
 - 1. Application: Exterior sheathing, unless otherwise indicated.
 - 2. Glass Mat Faced Sheathing: Glass mat faced gypsum substrate as defined in ASTM C1177/C1177M.
 - 3. Core Type: Regular, as indicated.
 - 4. Regular Board Thickness: 1/2 inch.
 - 5. Edges: Square.
 - 6. Glass Mat Faced Products:
 - a. Georgia-Pacific Gypsum; DensGlass Sheathing.
 - b. National Gypsum Company; Gold Bond Brand eXP Extended Exposure Sheathing.
 - c. Substitutions: See Section 01 60 00 - Product Requirements.

2.04 ACCESSORIES

- A. Acoustic Insulation: ASTM C665; preformed glass fiber, friction fit type, unfaced. Thickness: 3 inch.
- B. Acoustic Insulation: 1; preformed glass fiber, friction fit type, unfaced. Thickness: 2 inch.
- C. Acoustic Sealant: Acrylic emulsion latex or water-based elastomeric sealant; do not use solvent-based non-curing butyl sealant.
- D. Finishing Accessories: ASTM C1047, galvanized steel or rolled zinc, unless noted otherwise.
 - 1. Types: As detailed or required for finished appearance.
- E. Construction Adhesive: Sonneborn 200 Construction Adhesive manufactured by Sonneborn Building Products.
- F. Screws for Attachment to Steel Members Less Than 0.033 inch In Thickness, to Wood Members, and to Gypsum Board: ASTM C1002; self-piercing tapping type; cadmium plated for exterior locations.
- G. Screws for Attachment to Steel Members From 0.033 to 0.112 inch in Thickness: ASTM C954; steel drill screws for application of gypsum board to loadbearing steel studs.

PART 3 EXECUTION

3.01 EXAMINATION

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

3.02 FRAMING INSTALLATION

- A. Metal Framing: Install in accordance with ASTM C754 and manufacturer's instructions.
- B. Suspended Ceilings and Soffits: Space framing and furring members as indicated.
- C. Studs: Space studs at 16 inches on center.
 - 1. Extend partition framing as indicated on drawings.
 - 2. Partitions Terminating at Structure: Attach extended leg top runner to structure, maintain clearance between top of studs and structure, and brace both flanges of studs with continuous bridging.
- D. Openings: Reinforce openings as required for weight of doors or operable panels, using not less than double studs at jambs.

3.03 ACOUSTIC ACCESSORIES INSTALLATION

- A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.
- B. Acoustic Sealant: Install in accordance with manufacturer's instructions.

3.04 BOARD INSTALLATION

- A. Comply with ASTM C 840 and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.
- B. Single-Layer Non-Rated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.
- C. Double-Layer Non-Rated: Use gypsum board for first layer, placed parallel to framing or furring members, with ends and edges occurring over firm bearing. Use glass mat faced gypsum board at exterior walls and at other locations as indicated. Place second layer perpendicular to framing or furring members. Offset joints of second layer from joints of first layer.
- D. Installation on Metal Framing: Use screws for attachment of gypsum board except face layer of non-rated double-layer assemblies, which may be installed by means of adhesive lamination.

3.05 INSTALLATION OF TRIM AND ACCESSORIES

- A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.
- B. Corner Beads: Install at external corners, using longest practical lengths.

END OF SECTION

SECTION 09 30 00
PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Tile for floor applications.
- B. Tile for wall applications.
- C. Tile for shower receptors.
- D. Cementitious backer board as tile substrate.
- E. Coated glass mat backer board as tile substrate.
- F. Stone thresholds.
- G. Ceramic accessories.
- H. Ceramic trim.
- I. Non-ceramic trim.

1.02 RELATED REQUIREMENTS

- A. Section 07 92 00 - Joint Sealants.
- B. Section 09 21 16 - Gypsum Board Assemblies: Installation of tile backer board.

1.03 REFERENCE STANDARDS

- A. ANSI A108 Series/A118 Series/A136.1 - American National Standard Specifications for the Installation of Ceramic Tile (Compendium); 2012.1.
- B. ANSI A108.1a - American National Standard Specifications for Installation of Ceramic Tile in the Wet-Set Method, with Portland Cement Mortar; 2012.1.
- C. ANSI A108.1b - American National Standard Specifications for Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set or Latex Portland Cement Mortar; 2012.1.
- D. ANSI A108.1c - Specifications for Contractors Option: Installation of Ceramic Tile in the Wet-Set Method with Portland Cement Mortar or Installation of Ceramic Tile on a Cured Portland Cement Mortar Bed with Dry-Set or Latex Portland Cement
- E. ANSI A108.4 - American National Standard Specifications for Installation of Ceramic Tile with Organic Adhesives or Water Cleanable Tile-Setting Epoxy Adhesive; 2012.1.
- F. ANSI A108.5 - American National Standard Specifications for Installation of Ceramic Tile with Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar; 2012.1.
- G. ANSI A108.6 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy; 2012.1.
- H. ANSI A108.8 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant Furan Resin Mortar and Grout; 2012.1.
- I. ANSI A108.9 - American National Standard Specifications for Installation of Ceramic Tile with Modified Epoxy Emulsion Mortar/Grout; 2012.1.
- J. ANSI A108.10 - American National Standard Specifications for Installation of Grout in Tilework; 2012.1.
- K. ANSI A108.11 - American National Standard for Interior Installation of Cementitious Backer Units; 2012.1.
- L. ANSI A108.12 - American National Standard for Installation of Ceramic Tile with EGP (Exterior glue plywood) Latex-Portland Cement Mortar; 2012.1.
- M. ANSI A108.13 - American National Standard for Installation of Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone; 2012.1.
- N. ANSI A118.4 - American National Standard Specifications for Latex-Portland Cement Mortar; 2012.1.

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- O. ANSI A118.6 - American National Standard Specifications for Standard Cement Grouts for Tile Installation; 2012.1.
- P. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units; 2012.1.
- Q. ANSI A118.10 - American National Standard Specifications for Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone Installation; 2012.1.
- R. ANSI A137.1 - American National Standard Specifications for Ceramic Tile; 2012.
- S. ASTM C1178/C1178M - Standard Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel; 2011.
- T. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation; 2012.

1.04 SUBMITTALS

- A. Product Data: Provide manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.
- B. Samples: Mount tile and apply grout on two plywood panels, minimum 18 x 18 inches in size illustrating pattern, color variations, and grout joint size variations.
- C. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 60 00 - Product Requirements, for additional provisions.
 - 2. Extra Tile: 10 square feet of each size, color, and surface finish combination.
- D. LEED Submittal: Documentation of recycled content and location of manufacture.
- E. LEED Submittals:
 - 1. Complete LEED Form Exhibit A, and provide the following information for each material.
 - a. Product Data for Credit MR 4: For products having recycled content, provide documentation indicating percentages by weight of post-consumer and pre-consumer content.
 - 1) Provide statement indicating cost for each material having recycled content.
 - b. Product Data for Credit MR 5: For products extracted and manufactured within 500 miles, provide documentation indicating percentages by weight of regionally extracted and manufactured components.
 - 1) Provide statement indicating cost for each material having regionally extracted and manufactured content.
 - 2. Complete LEED Form Exhibit B-1 and provide confirmation of the following information for all adhesives and sealants on the interior of the building (i.e. inside the weatherproofing system and applied-onsite):
 - a. Product Data for Credit EQ 4.1: For adhesives and sealants, including printed manufacturer's statement of VOC content.
 - 3. Complete LEED Form Exhibit B-2 and provide confirmation of the following information for all paints and coatings on the interior of the building (i.e. inside the weatherproofing system and applied-onsite):
 - a. Product Data for Credit EQ 4.2: For paints and coatings, including printed manufacturer's statement of VOC content.

1.05 QUALITY ASSURANCE

- A. Maintain one copy of The Tile Council of North America Handbook and ANSI A108 Series/A118 Series on site.

PART 2 PRODUCTS

2.01 TILE

- A. Manufacturers:
 - 1. ShawContract: www.shawcontract.com
 - 2. Substitutions: See Section 01 60 00 - Product Requirements.

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- B. Tile : ANSI A137.1, and as follows:
 - 1. Moisture Absorption: 0.5 to 3.0 percent.
 - 2. Size and Shape: As indicated on drawings.
 - 3. Edges: Square.
 - 4. Colors: As scheduled.
 - 5. Pattern: as indicated on the drawings.
 - 6. Trim Units: Matching cove base shapes in sizes coordinated with field tile.

2.02 TRIM AND ACCESSORIES

- A. Ceramic Accessories: Glazed finish, same color and finish as adjacent field tile; same manufacturer as tile.
- B. Trim: Matching bullnose, double bullnose, cove base, and cove ceramic shapes in sizes coordinated with field tile.
 - 1. Applications: Use in the following locations:
 - a. Open Edges: Bullnose.
 - b. Inside Corners: Jointed.
 - c. Floor to Wall Joints: Cove base.
 - 2. Manufacturer: Same as for tile.
- C. Non-Ceramic Trim: Satin brass anodized extruded aluminum, style and dimensions to suit application, for setting using tile mortar or adhesive.
 - 1. Applications: Use in the following locations:
 - a. Open edges of wall tile.
 - 2. Manufacturer:
 - a. Blanke Cubelite aluminum white tile edge protector..
- D. Thresholds: Marble, gray, honed finish; 2 inches wide by full width of wall or frame opening; 1/2 inch thick; beveled one long edge with radiused corners on top side; without holes, cracks, or open seams.
 - 1. Applications: Provide at the following locations:
 - a. At doorways where tile terminates.

2.03 SETTING MATERIALS

- A. Provide setting materials made by the same manufacturer as grout.
- B. Latex-Portland Cement Mortar Bond Coat: ANSI A118.4.
 - 1. Products:
 - a. Custom Building Products; MegaLite: www.custombuildingproducts.com.
 - b. All paints and coatings used on the interior of the building must comply with the requirements of IEQ Credit 4.2, LEED 2009 for New Construction and Major Renovation.

2.04 GROUTS

- A. Manufacturers:
 - 1. Custom Building Products; Prism SureColor Grout: www.custombuildingproducts.com.
 - 2. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Standard Grout: ANSI A118.6 standard cement grout.
 - 1. Use sanded grout for joints 1/8 inch wide and larger; use unsanded grout for joints less than 1/8 inch wide.
 - 2. Color(s): As scheduled.
 - 3. Products:
 - a. Custom Building Products; Polyblend Sanded Grout: www.custombuildingproducts.com.
 - b. LATICRETE International, Inc; 1600 Unsanded Grout: www.laticrete.com.
- C. Stain Resistant Grout Additive: Liquid admixture for sanded and unsanded cement-based grouts; mix with dry grout material in place of water.

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1. Applications: floors.
2. Products:
 - a. ProSpec, an Oldcastle brand; ProColor Stain Guard Grout Additive: www.prospec.com.
- D. Tile Sealant: Gunnable, silicone, siliconized acrylic, or urethane sealant; moisture and mildew resistant type.
 1. Applications: Between tile and plumbing fixtures.
 2. Products:
 - a. Custom Building Products; Commercial 100% Silicone Caulk: www.custombuildingproducts.com.
 - b. LATICRETE International, Inc; LATICRETE Latasil: www.laticrete.com.
- E. All adhesives and sealants used on the interior of the building must comply with the requirements of IEQ Credit 4.1, LEED 2009 for New Construction and Major Renovation.

2.05 THICK-BED MATERIALS

- A. Mortar Bed Materials: Portland cement, sand, latex additive, and water.
 1. Products:
 - a. LATICRETE International, Inc; LATICRETE 3701 Fortified Mortar Bed: www.laticrete.com.

2.06 THIN-SET ACCESSORY MATERIALS

- A. Waterproofing Membrane : Specifically designed for bonding to cementitious substrate under thick mortar bed or thin-set tile; complying with ANSI A118.10. Use at showers and adjacent dressing areas.
 1. Type: Fluid-applied.
 2. Material: SBS rubber.
 3. Thickness: 25 mils, minimum, dry film thickness.
 4. Products:
 - a. AVM Industries, Inc; System 750 with polyester fabric reinforcing at edges, corners, joints, and cracks: www.avmindustries.com.
 - b. LATICRETE International, Inc; LATICRETE Hydro Ban: www.laticrete.com.
 - c. Merkrete, by Parex USA, Inc.; Merkrete Hydro Guard 2000: www.merkrete.com.
- B. Cementitious Backer Board: ANSI A118.9; High density, cementitious, glass fiber reinforced, 1/2 inch thick; 2 inch wide coated glass fiber tape for joints and corners.
- C. Coated Glass Mat Backer Board: ASTM C1178/C1178M, with coated inorganic fiberglass mat on both surfaces and integral acrylic coating vapor retarder.
- D. Mesh Tape: 2-inch wide self-adhesive fiberglass mesh tape.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that sub-floor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive tile.
- B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive tile.
- C. Verify that sub-floor surfaces are dust-free and free of substances that could impair bonding of setting materials to sub-floor surfaces.
- D. Verify that concrete sub-floor surfaces are ready for tile installation by testing for moisture emission rate and alkalinity; obtain instructions if test results are not within limits recommended by tile manufacturer and setting materials manufacturer.
- E. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

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- A. Protect surrounding work from damage.
- B. Vacuum clean surfaces and damp clean.
- C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.
- D. Install backer board in accordance with ANSI A108.11 and board manufacturer's instructions. Tape joints and corners, cover with skim coat of setting material to a feather edge.
- E. Prepare substrate surfaces for adhesive installation in accordance with adhesive manufacturer's instructions.

3.03 INSTALLATION - GENERAL

- A. Install tile and grout in accordance with applicable requirements of ANSI A108.1 through A108.13, manufacturer's instructions, and The Tile Council of North America Handbook recommendations.
- B. Lay tile to pattern indicated. Do not interrupt tile pattern through openings.
- C. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.
- D. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make grout joints without voids, cracks, excess mortar or excess grout, or too little grout.
- E. Form internal angles square and external angles bullnosed.
- F. Install ceramic accessories rigidly in prepared openings.
- G. Install non-ceramic trim in accordance with manufacturer's instructions.
- H. Install thresholds where indicated.
- I. Sound tile after setting. Replace hollow sounding units.
- J. Keep expansion joints free of adhesive or grout. Apply sealant to joints.
- K. Prior to grouting, allow installation to completely cure; minimum of 48 hours.
- L. Grout tile joints. Use standard grout unless otherwise indicated.
- M. Apply sealant to junction of tile and dissimilar materials and junction of dissimilar planes.

3.04 INSTALLATION - FLOORS - THIN-SET METHODS

- A. Over interior concrete substrates, install in accordance with The Tile Council of North America Handbook Method F113, dry-set or latex-Portland cement bond coat, with standard grout, unless otherwise indicated.

3.05 INSTALLATION - SHOWERS RECEPTORS AND WALLS

- A. At tiled shower receptors install in accordance with The Tile Council of North America Handbook Method B415, mortar bed floor, and W244, thin-set over cementitious backer unit walls.
- B. Grout with standard grout as specified above.
- C. Seal joints between tile work and other work with sealant Type ____ specified in Section 07 92 00.

3.06 INSTALLATION - WALL TILE

- A. Over coated glass mat backer board on studs, install in accordance with The Tile Council of North America Handbook Method W245.

3.07 CLEANING

- A. Clean tile and grout surfaces.

3.08 SCHEDULE: SEE DRAWINGS.

END OF SECTION

SECTION 09 51 00 ACOUSTICAL CEILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Suspended metal grid ceiling system.
- B. Acoustical units.

1.02 RELATED REQUIREMENTS

- A. Section 23 37 00 - Air Outlets and Inlets: Air diffusion devices in ceiling.
- B. Section 26 51 00 - Interior Lighting: Light fixtures in ceiling system.

1.03 REFERENCE STANDARDS

- A. ASTM C635 - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2007.
- B. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2008e1.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Sequence work to ensure acoustical ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.
- B. Do not install acoustical units until after interior wet work is dry.

1.05 SUBMITTALS

- A. Product Data: Provide data on suspension system components.
- B. Samples: Submit two samples 6x6 inch in size illustrating material and finish of acoustical units.
- C. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 60 00 - Product Requirements, for additional provisions.
 - 2. Extra Acoustical Units: Quantity equal to 5 percent of total installed.

1.06 QUALITY ASSURANCE

- A. Suspension System Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- B. Acoustical Unit Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.07 FIELD CONDITIONS

- A. Maintain uniform temperature of minimum 60 degrees F, and maximum humidity of 50 percent prior to, during, and after acoustical unit installation.

PART 2 PRODUCTS

2.01 ACOUSTICAL UNITS

- A. Manufacturers:
 - 1. Armstrong World Industries, Inc; Product TechZone with Ultima Panels: www.armstrong.com.
 - 2. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Acoustical Units - General: ASTM E1264, Class A.
- C. Acoustical Panels: Painted mineral fiber, ASTM E1264 Type III, with the following characteristics:
 - 1. VOC Content: As specified in Section 01 60 00.
 - 2. Size: 24 x 24 inches and as drawn and scheduled on the drawings.
 - 3. Thickness: 3/4 inches.
 - 4. Edge: Square Lay-in.
 - 5. Surface Color: White.
 - 6. Surface Pattern: Directional fissured.
 - 7. Product: Ultima by Armstrong.
 - 8. Suspension System: Exposed aluminum grid painted white.

- D. Acoustical Panels Type Cementitious Wood Fiber:: Tectum , complying with the following characteristics:
 - 1. VOC Content: As specified in Section 01 60 00.
 - 2. Size: 24xvaries inches.
 - 3. Thickness: 1 inches.
 - 4. Edge: Square.
 - 5. Surface Color: White.
 - 6. Product: Tectum Direct Attached Ceiling Panels by _____.
- E. Glass Fiber Acoustical Panels: Fabric faced glass fiber, ASTM E1264 Type XII, with the following characteristics:
 - 1. Size: 6 inch and 24 inch widths by multiple lengths. See drawings.
 - 2. Edge: 4 inch Axiom.
 - 3. Surface Color: White.
 - 4. Product: TechZone with Optima by Armstrong.
 - 5. Suspension System: Exposed grid.

2.02 SUSPENSION SYSTEM(S)

- A. Manufacturers: as scheduled.
 - 1. Armstrong World Industries, Inc: www.armstrong.com.
 - 2. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Suspension Systems - General: ASTM C635; die cut and interlocking components, with stabilizer bars, clips, splices, perimeter moldings, and hold down clips as required.
- C. Exposed Steel Suspension System: Formed steel, commercial quality cold rolled; intermediate duty.
 - 1. Profile: Tee; 9/16 inch wide face.
 - 2. Construction: Double web.
 - 3. Finish: White painted.
 - 4. Product: Armstrong Interlude XL .

2.03 ACCESSORIES

- A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.
- B. Perimeter Moldings: Same material and finish as grid.
 - 1. At Exposed Grid: Provide Tegular and Lay-in Shadow 7873-shaped molding for mounting at same elevation as face of grid.
 - 2. At Floating Clouds: Axiom Classic 4 inch high.
- C. Acoustical Insulation: Specified in Section 07 21 00.
 - 1. Thickness: 3.5 inch.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that layout of hangers will not interfere with other work.

3.02 INSTALLATION - SUSPENSION SYSTEM

- A. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.
- B. Install after major above-ceiling work is complete. Coordinate the location of hangers with other work.
- C. Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.
- D. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.
- E. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.
- F. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.

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- G. Do not eccentrically load system or induce rotation of runners.

- H. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
 - 1. Use longest practical lengths.
 - 2. Overlap and rivet corners.

3.03 INSTALLATION - ACOUSTICAL UNITS

- A. Install acoustical units in accordance with manufacturer's instructions.
- B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.
- C. Fit border trim neatly against abutting surfaces.
- D. Install units after above-ceiling work is complete.
- E. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.
- F. Cutting Acoustical Units:
 - 1. Make field cut edges of same profile as factory edges.

3.04 TOLERANCES

- A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.
- B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

END OF SECTION

SECTION 09 65 10 - LUXURY VINYL TILE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes providing and installing luxury vinyl tile (LVT) flooring over existing concrete substrate:
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 03 Section "Cast In Place Concrete" for curing compounds and other concrete treatments compatibility with carpet tile and adhesives.
 - 2. Division 09 Section "Preparing Concrete Floor For Finishes" for surface preparation and testing.
 - 3. Division 9 Section "Resilient Wall Base and Accessories." for resilient wall base, reducer strips, and other accessories installed with floor finish.
 - 4. Division 26 Section "Interior Lighting" for floor reflectance factors required in designing and selecting lighting fixtures.
- C. Contractor's Investigation: Prior to Contract Execution, the Contractor shall have thoroughly investigated the entities such as employees, consultants, subcontractors, manufacturers, suppliers, etc. and other entities that will performing work or supplying materials, products, equipment, or systems for this project to ensure that they meet all of the qualifications and requirements mentioned or implied in the Contract Documents. If it is later determined that any of the previously mentioned entities do not meet the qualifications and requirements specified in the Contract Documents, the Contractor will be required to replace that entity with a qualified entity at no increase in Contract sum or Contract Time.
- D. If testing indicates moisture levels above and floor substrate conditions unacceptable to those recommended by the floor covering manufacturer, provide proper vapor retarder to bring vapor emissions to acceptable levels and underlayment to bring concrete substrate to acceptable conditions. All materials and methods used to bring concrete substrate to acceptable levels and conditions shall be as recommended by and acceptable to the floor covering manufacturer.

1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 01 Specification Sections.
- B. Product data for each type of product specified.
 - 1. Certification by tile manufacturer that products supplied for tile installation comply with local regulations controlling use of volatile organic compounds (VOCs).
- C. Samples for initial selection purposes in form of manufacturer's color charts consisting of actual tiles or sections of tiles showing full range of colors and patterns available for each type of resilient floor tile indicated.

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- D. Samples for verification purposes in full-size tiles of each different color and pattern of resilient floor tile specified, showing full range of variations expected in these characteristics.
- E. Product certificates, in lieu of laboratory test reports when permitted by Architect, signed by manufacturer certifying that each product complies with requirements.
 - 1. Slip Resistance: For tile to be used on ramps and inclines, submit manufacturer's published data stating that tile meets slip resistance requirements for ADA and listing the coefficient of friction measurements. Data shall include measurements after floor polish has been applied.
- F. Maintenance data for resilient floor tile, to include in Operating and Maintenance Manual specified in Division 01.
- G. Shop Drawings showing floor patterns with multi-color tile. Floor pattern locations are noted in Drawings.

1.4 QUALITY ASSURANCE

- A. Single-Source Responsibility for Floor Tile: Obtain each type, color, and pattern of tile from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the Work.
- B. Installer Qualifications Criteria: As an absolute minimum, the floor system contractor/installer shall meet the following criteria:
 - 1. Be acceptable to the floor finish manufacturer.
 - 2. Never have had a manufacturer's approval or certification revoked because of unsatisfactory performance?
 - 3. Be a floor system installer/contractor with 7 continuous years experience specializing in the specified floor system.
 - 4. Has completed at least 5 projects of comparable size, complexity, and difficulty within the last year.
 - 5. Be experienced in performing the specified substrate tests using own equipment.
 - 6. Has completed at least 80% of projects on time and under budget
 - 7. Currently have all necessary tools, equipment, and labor to perform the specified work. Due to the complexity of this project, at Contract Execution, provide the name of the job foreman who will be on the job site from start to finish. The Owner or Architect or both may also request to visit installers office and warehouse facilities prior to beginning work or at anytime during work progress.
 - 8. Be able to self-perform all work described in this section of the specifications with own employees without sub-contracting. For the purpose of this Contract, the installers own employees are considered employees for which the installer contributes directly to and is directly financially responsible for all Federal, State, and Local Taxes. and .Social Security.
 - 9. Has operated under the same name for at least 5 years.
 - 10. Be bondable and have not been refused a bond in the last 5 years
 - 11. Has not, under this name or any other name, ever filed for protection under either Chapter 7 or 11 of the US Bankruptcy Laws within last 7 years.
 - 12. Has verifiable means to provide necessary funds to honor contractor's 2-year warranty.
 - 13. Quality Control Plan: The installer/sub-contractor shall have an established and verifiable Quality Assurance/Control Program. Evidence of a quality control/assurance plan including onsite inspections with schedules and check sheets from previous projects **may** be requested prior to Contract execution. An unacceptable Quality Assurance/Control Plan is reason for disqualifying the installer. The quality program should include, but not

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be limited to, the following:

- a. Awards
- b. Mentor program
- c. Written procedures
- d. Rework procedures
- e. Employee certifications
- f. Regular quality meetings
- g. Employee job descriptions
- h. Regular employee training
- i. Designated field inspectors
- j. Manufacturer's certification
- k. Employee progression levels
- l. Quality Assurance/Control manual
- m. Member of professional organizations

- n. Onsite inspections with schedules and check sheets
- o. Qualifications of suppliers, subcontractors, and consultants
- p. Inspection of incoming products and raw materials and return good procedures
- q. Job Visit Log Book and Names and titles of individuals making job visits

C. Fire Performance Characteristics: Provide resilient floor tile with the following fire performance characteristics as determined by testing products per ASTM test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.

1. Critical Radiant Flux: 0.45 watts per sq cm or more per ASTM E 648.
2. Smoke Density: Less than 450 per ASTM E 662.

D. Mockup:

1. Prior to installing floor covering, construct mockup to verify selections made under sample submittals and to demonstrate aesthetic effects as well as other qualities of materials and execution, including seams and welding. Build mockups to comply with the following requirements, using each type of specified materials and procedures for final unit of Work.
 - a. Notify Architect and materials manufacturer one week in advance of the dates and times when mockups will be constructed.
 - b. Locate mockups on site in the locations indicated or, if not indicated, as directed by Architect. Construct of sufficient size to allow inclusion of following installations:
 - (1) Floor area.
 - (2) Base
 - c. Build mockups for each type of installation and install in sizes approximately 48 inches long by 48 inches high. However, size shall be of sufficient size to properly show intent of the Work to be performed and relationship of all installed materials.
 - d. Protect accepted mockups
 - e. Retain and maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work. When directed by the Architect, approved mockups may become a part of the completed work.
 - (1) Acceptance of mockups is for color, texture, pattern, terminations, grooving, welding, aesthetic qualities of workmanship; and other material and construction qualities specifically determined by Architect.
 - (2) Acceptance of mockups does not constitute approval of deviations from the Contract Documents contained in mockups, unless Architect specifically approves such deviations in writing.
 - (3) If mockup is not a part of the actual construction, demolish and remove mockups from Project site, when directed by the Architect.

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- (4) Accepted mockups in an undisturbed condition at the time of Substantial Completion may become part of the completed Work.
- (5) Confirm slip resistance properties of mockup.

E. Manufacturer's Inspection: The flooring material's representative shall inspect the installation as necessary to ensure that the installation meets all of the manufacturer's requirements for issuance of the manufacturer's full warranty for the specified period. The contractor shall arrange for this inspection as recommended by the flooring manufacturer. This inspector shall be approved and authorized by the flooring manufacturer to conduct warranty inspections and to approve installations.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver tiles and installation accessories to Project site in original manufacturer's unopened cartons and containers each bearing names of product and manufacturer, Project identification, and shipping and handling instructions.
- B. Store flooring materials in dry conditioned spaces, protected from the weather with ambient temperatures maintained as recommended by the manufacturer. If no recommendations, then between 50 deg F and 90 deg F.
- C. Store tiles on flat surfaces. Move tiles and installation accessories into spaces where they will be installed at least 48 hours in advance of installation.

1.6 PROJECT CONDITIONS

- A. Maintain a minimum temperature in spaces to receive tiles as recommended by the manufacturer for at least 48 hours prior to installation, during installation, and for not less than 48 hours after installation. After this period, maintain a temperature of not less than 55 deg F. If no recommendations, then 70 deg. F.
- B. Do not install tiles until they are at the same temperature as the space where they are to be installed.
- C. Close spaces to traffic during tile installation.

1.7 SEQUENCING AND SCHEDULING

- A. Install tiles and accessories after other finishing operations, including painting, have been completed.
- B. Do not install tiles over concrete slabs until the slabs have cured and are sufficiently dry to bond with adhesive as determined by tile manufacturer's recommended bond and moisture test.

1.8 EXTRA MATERIALS

- A. Deliver extra materials to Owner. Furnish extra materials matching products installed as described below, packaged with protective covering for storage and identified with labels clearly describing contents.
 - 1. Furnish not less than one box for each 50 boxes or fraction thereof, of each class, wearing surface, color, pattern and size of resilient floor tile installed.

1.9 WARRANTY

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- A. The manufacture shall issue a full standard 10-year materials and labor warranty.
- B. The warranty shall not deprive the Architect of other rights the Architect may have under other provisions of the Contract Documents, including but not limited to all rights and privileges provide by the Uniform Commercial Code and the Magnuson Moss Act and will be in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

PART 2 - PRODUCTS

2.1 MANUFACTURERS AND PRODUCTS

- A. Products: Tile is indicated on the drawings. Subject to compliance with requirements, provide equal tile by one of the following manufacturers may be submitted for review:
 - 1. Interface; Textured Stone, Level Set Collection; Style A003; Color per plans (Basis of Design).
 - 2. Tarkett
 - 3. Armstrong
 - 4. Mannington Commercial
- B. Provide for special colors for borders and accents if requested by the Architect.
- C. Performance Criteria
 - 1. All tile shall fully comply with all of the manufacturer's published performance criteria.
 - 2. Size: 50cm x 50cm.
- D. Slip Resistance
 - 1. All installed floor coverings/finishes shall meet the dry and wet slip resistant requirements of the applicable floor covering/finish standards including, but not limited to, ANSI A137.1 Dynamic Coefficient of Friction (DCOF) AcuTest Criteria) and the IBC-2015, or Australia (SA) HB198:2014 - "Guide to the Specification and Testing of Pedestrian Surfaces" whichever is more stringent and specific to project conditions. Dynamic Coefficient of Friction (DCOF) values shall be the recommended minimum dry and wet values for the intended installation location and use such as restrooms, halls, kitchens, labs, classrooms, entries, equipment and maintenance rooms, stairs, ramps, etc.
 - 2. All floor coverings/finishes shall be classified as Sustainable Slip Resistant.
 - 3. All precautions and procedures, including but not limited to, on site testing shall be taken prior to, during, and after installation to ensure that floor covering/finish has the required dry and wet DCOF at substantial completion.
 - 4. Unless directed otherwise by the Owner, after substantial completion, the Owner shall be the sole responsible entity for maintaining the floor covering/finish slip resistance properties by using maintenance products and procedures recommended by the floor finish/covering manufacturer.

2.3 INSTALLATION ACCESSORIES

- A. Concrete Slab Primer: Nonstaining type as recommended by flooring manufacturer.
- B. Underlayment and Patching Materials: As recommended by the floor covering manufacturer to meet specific installation requirements including, but not limited to, moisture emission, floor levelness, floor flatness, surface texture, warranty, etc.

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1. Patching material shall be cementitious. Gypsum base patching materials are not acceptable.
- C. Adhesives (Cements):
1. Use adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24). Adhesive shall be suitable for the type substrate the floor covering is to be bonded to and be compatible with applied moisture barriers and underlayments.
 - a. Tile Adhesives: Not more than 50 g/L.
 2. Waterproof: As recommended and provided by the flooring manufacturer for specific use. Alkali resistant epoxy adhesive, formulated biocide-type as recommended by the specific tile manufacturer. To be used in all areas subject to moisture and wetting such as in the vicinity of exterior doors, exits from shower areas, under drinking fountains, or any area subject to wetting splash or spillage. Adhesive shall ensure proper adhesion between floor covering and adhesive and between substrate and adhesive when floor covering or adhesive are subjected to moisture from above or below.
 3. Water-resistant: As recommended and provided by the flooring manufacturer for specific use. Alkali and water resistant, formulated biocide-type of the type recommended by tile manufacturers to suit floor tile products and substrate conditions indicated. Adhesive shall not be affected by or break down when exposed to moisture. Adhesive shall ensure proper adhesion between floor covering and adhesive and between substrate and adhesive when floor covering or adhesive are subjected to moisture from above or below.
- D. Metal Edge Strips: Extruded aluminum with mill finish of width shown, of height required to protect exposed edge of tiles, and in maximum available lengths to minimize running joints.
- E. Floor Polish: Type recommended by the tile manufacturer.
- F. Vapor-Moisture Retarder: When the specified moisture tests or other moisture tests required by the floor covering manufacturer do not comply with the floor covering manufacturer's requirements or recommendations or when there are no requirements or recommendations, then with those specified in this Section, provide a vapor retarder system recommended by the floor covering finish manufacturer. Vapor retarder system shall be compatible with the floor covering, the adhesive, and shall reduce water vapor transmission to an acceptable level.

PART 3 - EXECUTION

3.1 INSPECTION AND TESTING

- A. Where test and inspection results (including, but not limited to, calcium chloride, relative humidity, sounding, and tests for level and flatness) indicate that moisture and surface conditions do not meet the floor finish manufacturer's requirements, the Contractor shall provide all labor, materials, and procedures to ensure that the substrate meets the floor finish manufacturer's requirements prior to installing the floor finish. Neither the Contract Sum or Contract Time will not be modified to meet this provision.
- B. Record results of all tests and send copies to the Owner and Architect. Show on a floor grid where each test was conducted and the test results. As a minimum, each report shall include the following information for each test that was conducted:
1. Project name
 2. Date and Time of the Test
 3. Test Location (wall, room, etc) of test.

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4. Name of person conducting test
 5. Test results
 6. Conclusions and recommendations
- C. Examine subfloors and conditions, with installer and manufacturer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting performance of floor covering. Notify the Architect of conditions detrimental to the proper and timely completion of the work. Verify that there is no curing membrane on the floor. If there is a curing membrane or sealer on surfaces to receive floor covering, remove the membrane according to the manufacturer's instructions. Acid-removal is not an acceptable method to remove curing membrane or sealer.
1. Substrate are free of cracks, ridges, depressions, scale, and foreign deposits of any kind.
 2. Prior to installing floor system, fill moving joints and non-moving kerfs as recommended by the floor system manufacturer.
 3. Ensure that concrete does not contain aggregates that are soft or break down in liquids.
- D. Ensure variations in concrete slab levels do not exceed 1/8" in 10'. High spots shall be ground down and minor low spots shall be filled with epoxy or epoxy/sand mixture or a cementitious underlayment as recommended by the floor system manufacturer.
- E. The cementitious substrate shall be cured for a minimum of at least 28 days or as recommended by the floor system manufacturer, whichever is more stringent.
- F. Ensure concrete substrate on or below grade are adequately waterproofed beneath and at the perimeter of the slab, and at the earth side of below-grade walls. Care should be taken not to rupture the vapor barrier during the installation.
- G. The concrete floor temperature will have to be maintained at a minimum of 75°F during the installation, and the General Contractor shall make sure that the moisture content does not exceed 3% (according R.M.A. testing method).
- H. Concrete: Verify that concrete slabs comply with ASTM F 710 and with Division 09 Section "Preparing Concrete Floors For Finishes" and make required corrections to bring concrete into compliance.
- I. Do not proceed with the work until unsatisfactory conditions have been corrected by the Contractor in a manner acceptable to the manufacturer and Architect.
- J. Adhesion testing is described under following paragraph 3.2.
- 3.2 PREPARATION
- A. Substrate: Perform preparation and cleaning procedures according to finish floor manufacturer's instructions for particular substrate conditions involved and as specified. Provide clean, dry and neutral substrate for flooring application.
 - B. Remove substrate coatings, including curing compounds, and other substances that are incompatible with the floor covering and that contain soap, wax, oil, or silicone. Do not use liquid solvents or adhesive removers.
 - C. Patch and repair cracks, voids, and other imperfections of concrete with high strength Portland cement based patching material. Do not use gypsum based patching materials. After completion of sanding, patching and leveling, vacuum or sweep entire surface of concrete to remove loose dust and dirt before starting the installation of the material.

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- D Concrete Surfaces: Shot-blast, power scarify as required to obtain surface profile for optimum bond of flooring to concrete. Remove sufficient material to provide a sound surface, free of laitance, glaze efflorescence, and any bond-inhibiting curing compounds or form release agents. Remove grease oil and other penetrating contaminants. Repair damaged and deteriorated concrete to acceptable condition. Leave surface free of dust, dirt, laitance and efflorescence. Acid etching shall not be used.
- E. Level substrate within to floor covering manufacturers requirements noncumulative, in all directions. Sand or grind protrusions, bumps, and ridges. Patch and repair cracks and rough areas. Fill depressions.
 - 1. If concrete is out of level then it should be properly leveled by an experienced underlayment contractor using cement based material that will provide a minimum of 3,000 psi compressive strength and sufficient bond to existing clean concrete surface.
 - 2. Use leveling and patching compounds to fill cracks, holes, and depressions in substrate as recommended by the floor covering manufacturer.
- F. Broom or vacuum clean subfloors to be covered. Following cleaning, examine subfloors for moisture, alkaline salts, carbonation, or dust. Do not use oil based sweeping compounds.
- G. Primer: If required, apply concrete-slab primer, according to manufacturer's directions, where recommended by the floor covering manufacturer.
- H. Verify that concrete sub-floor, on or below grade, is adequately waterproofed beneath the slab and the perimeter with a suitable vapor barrier. Notify the Architect if inadequate waterproofing or vapor retarder is used.
- I. Verify that the concrete was wet cured and that no curing compounds or sealers were used. Notify the Architect if sealers or curing compounds were used..
- J. The building shall be dry and closed in. Flooring installation shall not begin until the installer is familiar with existing sub-floor conditions, and after completion of all other work in this area. During cold weather the room temperature shall be maintained at a minimum of 75°F.
- K. Adhesion/Bond Tests: After the substrate has been properly and satisfactorily prepared, sounded, and tested for moisture, perform adhesion tests to determine compatibility of adhesive, floor finish, and subfloor. Conduct all testing after all traces of curing compounds and sealers have been removed.
 - 1. When performing adhesion tests, perform testing with the adhesives and floor covering to be used on this project.
 - 2. Conduct adhesion test as recommended by the flooring manufacturer. If none recommended, perform the following:
 - a. Spread adhesive on substrate at recommended rate in two separate areas.
 - b. Allow one area to remain bare and to cure for recommended curing time or a minimum of 24 hours. Apply finish floor over other area of adhesive and allow to cure for recommended curing time or a minimum of 24 hours.
 - c. If adhesive can be scraped up with a putty knife, adhesion is not acceptable. Contact finish floor manufacturer for instructions. If adhesive cannot be scraped up, conditions are acceptable
 - d. Record test values for each type and combination of flooring and adhesive to be used.
 - e. Send copies of test reports to the Owner and the Architect.

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3.3 INSTALLATION

A. General:

1. Comply with tile manufacturer's installation directions and other requirements indicated that are applicable to each type of tile installation included in Project.
2. To prevent a distinct color line, do not lay tile one by one from a box. Instead, before laying tile, take tile from 5 boxes and mix the tile from these boxes randomly. Lay the tile from the randomly mixed tile. Repeat this procedure until all tile has been laid.
3. Offset tile edges as recommended by the manufacturer
4. Immediately remove all adhesive from the surface of the flooring using a clean, white cloth dampened with a neutral detergent and water. Dried epoxy adhesive cannot be removed from tile.
5. Roll the tile in both directions within 30 minutes after installation using a 100-lb. roller.
6. Maintain manufacturer's recommended open time for adhesives.

B. Adhesives

1. Waterproof (Epoxy): Use to install tile in areas subject to moisture or wetting such as in the vicinity of exterior doors, exits from shower areas, under drinking fountains, or any area subject to wetting.
2. Moisture Resistant: Use only to install tile in areas not subject moisture or wetting.

C Lay out tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths at perimeter that equal less than one-half of a tile. Install tiles square with room axis, unless otherwise indicated.

D Match tiles for color and pattern by selecting tiles from cartons in same sequence as manufactured and packaged, if so numbered. Cut tiles neatly around all fixtures. Discard broken, cracked, chipped, or deformed tiles.

1. Lay tiles in pattern with respect to location of colors, patterns, and sizes as indicated on Drawings. If not indicated, then lay tiles with grain running in one direction.

E Scribe, cut, and fit tiles to butt tightly to vertical surfaces, permanent fixtures, built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings.

F Extend tiles into toe spaces, door reveals, closets, and similar openings.

G Maintain reference markers, holes, or openings that are in place or plainly marked for future cutting by repeating on finish flooring as marked on subfloor. Use chalk or other nonpermanent marking device.

H Install tile on covers for telephone and electrical ducts, and similar items occurring within finished floor areas. Maintain overall continuity of color and pattern with flooring installed on these covers. Tightly adhere edges to perimeter of floor around covers and to covers.

I Adhere tiles to flooring substrates without producing open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, or other surface imperfections in completed tile installation.

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- J Use full spread of adhesive applied to substrate in compliance with tile manufacturer's directions including those for trowel notching, adhesive mixing, and the pot life and working time of the adhesives.

- K Hand roll tiles where required by tile manufacturer. Roll the tile in both directions within 30 minutes after installation, using a 100-lb. roller.

- L. Apply sealant around door frames.

3.4 VISUAL REQUIREMENTS

- A. Installed tile shall comply with the following visual requirements. Tile not complying with following criteria shall be removed, and replaced with acceptable tile at no additional cost:
 - 1. No lippage
 - 2. Uniform color
 - 3. No dead spots
 - 4. No dark streaks
 - 5. No voids in finish
 - 6. No uneven surfaces
 - 7. No visible adhesives
 - 8. Uniform gloss and color
 - 9. Visible adhesive in joints
 - 10. No uneven or crooked seams
 - 11. No variations in tile dimensions
 - 12. Seam welds open, uneven, not flush
 - 13. Open uneven or curled terminations
 - 14. No surfaces that are not level and flat
 - 15. No unexpected color or patten variations
 - 16. No bubbles, blisters, bumps, or delamination
 - 17. Improper transition to adjoining floor finishes
 - 18. No broken, chipped, cracked or out of square tile
 - 19. Base is even, flush, straight, and tightly fitted to wall.
 - 20. Seams are tight, even, and flush with adjoining seams
 - 21. Unacceptable color contrast between seam weld and floor finish
 - 22. No squeaks (provided ambient conditions are properly maintained
 - 23. Rebound that does not meet the published value of the installed floor
 - 24. Floor receptacles properly recessed, with operable cover and not posing a trip hazard
 - 25. No buckling or bowing (provided ambient conditions are maintained at 55-75 deg F. and 35-50 % relative humidity or as required by the Maple Flooring Manufacturer's Association).
 - 26. No peeling or delamination of finish surface. (provided ambient conditions are properly maintained.

3.5 CLEANING AND PROTECTION

- A. Perform the following operations immediately after completing tile installation:
 - 1. Remove visible adhesive and other surface blemishes using cleaner recommended by tile manufacturers.

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2. Sweep or vacuum floor thoroughly.
 3. Do not wash floor until after time period recommended by resilient floor tile manufacturer.
 4. Damp-mop tile to remove black marks and soil.
- B. Protect flooring against mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods indicated or recommended by tile manufacturer.
1. If polish is recommended by the flooring manufacturer, apply recommended number of coats to tile surfaces that are free from soil, visible adhesive, and surface blemishes.
 - a. Use commercially available cross-linked acrylic product acceptable to tile manufacturer.
 - b. Coordinate selection of floor polish with Owner's maintenance service.
 2. Cover tiles with undyed, untreated building paper until inspection for Substantial Completion.
 3. Do not move heavy and sharp objects directly over tiles. Place plywood or hardboard panels over tiles and under objects while they are being moved. Slide or roll objects over panels without moving panels.
 4. Do not allow traffic for 24 hours after installation. Newly installed flooring should not be exposed to rolling load traffic for at least 72 hours after installation to allow setting and drying of the adhesive
- C. Clean tile not more than 4 days prior to dates scheduled for inspections intended to establish date of Substantial Completion in each area of Project. Clean tiles using method recommended by manufacturer.
1. Strip protective floor polish that was applied after completing installation prior to cleaning.
 2. Reapply floor polish after cleaning.

END OF SECTION

SECTION 096813 - TILE CARPETING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes modular, Multi-level pattern loop. carpet tile.
- B. Related Requirements:
 - 1. Division 09 Section "Resilient Base and Accessories " for resilient wall base and accessories installed with carpet tile.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include manufacturer's written data on physical characteristics, durability, and fade resistance.
 - 2. Include installation recommendations for each type of substrate.
- B. Shop Drawings: Show the following:
 - 1. Type of subfloor.
 - 2. Type of installation.
- C. Samples: For each of the following products and for each color and texture required. Label each Sample with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in schedules.
 - 1. Carpet Tile: Full-size Sample.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For carpet tiles to include in maintenance manuals. Include the following:
 - 1. Methods for maintaining carpet tile, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.
 - 2. Precautions for cleaning materials and methods that could be detrimental to carpet tile.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Carpet Tile: Full-size units equal to 5 percent of amount installed for each type indicated, but not less than 10 sq. yd..

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1.6 DELIVERY, STORAGE, AND HANDLING

- A. Comply with CRI 104.

1.7 FIELD CONDITIONS

- A. Comply with CRI 104 for temperature, humidity, and ventilation limitations.
- B. Environmental Limitations: Do not deliver or install carpet tiles until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at occupancy levels during the remainder of the construction period.
- C. Where demountable partitions or other items are indicated for installation on top of carpet tiles, install carpet tiles before installing these items.

1.8 WARRANTY

- A. Special Warranty for Carpet Tiles: Manufacturer agrees to repair or replace components of carpet tile installation that fail in materials or workmanship within specified warranty period.
 - 1. Warranty does not include deterioration or failure of carpet tile due to unusual traffic, failure of substrate, vandalism, or abuse.
 - 2. Failures include, but are not limited to, more than 10 percent edge raveling, snags, runs, loss of tuft bind strength, loss of face fiber, and delamination.
- 3. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 CARPET TILE

- A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Mannington Commercial (Style- refer to drawings).
 - 2. Shaw Contract Group - (Style - refer to drawings).
 - 3. Milliken (Style - refer to drawings).
 - 4. Interface (Style - refer to drawings).
- B. Color: As selected by Architect from manufacturer's full range
- C. Fiber Content: 100 percent nylon 6, 6.
- D. Pile Characteristic: Pattern-loop pile.
- E. Stitches: 9 stitches per inch.
- F. Gage: 1/12.
- G. Surface Pile Weight: 19 oz./sq. yd..
- H. Primary Backing/Backcoating: Manufacturer's standard composite materials .

- I. Secondary Backing: Manufacturer's standard material.
 - J. Size: 24 by 24 inches.
 - K. Performance Characteristics: As follows:
 - 1. Appearance Retention Rating: Moderate traffic, 2.5 and Heavy traffic, 3.0 minimum according to ASTM D 7330.
 - 2. Critical Radiant Flux Classification: Not less than 0.45 W/sq. cm.
- 2.2 INSTALLATION ACCESSORIES
- A. Adhesives: Water-resistant, mildew-resistant, nonstaining, pressure-sensitive type to suit products and subfloor conditions indicated, that complies with flammability requirements for installed carpet tile and is recommended by carpet tile manufacturer for releasable installation.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting carpet tile performance. Examine carpet tile for type, color, pattern, and potential defects.
- B. Concrete Subfloors: Verify that concrete slabs comply with ASTM F 710 and the following:
 - 1. Slab substrates are dry and free of curing compounds, sealers, hardeners, and other materials that may interfere with adhesive bond. Determine adhesion and dryness characteristics by performing bond and moisture tests recommended by carpet tile manufacturer.
 - 2. Subfloor finishes comply with requirements specified in Division 03 Section "Cast-in-Place Concrete" for slabs receiving carpet tile.
 - 3. Subfloors are free of cracks, ridges, depressions, scale, and foreign deposits.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. General: Comply with CRI 104, Section 6.2, "Site Conditions; Floor Preparation," and with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile installation.
- B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8 inch wide or wider and protrusions more than 1/32 inch unless more stringent requirements are required by manufacturer's written instructions.
- C. Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by carpet

tile manufacturer.

- D. Clean metal substrates of grease, oil, soil and rust, and prime if directed by adhesive manufacturer. Rough sand painted metal surfaces and remove loose paint. Sand aluminum surfaces, to remove metal oxides, immediately before applying adhesive.
- E. Broom and vacuum clean substrates to be covered immediately before installing carpet tile.

3.3 INSTALLATION

- A. General: Comply with CRI 104, Section 14, "Carpet Modules," and with carpet tile manufacturer's written installation instructions.
- B. Installation Method: Glue down; install every tile with full-spread, releasable, pressure-sensitive adhesive.
- C. Maintain dye lot integrity. Do not mix dye lots in same area.
- D. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet tile manufacturer.
- E. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on finish flooring as marked on subfloor. Use nonpermanent, nonstaining marking device.
- G. Install pattern parallel to walls and borders.

3.4 CLEANING AND PROTECTION

- A. Perform the following operations immediately after installing carpet tile:
 - 1. Remove excess adhesive, seam sealer, and other surface blemishes using cleaner recommended by carpet tile manufacturer.
 - 2. Remove yarns that protrude from carpet tile surface.
 - 3. Vacuum carpet tile using commercial machine with face-beater element.
- B. Protect installed carpet tile to comply with CRI 104, Section 16, "Protecting Indoor Installations."
- C. Protect carpet tile against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet tile manufacturer.

END OF SECTION

SECTION 09 91 13 EXTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Surface preparation.
- B. Field application of paints and other coatings.
- C. Scope: Finish exterior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.
- D. Do Not Paint or Finish the Following Items:
 - 1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
 - 2. Items indicated to receive other finishes.
 - 3. Items indicated to remain unfinished.
 - 4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
 - 5. Non-metallic roofing and flashing.
 - 6. Stainless steel, anodized aluminum, bronze, terne coated stainless steel, zinc, and lead.
 - 7. Glass.
 - 8. Concealed pipes, ducts, and conduits.
- E. See Schedule for surfaces to be finished at the end of this Section.

1.02 RELATED REQUIREMENTS

- A. Section 09 91 23 - Interior Painting.

1.03 REFERENCE STANDARDS

- A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.
- B. SSPC-SP 1 - Solvent Cleaning; 2015.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide complete list of products to be used, with the following information for each:
 - 1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
 - 2. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
- C. Samples: Submit two painted samples, illustrating selected colors for each color and system selected. Submit on tempered hardboard, 12 x 12 inch in size.
- D. Coating Maintenance Manual: Upon completion of the project, the Contractor, or paint manufacturer/supplier shall furnish a coating maintenance manual, such as Sherwin-Williams' "Custodian Project Color and Product Information" report or equivalent. Manual shall include an Area Summary with a finish schedule, Area Detail designating where each product/color/finish was used, product data pages, MSDS sheets, care and cleaning instructions, touch-up procedures, and color samples of each color and finish used.
- E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 60 00 - Product Requirements, for additional provisions.
 - 2. Extra Paint and Finish Materials: 1 gallon of each color; from the same product run, store where directed.
 - 3. Label each container with color in addition to the manufacturer's label.

1.05 DELIVERY, STORAGE, AND HANDLING

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- 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 as required by manufacturer's instructions.

1.06 FIELD CONDITIONS

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
- B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
- C. Do not apply exterior paint and finishes during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.
- D. Minimum Application Temperatures for Latex Paints: 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Provide paints and finishes from the same manufacturer unless noted otherwise on the Schedule.
 - 1. In the event that a single manufacturer cannot provide specified products, minor exceptions will be permitted provided approval by Architect is obtained using the specified procedures for substitutions.
- B. Paints:
 - 1. Base Manufacturer: Sherwin-Williams Company.
 - 2. PPG Architectural Finishes, Inc: www.ppgaf.com.
 - 3. Rust-Oleum Industrial Brands: www.rustoleum.com/industrial
- C. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 PAINTS AND FINISHES - GENERAL

- A. Paints and Finishes: Ready mixed, unless required to be a field-catalyzed paint.
 - 1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
 - 2. Supply each paint material in quantity required to complete entire project's work from a single production run.
 - 3. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.
- B. Volatile Organic Compound (VOC) Content:
 - 1. Provide paints and finishes that comply with the most stringent requirements specified in the following:
 - a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
 - 2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.
- C. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.

2.03 ACCESSORY MATERIALS

- A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially effect proper application.
- C. Test shop-applied primer for compatibility with subsequent cover materials.

3.02 PREPARATION

- A. Clean surfaces thoroughly and correct defects prior to application.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces for finishing.
- D. Seal surfaces that might cause bleed through or staining of topcoat.
- E. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
- F. Pre-finished Metal:
 - 1. Pressure wash all surfaces to be coated using a solution of hot water and detergent at a minimum fo 3500 psi and minimum flow rate of 3.0 gallons per minute with a zero-degree tip to remove all oil, grease, chalk, dust, dirt and other contaminants. Rinse all surfaces with clean water. Clean all failed and rusting areas per SSPC-SP11 Power Tool Cleaning to bare metal, taking care not to burnish the surface. Feather all edges smooth.
- G. Ferrous Metal:
 - 1. Solvent clean according to SSPC-SP1.
 - 2. Shop-Primed Surfaces: Sand and scrape to remove loose primer, paint and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces.
 - 3. Remove rust, loose mill scale, and other foreign substances using using methods recommended in writing by paint manufacturer and SSPC-SP3 (power tool cleaning). Protect from corrosion until coated.
- H. Exterior Wood Surfaces to Receive Opaque Finish: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior calking compound after prime coat has been applied. Back prime concealed surfaces before installation.
- I. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

3.03 APPLICATION

- A. Exterior Wood to Receive Opaque Finish: If final painting must be delayed more than 2 weeks after installation of woodwork, apply primer within 2 weeks and final coating within 4 weeks.
- B. Apply products in accordance with manufacturer's written instructions.
- C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- D. Apply each coat to uniform appearance.
- E. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply additional coats until complete hide is achieved.
- F. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- G. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 CLEANING

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

3.05 PROTECTION

- A. Protect finishes until completion of project.
- B. Touch-up damaged finishes after Substantial Completion.

3.06 SCHEDULE - EXTERIOR

- A. Steel - Unprimed
 - 1. One coat primer; Sherwin Williams Pro-Cryl Universal Primer, 3.0 MDF
 - 2. Two coats high performance acrylic; Sherwin Williams Multi-Surface Acrylic, 2.5 MDF per coat.
- B. Steel - Shop primed and previously painted surfaces (including mechanical equipment and all steel doors/frames, handrails/guardrails, etc.)
 - 1. Touch-up with one coat primer, Sherwin Williams Pro-Cryl Universal Primer, 0.7 MDF
 - 2. Two coats high performance acrylic; Sherwin Williams Multi-Surface Acrylic, 2.5 MDF per coat.
- C. Steel - Shop primed; high performance coating (acrylic type)
 - 1. One coat primer; Sherwin Williams Pro-Cryl Universal Primer; 3.0 MDF
 - 2. Two coats high performance acrylic; Sherwin Williams Sher-Cryl HPA, Semi-gloss; 4.0 MDF per coat.
 - 3. One coat acrylic clear coat; Sherwin Williams Sher-Clear 1K Acrylic Clear Coat, Semi-gloss; 2.0 MDF.
- D. Steel - Galvanized / Pre-finished Metal
 - 1. One coat primer; Sherwin Williams Pro-Cryl Universal Primer, 4.0 - 6.0 MDF
 - 2. Two coats high performance alkyd enamel; Sherwin Williams Urethane Alkyd Enamel, 3.0 to 5.0 MDF per coat.
- E. Portland Cement Stucco
 - 1. One coat primer; BASF MasterProtect P200, applied in conformance with manufacturer's printed instructions
 - 2. Two coats elastomeric acrylic coating; BASF MasterProtect EL 750 Medium; 8.5 MDF per coat.

END OF SECTION

SECTION 09 91 23 INTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Surface preparation.
- B. Field application of paints.
- C. Scope: Finish interior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.
 - 1. Both sides and edges of plywood backboards for electrical and telecom equipment before installing equipment.
 - 2. Mechanical and Electrical:
 - a. In finished areas, paint conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, mechanical equipment, and electrical equipment, unless otherwise indicated.
 - b. In finished areas, paint shop-primed items.
- D. Do Not Paint or Finish the Following Items:
 - 1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
 - 2. Items indicated to receive other finishes.
 - 3. Items indicated to remain unfinished.
 - 4. Fire rating labels, equipment serial number and capacity labels, bar code labels, and operating parts of equipment.
 - 5. Stainless steel, anodized aluminum, bronze, terne coated stainless steel, and lead items.
 - 6. Glass.
 - 7. Concealed pipes, ducts, and conduits.
 - 8. Exposed data cabling, control wiring, and security/fire alarm cables.
- E. See Schedule at the end of this Section for surfaces to be finished.

1.02 RELATED REQUIREMENTS

- A. Section 09 91 13 - Exterior Painting.

1.03 REFERENCE STANDARDS

- A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.
- B. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Base Materials; 2007.
- C. SSPC-SP 1 - Solvent Cleaning; 2015.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide complete list of products to be used, with the following information for each:
 - 1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
 - 2. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
- C. Coating Maintenance Manual: Upon completion of the project, the Contractor, or paint manufacturer/supplier shall furnish a coating maintenance manual, such as Sherwin-Williams' "Custodian Project Color and Product Information" report or equivalent. Manual shall include an Area Summary with a finish schedule, Area Detail designating where each product/color/finish was used, product data pages, MSDS sheets, care and cleaning instructions, touch-up procedures, and color samples of each color and finish used. Maintenance Materials: Furnish

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the following for Owner's use in maintenance of project.

1. See Section 01 60 00 - Product Requirements, for additional provisions.
2. Extra Paint and Finish Materials: 1 gallon of each color; from the same product run, store where directed.
3. Label each container with color in addition to the manufacturer's label.

1.05 DELIVERY, STORAGE, AND HANDLING

- 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 as required by manufacturer's instructions.

1.06 FIELD CONDITIONS

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
- B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
- C. Do not apply materials when relative humidity exceeds 85 percent; at temperatures less than 5 degrees F above the dew point; or to damp or wet surfaces.
- D. Minimum Application Temperatures for Paints: 50 degrees F for interiors unless required otherwise by manufacturer's instructions.
- E. Minimum Application Temperature for Varnish Finishes: 65 degrees F for interior, unless required otherwise by manufacturer's instructions.
- F. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Provide paints and finishes from the same manufacturer to the greatest extent possible.
 1. In the event that a single manufacturer cannot provide specified products, minor exceptions will be permitted provided approval by Architect is obtained using the specified procedures for substitutions.
- B. Paints:
 1. Base Manufacturer: Sherwin-Williams Company: www.sherwin-williams.com.
 2. PPG Paints: www.ppgpaints.com.
- C. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 PAINTS AND FINISHES - GENERAL

- A. Paints and Finishes: Ready mixed, unless intended to be a field-catalyzed paint.
 1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
 2. Supply each paint material in quantity required to complete entire project's work from a single production run.
- B. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions. Volatile Organic Compound (VOC) Content:
 1. Provide paints and finishes that comply with the most stringent requirements specified in the following:
 - a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
 2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59,

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Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.

- C. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.
- D. Colors: As indicated on drawings.
 - 1. In finished areas, finish pipes, ducts, conduit, and equipment the same color as the wall/ceiling they are mounted on/under.
 - 2. In utility areas, finish equipment, piping, conduit, and exposed duct work in colors according to the color coding scheme indicated.

2.03 JOINT AND TEXTURE MATERIALS

- A. Joint Materials: ASTM C475 and as recommended by gypsum board manufacturer for project conditions.
 - 1. Tape: 2 inch wide, creased paper tape for joints and corners, except as otherwise indicated.
 - 2. Ready-mixed vinyl-based joint compound.

2.04 ACCESSORY MATERIALS

- A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.
- B. Patching Material: Latex filler.
- C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not begin application of paints and finishes until substrates have been properly prepared.
- B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially effect proper application.
- D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- E. Test shop-applied primer for compatibility with subsequent cover materials.
- F. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
 - 1. Gypsum Wallboard: 12 percent.

3.02 PREPARATION

- A. Clean surfaces thoroughly and correct defects prior to application.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.
- D. Seal surfaces that might cause bleed through or staining of topcoat.
- E. Gypsum Board: Fill minor defects with filler compound. Spot prime defects after repair.
- F. Ferrous Metal:
 - 1. Solvent clean according to SSPC-SP1.
 - 2. Remove rust, loose mill scale, and other foreign substances using methods recommended in writing by paint manufacturer and SSPC-SP3. Protect from corrosion until coated.
- G. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

3.03 GYPSUM BOARD JOINT TREATMENT

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- A. Paper Faced Gypsum Board: Use paper joint tape, bedded with ready-mixed vinyl-based joint compound and finished with ready-mixed vinyl-based joint compound.
- B. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
 - 1. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
 - 2. Level 3: Walls to receive textured wall finish.
 - 3. Level 2: In utility areas, behind cabinetry, and on backing board to receive tile finish.
 - 4. Level 1: Fire rated wall areas above finished ceilings, whether or not accessible in the completed construction.
- C. 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.
 - 2. Taping, filling, and sanding is not required at surfaces behind adhesive applied ceramic tile and fixed cabinetry.
- D. Where Level 5 finish is indicated, spray apply high build drywall surfacer over entire surface after joints have been properly treated; achieve a flat and tool mark-free finish.

3.04 TEXTURE FINISH

- A. Apply finish texture coating by means of a heavy nap roller in accordance with manufacturer's instructions and to match approved sample.

3.05 APPLICATION

- A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
- B. Apply products in accordance with manufacturer's written instructions.
- 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. Allow applied coats to dry before next coat is applied.
- E. Apply each coat to uniform appearance in thicknesses specified by manufacturer.
- F. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply as many coats as necessary for complete hide.
- G. Sand wood and metal surfaces lightly between coats to achieve required finish.
- H. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- I. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.06 CLEANING

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

3.07 PROTECTION

- A. Protect finishes until completion of project.
- B. Touch-up damaged finishes after Substantial Completion.

3.08 SCHEDULE - INTERIOR

- A. Steel - Shop primed (including fire extinguisher cabinets and all steel doors/ frames, railings, etc.)
 - 1. Touch-up with one coat primer; Sherwin Williams Pro-Cryl Universal Primer, 2.0 MDF
 - 2. Two coats high performance acrylic; Sherwin Williams Multi-Surface Acrylic, 2.5 MDF.
- B. Gypsum Board
 - 1. One coat PVA primer/sealer; Sherwin Williams ProGreen 200 Latex Wall primer; 1.1 MDF
 - 2. Two coats acrylic latex paint; Sherwin Williams Pro Mar Zero VOC Acrylic Eg-Shel; 1.6

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MDF

C. Sealed Concrete

1. Prepare floor in accordance with sealer manufacturer's printed instructions.
2. Two coats Kure-N-Seal manufactured by Sonneborn Building Products; apply two continuous, uniform coats using a low-pressure sprayer.

END OF SECTION

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SECTION 09 93 00 - STAINING AND TRANSPARENT FINISHING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes surface preparation and application of wood stains and transparent finishes.
 - 1. Exterior Substrates:
 - a. Tongue and groove ceilings/soffits.

1.2 DEFINITIONS

- A. MPI Gloss Level 1: Not more than 5 units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.
- B. MPI Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.
- C. MPI Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.
- D. MPI Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.
- E. MPI Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
 - 1. Include printout of current "MPI Approved Products List" for each product category
Samples: For each type of finish system and in each color and gloss of finish required.

1.4 QUALITY ASSURANCE

- A. Mockups: Apply mockups of each finish system indicated and each color selected to verify preliminary selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
 - 1. Architect will select one surface to represent surfaces and conditions for application of each type of finish system and substrate.
 - a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft. (9 sq. m).
 - b. Other Items: Architect will designate items or areas required.
 - 2. Final approval of stain color selections will be based on mockups.
 - a. If preliminary stain color selections are not approved, apply additional mockups of additional stain colors selected by Architect at no added cost to Owner.

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PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
- B. 1. Behr Process Corporation.
- C. 2. Benjamin Moore & Co.
- D. 3. The Sherwin – Williams Company

2.2 MATERIALS, GENERAL

- A. MPI Standards: Products shall comply with MPI standards indicated and shall be listed in its "MPI Approved Products List."
- B. Material Compatibility:
 - 1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 - 2. For each coat in a paint system, products shall be recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
 - 3. Primers, Sealers, and Undercoaters: 200 g/L.
- C. Stain Colors: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Maximum Moisture Content of Exterior Wood Substrates: 15 percent, when measured with an electronic moisture meter.
- C. Maximum Moisture Content of Interior Wood Substrates: 13 percent, when measured with an electronic moisture meter.
- D. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- E. Proceed with finish application only after unsatisfactory conditions have been corrected.
 - 1. Beginning finish application constitutes Contractor's acceptance of substrates and conditions.

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3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates indicated.
- B. Remove hardware, covers, plates, and similar items already in place which are removable. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and finishing.
 - 1. After completing finishing operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
- C. Clean and prepare surfaces to be finished according to manufacturer's written instructions for each substrate condition and as specified.
 - 1. Remove dust, dirt, oil, and grease by washing with a detergent solution; rinse thoroughly with clean water and allow to dry. Remove grade stamps and pencil marks by sanding lightly. Remove loose wood fibers by brushing.
 - 2. Remove mildew by scrubbing with a commercial wash formulated for mildew removal and as recommended by stain manufacturer.

3.3 APPLICATION

- A. Apply finishes according to manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual."
- B. Apply finishes to produce surface films without cloudiness, holidays, lap marks, brush marks, runs, ropiness, or other surface imperfections.

3.4 CLEANING AND PROTECTION

- A. Protect work of other trades against damage from finish application. Correct damage by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- B. At completion of construction activities of other trades, touch up and restore damaged or defaced finished wood surfaces.

3.5 EXTERIOR WOOD-FINISH-SYSTEM SCHEDULE

- A. Wood Substrates: Exposed framing.
 - 1. Clear, Two-Component Polyurethane Varnish System MPI EXT 6.2Q:
 - a. Prime Coat: Varnish, aliphatic polyurethane, two component, matching topcoat.
 - b. Intermediate Coat: Varnish, aliphatic polyurethane, two component, matching topcoat.
 - c. Topcoat: Varnish, aliphatic polyurethane, two component (MPI Gloss Level 6 or 7), MPI #78.

END OF SECTION

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SECTION 10 14 00 – SIGNS AND APPLIED LETTERS

PART 1 - GENERAL

1.1 SUMMARY

- a. This Section includes the following types of signs:
 - 1) Room Identification Plaques.
 - 2) Cast Aluminum Building Plaque.
 - 3) Individual dimensional metal letters mounted to exterior building wall(s).
 - 4) Individual die-cut vinyl letters applied to interior walls.
 - 5) Individual dimensional plastic letters mounted to interior walls.
- b. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1) Section 01 50 00 - Temporary Facilities: Temporary project identification signs.
 - 2) Section 10 14 26 - Post and Panel Signs: Freestanding exterior signs.

1.2 SUBMITTALS

- a. General: Submit the following according to the Conditions of the Contract and Division 1 Specification Sections.
 - 1) Product data for each type of sign specified, including details of construction relative to materials, dimensions of individual components, profiles, and finishes.
 - 2) Shop drawings:
 - a. Drawings showing fabrication and erection of signs. Include plans, elevations, and large-scale sections of typical members and other components. Show anchors, grounds, layout, reinforcement, accessories, and installation details.
 - b. Schedule of panel signs with information about each individual sign furnished, including, but not limited to: door number, room name and number, sign type, sign text, and sign illustration graphics. Schedule shall be prepared by contractor or supplier; schedule will not be furnished by Architect. Provide message list for each sign required, including large-scale details of wording and lettering layout.
 - 3) For signs supported by or anchored to structures or canopies, provide setting drawings, templates, and directions for installation of anchor bolts and other anchors to be installed as a unit of Work in other Sections.
- b. Templates:
 - 1) Furnish full-size spacing templates for individually mounted dimensional letters and numbers.
 - 2) Furnish full-size rubbings for metal plaques.
- c. Samples for initial selection of color, pattern, and texture:

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- 1) Cast Acrylic Sheet and Plastic Laminate: Manufacturer's color charts consisting of actual sections of material including the full range of colors available for each material required.
- d. Samples for verification of color, pattern, and texture selected and compliance with requirements indicated:
 - 1) Cast Acrylic Sheet and Plastic Laminate: Provide a sample panel not less than 8-1/2 inches by 11 inches for each material, color, texture, and pattern required. On each panel include a representative sample of the graphic image process required, showing graphic style, and colors and finishes of letters, numbers, and other graphic devices.
 - 2) Dimensional Letters: Provide full-size representative samples of each dimensional letter type required, showing letter style, color, and material finish and method of attachment. Approved samples may be utilized in the final installation.

1.3 QUALITY ASSURANCE

- a. Sign Fabricator Qualifications: Firm experienced in producing signs similar to those indicated for this Project, with a record of successful in-service performance, and sufficient production capacity to produce sign units required without causing delay in the Work.
- b. Single-Source Responsibility: For each separate sign type required, obtain signs from one source of a single manufacturer.
- c. Design Concept: The Drawings indicate sizes, profiles, and dimensional requirements of signs and are based on the specific types and models indicated. Sign units by other manufacturers may be considered provided deviations in dimensions and profiles do not change the design concept as judged by the Architect. The burden of proof of equality is on the proposer.
- d. Regulatory Requirements: Comply with the Americans with Disabilities Act (ADA) and with code provisions as adopted by authorities having jurisdiction.

1.4 PROJECT CONDITIONS

- a. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication to ensure proper fitting. Show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delay.

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:

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1. Manufacturers of Panel Signs:
 - a. ABC Architectural Signing System.
 - b. Allenite www.allenitesigns.com
 - c. Andco Industries Corp. www.andco.com
 - d. APCO Graphics, Inc. www.apcoline.com
 - e. Architectural Graphic Products
 - f. ASI Sign Systems, Inc. www.asisign.com
 - g. Bayuk Graphic Systems, Inc.
 - h. Best Manufacturing Company www.bestsigns.com
 - i. Charleston Industries, Inc. www.cisigns.com
 - j. DGS Corp.
 - k. Diskey Sign Corp. www.diskeysign.com
 - l. Environmental Graphic Systems, Inc. www.egs-signs.com
 - m. Modulex. www.modulex.com
 - n. Mohawk Sign Systems www.mohawksign.com
 - o. Poblocki & Sons, Inc. www.poblocki.com/home.html
 - p. South Texas Graphic Specialties, Inc.
 - q. Spanjer Brothers, Inc.
 - r. The Supersine Company
 - s. Vomar Products, Inc. www.vomarproducts.com

2. Manufacturers of Dimensional Letters:
 - a. Andco Industries Corp. www.andco.com
 - b. A.R.K. Ramos Manufacturing Company, Inc. www.arkramos.com
 - c. ASI Sign Systems, Inc. www.asisign.com
 - d. Gemini, Inc. www.signletters.com
 - e. Matthews International Corp. www.matthewsgsd.com
 - f. Metal Arts. www.metalartslettersandplaques.com
 2. Metallic Arts, Inc. www.metallicarts.com
 3. The Southwell Company. www.southwellco.com/metalletters.html
 4. Spanjer Brothers, Inc.
 5. Vomar Products, Inc. www.vomarproducts.com

- B. Manufacturers of Cast Plaques:
 - a. Andco Industries Corp. www.andco.com
 - b. A.R.K. Ramos Manufacturing Company, Inc. www.arkramos.com
 - c. Gemini, Inc. www.signletters.com
 - d. Metal Arts. www.metalartslettersandplaques.com
 - e. OMC Industries, Inc. www.omc-bronze.com
 - f. The Southwell Company www.southwellco.com/castplaques.html
 - g. Vomar Products, Inc. www.vomarproducts.com

2.2 MATERIALS

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- A. Cast Acrylic Sheet: Provide cast (not extruded or continuous cast) methyl methacrylate monomer plastic sheet, in sizes and thicknesses indicated, with a minimum flexural strength of 16,000 psi when tested according to ASTM D 790, with a minimum allowable continuous service temperature of 176 deg F (80 deg C), and of the following general types:
 - 1. Transparent Sheet: Where sheet material is indicated as "clear," provide colorless sheet in matte finish, with light transmittance of 92 percent, when tested according to the requirements of ASTM D 1003.
 - 2. Opaque Sheet: Where sheet material is indicated as "opaque," provide colored opaque acrylic sheet in colors and finishes as selected from the manufacturer's standards.
- B. Aluminum Castings: Provide aluminum castings of alloy and temper recommended by the sign manufacturer for the casting process used and for the use and finish indicated.
- C. Fasteners: Use concealed fasteners fabricated from metals that are not corrosive to the sign material and mounting surface.
- D. Anchors and Inserts: Use nonferrous metal or hot-dipped galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete or masonry work.
- E. Colored Coatings for Acrylic Plastic Sheet: Use colored coatings, including inks and paints for copy and background colors that are recommended by acrylic manufacturers for optimum adherence to acrylic surface and are nonfading for the application intended.

2.3 ROOM IDENTIFICATION PLAQUES

- A. Comply with requirements indicated for materials, thicknesses, finishes, colors, designs, shapes, sizes, and details of construction.
 - 1. Produce smooth, even, level sign panel surfaces, constructed to remain flat under installed conditions within a tolerance of plus or minus 1/16 inch measured diagonally.
- B. Fabricate signs with edges mechanically and smoothly finished to conform with the following requirements:
 - 1. Edge Condition: Square, unless otherwise indicated.
 - 2. Corner Condition: Round corners, unless otherwise indicated.
- C. Permanently laminate face panels to backing sheets of material and thickness indicated using the manufacturer's standard process.
- D. Graphic Content and Style: Provide sign copy that complies with the requirements indicated for size, style, spacing, content, position, material, finishes, and colors of letters, numbers, and other graphic devices.

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- 1.1 Room Numbers, Symbols, and Restroom Copy: Matte finished acrylic, raised 1/32 inch in color contrasting the face laminate.
 - a. Characters and pictograms shall be chemically welded to the acrylic backing, through the face laminate, to ensure permanent adhesion.
 - b. Room numbers and restroom copy shall be accompanied by Grade II Braille by means of "VisiTouch Duradot System" using glass or metallic Duradots of 0.059" surface diameter with body of sphere pressure secured below face laminate.
 - 1) Braille shall be placed directly below the corresponding raised characters. If text is multi-lined, Braille is placed below entire text and separated 3/8" from any other tactile characters and 3/8" minimum from raised borders and decorative elements.
 - 2) The shape of Braille characters shall be rounded.
 - 3) A combination of upper and lower case letters shall be used. Uppercase letters shall be used only as the first letter of the first word of each sentence, proper nouns and names, individual letters of the alphabet, initials, and acronyms.
 - c. Routed boxes or glued-on dots are not acceptable.
- 1.2 Restroom pictograms shall appear on a minimum 6" square, unobstructed field.
- 1.3 Raised Copy: Machine-cut copy characters from matte-finished opaque acrylic sheet and chemically weld onto the acrylic sheet forming sign panel face. Produce precisely formed characters with square cut edges free from burrs and cut marks
 - a. Meet requirements of ADAAG Title III-4.30, with a 70% or better contrast.
 - b. Panel Material: Matte-finished clear acrylic with opaque color coating subsurface applied.
 - c. Font: Sans-serif type as indicated:
 - 1) The stroke width of the upper case "I" being 15% of the letter height or less.
 - 2) The character width of the uppercase "O" is between 55% and 110% of the height of the corresponding uppercase "I".
 - 3) The stroke width corresponding "O" width minimum 55% of "I" height 15% or less At least 55% maximum 110% of "I" height of "I" Height but no more than 110% of the "I" height.
 - d. Tactile Copy:
 - 1) Raised Copy Thickness: Not less than 1/32 inch.

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- 2) Copy Height: Limited to between 5/8" and 2". If separate visual characters are provided, raised characters can be 1/2" high and need not contrast with background.
- 3) The stroke width of the upper case "I" being 15% of the letter height or less.
 6. The distance between characters shall be a minimum of 1/8" and a maximum of 4X the character's stroke width. These distances are measured between the closest points of adjacent characters.
 7. Spacing between lines of copy shall be a minimum of 135% and a maximum of 170% of the corresponding uppercase "I" height (measured from baseline to baseline).
- C. Lower or secondary copy minimum 5/8" high incised Helvetica Medium, all caps, color paint-filled.
- D. Subsurface Copy: Apply copy to the back face of clear acrylic sheet forming the panel face by process indicated to produce precisely formed opaque images free from rough edges.
 - a. Use reverse silk-screen process to print copy; overspray the copy with an opaque background color coating, OR:
 - b. Use Dupont Chromalin heat- and pressure-laminated photopolymer film system to form copy and background color.
- 3 Window Signs: Slotted signs open on both ends for insertion of Owner panel. Window shall be a non-glare acrylic window with an exposed color laminate behind in color.
- 4 Produce exterior-mounted plaques of solid acrylic.

2.4 DIMENSIONAL LETTERS AND NUMBERS

- A. Exterior Building Letters: Form individual letters and numbers by casting. Produce characters with smooth, flat faces, sharp corners, and precisely formed lines and profiles, free from pits, scale, sand holes, or other defects. Comply with requirements indicated for finish, style, and size.
 1. General: Cast aluminum with clear anodized finish, in styles and heights as indicated.
 2. Thickness: 1" minimum.
 3. Back-Mounted: Cast lugs into the back of characters and tap to receive threaded brass or stainless steel mounting studs for mounting to building walls.

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- B. Interior Dimensional Letters: Vinyl die cut self-adhesive letters and numbers with smooth, flat finish and sharply defined edges, free from tears, splits, discolorations, or other defects. Comply with requirements indicated for finish, style, and size.
 - 1. Film: Vinyl with low sheen finish as manufactured by 3M, Oracle, or Arlon in minimum 4mm thickness.
 - 2. Fabrication: Factory die cut in styles, heights, and colors as indicated or selected by the Architect.
 - 3. Peel-off, stick-on mounting.

2.5 CAST METAL PLAQUE

- A. Plaques: Castings shall be free from pits, scale, sand holes, or other defects. Comply with requirements specified for metal, border style, background texture, and finish and with requirements shown for thickness, size, shape, and copy. Hand-tool and buff borders and raised copy to produce the manufacturer's standard satin polished finish. Refer to the "Finishes" Article for other finish requirements.
 - 1. Metal: Aluminum.
 - 2. Border Style: Plain bevel.
 - 3. Background Texture: Manufacturer's standard leatherette finish.
 - 4. Background Finish: Provide the manufacturer's standard baked-enamel finish.

2.6 FINISHES

- a. Colors and Surface Textures: For exposed sign material that requires selection of materials with integral or applied colors, surface textures or other characteristics related to appearance, provide color matches indicated, or if not indicated, as selected by the Architect from the manufacturer's standards.
- b. Metal Finishes: Comply with NAAMM "Metal Finishes Manual" for finish designations and applications recommendations.
- c. Aluminum Finishes: Finish designations prefixed by "AA" conform to the system established by the Aluminum Association for designating aluminum finishes.
 - 1) Class I, Clear Anodic Finish: AA-M12C22A41 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, clear coating 0.018 mm or thicker) complying with AAMA 607.1.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Locate sign units and accessories where indicated, using mounting methods of the type described and in compliance with the manufacturer's instructions.
 - 1. Install signs level, plumb, and at the height indicated, with sign surfaces free from distortion or other defects in appearance.

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- B. Wall-Mounted Panel Signs: Attach panel signs to wall surfaces using the methods indicated below:
1. Vinyl-Tape Mounting: Use double-sided foam tape to mount signs to smooth, nonporous surfaces. Do not use this method for vinyl-covered or rough surfaces.
 2. Silicone-Adhesive Mounting: Use liquid silicone adhesive recommended by the sign manufacturer to attach sign units to irregular, porous, or vinyl-covered surfaces. Use double-sided vinyl tape where recommended by the sign manufacturer to hold the sign in place until the adhesive has fully cured.
 3. Shim Plate Mounting: Provide 1/8-inch-thick concealed aluminum shim plates with predrilled and countersunk holes, at locations indicated, and where other mounting methods are not practicable. Attach the plate with fasteners and anchors suitable for secure attachment to the substrate. Attach panel sign units to the plate using the method specified above.
- C. Individual Dimensional Letters and Numbers:
1. Exterior Building Letters: Mount using threaded stainless steel or brass studs set in tapped lugs at backs of letters. Drill holes in finished masonry slightly larger than threaded studs and set in two-component clear epoxy adhesive. Use sufficient epoxy such that small amount of material pushes out of the mounting holes and seals to back of letters or spacers.
 2. Interior Dimensional Letters: Silicone-Adhesive Mounting: Use liquid silicone adhesive recommended by the letter manufacturer to attach individual letters to interior walls. Use double-sided vinyl tape to hold letters in place until the adhesive has fully cured.
- D. Cast Metal Plaques: Mount plaques using the standard method recommended by the manufacturer for the type of wall surface indicated.
1. Concealed Mounting: Mount the plaques by inserting threaded studs into tapped lugs on the back of the plaque. Set in predrilled holes filled with quick-setting cement.

3.2 CLEANING AND PROTECTION

- A. After installation, clean soiled sign surfaces according to the manufacturer's instructions. Protect units from damage until acceptance by the Owner.

END OF SECTION

SECTION 10 26 01 WALL AND CORNER GUARDS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Corner guards.

1.02 RELATED REQUIREMENTS

- A. Division 05 - Metal Fabrications: Anchors for attachment of work of this section, concealed in wall.
- B. Section 06 10 00 – Rough Carpentry: Support blocking for wall and corner guard anchors.

1.03 REFERENCE STANDARDS

- A. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2009.
- B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2015a.
- C. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2015.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Indicate physical dimensions, features, anchorage details, and rough-in measurements.
- C. Samples: Submit two sections of corner guard, 24 inch long, illustrating component design, configuration, color and finish.

1.05 PROJECT CONDITIONS

- A. Coordinate the work with wall or partition sections for installation of concealed blocking or anchor devices.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Wall and Corner Guards with 1-1/2" wings:
 - 1. Construction Specialties, Inc; Product SM-20M: www.c-sgroup.com.
 - 2. Pawling Pro-Tek Wall Protection Systems.
 - 3. InPro Corporation
 - 4. Substitutions: See Section 01 6000 - Product Requirements.

2.02 COMPONENTS

- A. Corner Guards - Surface Mounted: Extruded one-piece unit without splices, installed with screws.
 - 1. Products:
 - 2. Material: Type 304 stainless steel, No. 4 finish.
 - 3. Thickness: 18 gage, 0.05 inch.
 - 4. Width of Wings: 1-1/2 inches.
 - 5. Height: 48 inches.
 - 6. Corner Radius: 1/8 inch.
 - 7. Products:
 - a. InPro Corporation Stainless Steel Surface Mount Corner Guards.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.
- B. End Guards – Surface Mounted: Extruded one-piece unit without splices, installed with screws.
 - 1. Products:
 - 2. Material: Type 304 stainless steel, No. 4 finish.

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3. Thickness: 18 gage, 0.05 inch.
 4. Width of Wings: 1-1/2 inches.
 5. Height: 48 inches.
 6. Corner Radius: 1/8 inch.
 7. Products:
 - a. InPro Corporation Stainless Steel Surface Mount Corner Guards.
- C. Substitutions: See Section 01 60 00 - Product Requirements

2.03 FABRICATION

- A. Fabricate components with tight joints, corners and seams.
- B. Pre-drill holes for attachment.
- C. Form end trim closure by capping and finishing smooth.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that rough openings, concealed blocking, and anchors are correctly sized and located.
- B. Verify that field measurements are as indicated on Drawings.

3.02 INSTALLATION

- A. Install components in accordance with manufacturer's instructions, level and plumb, secured rigidly in position to wall framing members only.
- B. Position corner guard 8 inches above finished floor to 60 inches high.
- C. Coordinate installation of vinyl fabric wall covering with corner guard frame and cover.

3.03 TOLERANCES

- A. Maximum Variation From Required Height: 1/4 inch.
- B. Maximum Variation From Level or Plane For Visible Length: 1/4 inch.

END OF SECTION

SECTION 10 28 00 TOILET, BATH AND LAUNDRY ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Accessories for toilet rooms.

1.02 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry: Concealed supports for accessories, including in wall framing and plates.

1.03 REFERENCE STANDARDS

- A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2015.
- B. ASTM A269/A269M - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service; 2015.
- C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015.
- D. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2015.
- E. ASTM B456 - Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium; 2011.
- F. ASTM C1036 - Standard Specification for Flat Glass; 2011.
- G. ASTM C1503 - Standard Specification for Silvered Flat Glass Mirror; 2008 (Reapproved 2013).

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Submit data on accessories describing size, finish, details of function, and attachment methods.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Toilet Accessories:
 - 1. A & J Washroom Accessories Inc: www.ajwashroom.com.
 - 2. American Specialties, Inc: www.americanspecialties.com.
 - 3. Bradley Corporation: www.bradleycorp.com.
 - 4. Bobrick Washroom Equipment.
 - 5. Substitutions: Section 01 60 00 - Product Requirements.

2.02 MATERIALS

- A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.
 - 1. Grind welded joints smooth.
 - 2. Fabricate units made of metal sheet of seamless sheets, with flat surfaces.
- B. Stainless Steel Sheet: ASTM A666, Type 304.
- C. Stainless Steel Tubing: ASTM A269/A269M, Type 304 or 316.
- D. Galvanized Sheet Steel: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G90/Z275 coating.
- E. Mirror Glass: Annealed float glass, ASTM C1036 Type I, Class 1, Quality Q2, with silvering, protective and physical characteristics complying with ASTM C1503.
- F. Fasteners, Screws, and Bolts: Hot dip galvanized; tamper-proof; securitytype.
- G. Expansion Shields: Fiber, lead, or rubber as recommended by accessory manufacturer for component and substrate.

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203 FINISHES

- A. Stainless Steel: No. 4 Brushed finish, unless otherwise noted.
- B. Chrome/Nickel Plating: ASTM B456, SC 2, satin finish, unless otherwise noted.
- C. Baked Enamel: Pretreat to clean condition, apply one coat primer and minimum two coats epoxy baked enamel.
- D. Galvanizing for Items Other than Sheet: Comply with ASTM A123/A123M; galvanize ferrous metal and fastening devices.

204 TOILET ROOM ACCESSORIES - SEE DRAWINGS FOR SCHEDULE

PART 3 EXECUTION

301 INSTALLATION

- A. Install accessories in accordance with manufacturers' instructions in locations indicated on the drawings.
- B. Install plumb and level, securely and rigidly anchored to substrate.
- C. Mounting Heights: As required by accessibility regulations, unless otherwise indicated.

END OF SECTION

SECTION 10 44 00 FIRE PROTECTION SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fire extinguishers.
- B. Fire extinguisher cabinets.
- C. Accessories.

1.02 REFERENCE STANDARDS

- A. NFPA 10 - Standard for Portable Fire Extinguishers; 2018.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate cabinet physical dimensions, rough-in measurements for recessed cabinets, wall bracket mounted measurements, and exterior hardware and identification.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Fire Extinguishers:
 - 1. Ansul, Inc: www.ansul.com.
 - 2. Strike First Corporation of America: www.strikefirstusa.com.
- B. Fire Extinguisher Cabinets and Accessories:
 - 1. JL Industries, Inc: www.jlindustries.com.
 - 2. Larsen's Manufacturing Co; Product Architectural Series Cabinets, 2409-R1: www.larsensmfg.com. (Basis of Design)
 - 3. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 FIRE EXTINGUISHERS

- A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.
- B. Dry Chemical Type Fire Extinguishers: Carbon steel tank, with pressure gage.
 - 1. Class: A:B:C.
 - 2. Size: 5 pound.
 - 3. Finish: Baked polyester powder coat, color as selected.
 - 4. Class and Size 3A-10B:C.
 - 5. Cosmex 5X ABC dry Fire Extinguisher or equivalent with prior approval by Owner.

2.03 FIRE EXTINGUISHER CABINETS

- A. Cabinet Configuration: Semi-recessed type.
 - 1. Interior nominal dimensions of 9-1/2 inch wide x 24 inch high x 5 inch deep.
 - 2. Trim: Returned to wall surface, with 5/16 inch projection, 1 inch wide face.
- B. Door: 0.036 inch thick, Solid door design, reinforced for flatness and rigidity; latch. Hinge doors for 180 degree opening with two butt hinge. Provide nylon catch.
- C. Door Glazing: Glass, clear, 1/8 inch thick tempered. Set in resilient channel gasket glazing.
- D. Finish of Cabinet Exterior Trim and Door: Baked enamel, color as selected.
- E. Finish of Cabinet Interior: Enamel, color as selected.

2.04 ACCESSORIES

- A. Cabinet Signage: Die-cut vinyl, color and orientation as selected.
- B. Pull: Manufacturer's standard wire pull, US26D finish.

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PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Secure rigidly in place.
- C. Apply cabinet signage after completion of field painting. Apply square and plumb.

END OF SECTION

SECTION 12 21 13 HORIZONTAL LOUVER BLINDS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Horizontal slat louver blinds.
- B. Operating hardware.

1.02 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data indicating physical and dimensional characteristics.
- C. Samples: Submit two samples, 6 inch long illustrating slat materials and finish, cord type and color.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Horizontal Louver Blinds Without Side Guides:
 - 1. Hunter Douglas; Product CD80: www.hunterdouglas.com.
 - 2. Levolor Contract; Product Riviera Blinds: www.levolorcontract.com.
 - 3. Graber, division of Springs Window Fashions; Product Bali Classics: www.graberblinds.com.

2.02 BLINDS WITHOUT SIDE GUIDES

- A. Description: Horizontal slat louvers hung from full-width headrail with full-width bottom rail.
- B. Metal Slats: Spring tempered pre-finished aluminum; radiused slat corners, with manufacturing burrs removed.
 - 1. Width: 1 inch.
 - 2. Thickness: 0.006 inch.
 - 3. Color: As selected by Architect.
- C. Slat Support: Woven polypropylene cord, ladder configuration; color matched to blind.
- D. Head Rail: Pre-finished, formed aluminum box, with end caps; internally fitted with hardware, pulleys, and bearings for operation; same depth as width of slats.
- E. Lift Cord: Braided nylon; continuous loop; color matched to blind. Size cord so that end of cord is at 72 inches above finish floor when blind is in full closed position.
- F. Control Wand: Extruded hollow plastic; hexagonal shape.
 - 1. Non-removable type.
 - 2. Length of window opening height less 3 inch.
- G. Headrail Attachment: Wall brackets.

2.03 FABRICATION

- A. Determine sizes by field measurement.
- B. Fabricate blinds to fit within openings with uniform edge clearance of 1/2 inch.
- C. At openings requiring multiple blind units, provide separate blind assemblies with space of 1/2 inch between blinds, located at window mullion centers.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install blinds in accordance with manufacturer's instructions.
- B. Secure in place with concealed fasteners.

3.02 ADJUSTING

- A. Adjust blinds for smooth operation.

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3.03 CLEANING

- A. Clean blind surfaces just prior to occupancy.

END OF SECTION

SECTION 12 36 00 - COUNTERTOPS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Countertops for architectural cabinet work.
- B. Wall-hung counters and vanity tops.

1.02 RELATED REQUIREMENTS

- A. Section 06 41 00 - Architectural Wood Casework.

1.03 REFERENCE STANDARDS

- A. ANSI A208.2 - American National Standard for Medium Density Fiberboard for Interior Use; 2009.
- B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2015a.
- C. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014.
- D. ISFA 2-01 - Classification and Standards for Solid Surfacing Material; 2013.
- E. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Specimen warranty.
- C. Shop Drawings: Complete details of materials and installation; combine with shop drawings of cabinets and casework specified in other sections.
- D. Verification Samples: For each finish product specified, minimum size 6 inches square, representing actual product, color, and patterns.
- E. Test Reports: Chemical resistance testing, showing compliance with specified requirements.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Fabricator.
- B. Fabricator of Solid Surface Counters: Trained and approved by product manufacturer and holding a current and valid certificate from the manufacturer.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

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1.07 FIELD CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 PRODUCTS

2.01 COUNTERTOP ASSEMBLIES

- A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS).
- B. Plastic Laminate Countertops: High pressure decorative laminate sheet bonded to substrate.
1. Laminate Sheet, Unless Otherwise Indicated: NEMA LD 3, Grade HGP, for post-forming 0.039 inch nominal thickness.
 - a. Surface Burning Characteristics: Flame spread 25, maximum; smoke developed 450, maximum; when tested in accordance with ASTM E84.
 - b. Finish: Matte or suede, gloss rating of 5 to 20.
 - c. Surface Color and Pattern: As indicated on drawings.
 2. Exposed Edge Treatment: Post-formed laminate; front edge substrate built up to minimum 1-1/4 inch thick with radius edge, integral coved backsplash with radius top edge.
 3. Back and End Splashes: Same material, same construction.
- C. Solid Surfacing Countertops: Solid surfacing sheet or plastic resin casting over continuous substrate.
1. Flat Sheet Thickness: 3/4 inch, minimum.
 2. Solid Surfacing Sheet and Plastic Resin Castings: Complying with ISFA 2-01 and NEMA LD 3; acrylic or polyester resin, mineral filler, and pigments; homogenous, non-porous and capable of being worked and repaired using standard woodworking tools; no surface coating; color and pattern consistent throughout thickness.
 - a. Surface Burning Characteristics: Flame spread 25, maximum; smoke developed 450, maximum; when tested in accordance with ASTM E84.
 - b. Finish on Exposed Surfaces: Matte, gloss rating of 5 to 20.
 - c. Color and Pattern: As indicated on drawings.
 3. Other Components Thickness: 3/4 inch, minimum.
 4. Exposed Edge Treatment: As indicated on drawings.
 5. Back and End Splashes: Same sheet material, square top; minimum 4 inches high.

2.02 ACCESSORY MATERIALS

- A. Medium Density Fiberboard for Supporting Substrate: ANSI A208.2.
- B. Adhesives: Chemical resistant waterproof adhesive as recommended by manufacturer of materials being joined.
- C. Grommets: Injection molded plastic grommet with slotted cover; 2" holes with

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1-7/8' inside diameter, colors as selected; TG Series manufactured by Doug Mockett & Company, Inc.

- D. Manufactured Counter Supports: A & M Hardware Inc.; 1/8 inch formed steel brackets with minimum six 1/4 inch diameter mounting holes per leg; powder coat finish, colors as selected; sizes as indicated on drawings.

2.03 FABRICATION

- A. Fabricate tops and splashes in the largest sections practicable, with top surface of joints flush.
 - 1. Join lengths of tops using best method recommended by manufacturer.
 - 2. Fabricate to overhang fronts and ends of cabinets 1 inch, unless otherwise indicated, except where top butts against cabinet or wall.
 - 3. Prepare all cutouts accurately to size; replace tops having improperly dimensioned or unnecessary cutouts or fixture holes.
- B. Provide back/end splash wherever counter edge abuts vertical surface unless otherwise indicated.
 - 1. Secure to countertop with concealed fasteners and with contact surfaces set in waterproof glue.
 - 2. Height: 4 inches, unless otherwise indicated.
- C. Solid Surfacing: Fabricate tops up to 144 inches long in one piece; join pieces with adhesive sealant in accordance with manufacturer's recommendations and instructions.
- D. Wall-Mounted Counters: Provide skirts, aprons, brackets, and braces as indicated on drawings, finished to match.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Securely attach countertops to cabinets using concealed fasteners. Make flat surfaces level; shim where required.
- B. Attach plastic laminate countertops and wall-mounted supports using screws with minimum penetration into substrate board of 5/8 inch.
- C. Cut holes and install grommets in locations directed by Architect/Engineer. Provide one grommet per counter and one additional grommet for each 6'-0" of counter length.
- D. Seal joint between back/end splashes and vertical surfaces. Remove excess sealant.

3.02 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION

SECTION 31 10 00 - SITE CLEARING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section Includes:
 - 1. Protection of existing trees.
 - 2. Removal of trees and other vegetation.
 - 3. Topsoil stripping, stockpiling and spreading.
 - 4. Clearing and grubbing.
 - 5. Removing designated paving, curbs and sidewalks.
 - 6. Removing above-grade improvements.
 - 7. Removing below-grade improvements.
 - 8. Disconnecting, capping or sealing, and abandoning site utilities in place and/or removing site utilities.
- B. Related Sections:
 - 1. Section 31 23 16, Excavation and Fill.

1.03 DEFINITIONS

- A. Topsoil: Natural or cultivated surface-soil layer containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2 inches in diameter; and free of subsoil and weeds, roots, toxic materials, or other non-soil materials.
- B. Tree Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction, and defined by the drip line of individual trees or the perimeter drip line of groups of trees, unless otherwise indicated.

1.04 MATERIAL OWNERSHIP

- A. Except for stripped topsoil or other materials indicated to remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.05 SUBMITTALS

- A. When required by Owner or Architect/Engineer, Provide Transport and Disposal Manifests for all waste removed from the site.
- B. Product Data: Submit data for herbicide. Indicate compliance with applicable codes for environmental protection.

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- C. Photographs or videotape, sufficiently detailed, of existing conditions of trees and plantings, adjoining construction, and site improvements that might be misconstrued as damage caused by site clearing.
- D. Record drawings according to Division 01 Section "Project Record Documents," identifying and accurately locating capped utilities and other subsurface structural, electrical, and mechanical conditions.

1.06 QUALITY ASSURANCE

- A. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Administrative requirements."

1.07 APPLICABLE CODES AND REGULATIONS

- A. Contractor shall be responsible for complying with applicable permits for all site work.
- B. The Owner will not be a party to any condition where soil contamination, either new or existing, will be allowed to remain. All entities shall be familiar with and comply with federal, state, and local laws and regulations regarding soil contamination. Any existing contamination found or any new contamination shall be reported to the Architect/Engineer and the Owner.
- C. The Owner will not be a party to offsite pollution. All entities shall be familiar with and comply with EPA "National Pollutant Discharge Elimination System" regulations.
- D. All disposal other than approved topsoil disposal shall be done offsite and lawfully. Permits and disposal fees shall be the responsibility of the Contractor.
- E. All applicable laws, codes, regulations, ordinances and requirements of all authorities having Jurisdiction, including but not limited to TCEQ and the Edwards Aquifer Authority.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Herbicide: Type approved by authority having jurisdiction, when use of herbicides is permitted.

PART 3 - EXECUTION

3.01 EXAMINATION and PROJECT CONDITIONS

- A. Traffic: Conduct site-clearing operations to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities. Do not close or obstruct streets or other used facilities without permission from authorities having jurisdiction.
- B. Protection of Existing Improvements: Provide protection necessary to prevent damage to existing improvements indicated to remain in place.
- C. Protect improvements on adjoining properties and on Owner's property.

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- D. Restore damaged improvements to their original condition, as acceptable to property owners.
- E. Protect bench marks, survey control points, and existing structures to remain from damage or displacement.
- F. Protection of Existing Trees and Vegetation: Protect existing trees and other vegetation indicated to remain in place against unnecessary cutting, breaking or skinning of roots, skinning or bruising of bark, smothering of trees by stockpiling construction materials or excavated materials within drip line, excess foot or vehicular traffic, or parking of vehicles within drip line. Provide temporary guards to protect trees and vegetation to be left standing.
- G. Water trees and other vegetation to remain within limits of contract work as required to maintain their health during course of construction operations.
- H. Provide protection for roots over 1-1/2 inch in diameter that are cut during construction operations. Coat cut faces with an emulsified asphalt or other acceptable coating formulated for use on damaged plant tissues. Temporarily cover exposed roots with wet burlap to prevent roots from drying out; cover with earth as soon as possible.
- I. Repair or replace trees and vegetation indicated to remain which are damaged by construction operations in a manner acceptable to Architect/Engineer.
- J. Salvable Improvements: Carefully remove items indicated by Architect/Engineer Project Manager to be salvaged, and store on Owner's premises where indicated or directed.

3.02 PREPARATION

- A. Call Local Utility Purveyors for line information not less than ten working days before performing Work.
 - 1. Request underground utilities to be located and marked within and surrounding construction areas.
 - 2. Local Utility Locator contact numbers include:
 - a. North East ISD– (210) 407-000
 - b. Sewer and Water: San Antonio Water System, (210) 233-2010.
 - c. COSA Drainage (210) 207-2800
 - d. COSA Traffic Signal Operations, (210) 207-7765
 - e. Texas State Wide One Call Locator, 1-800-545-6005.
 - f. Gas and Electric: City Public Service, 1-800-545-6005.
 - g. Telephone Service: AT&T. 1-800-545-6005.
 - h. Cable Service: Time Warner Cable, 1-800-545-6005.

3.03 CLEARING

- A. General: Remove trees, shrubs, grass and other vegetation, improvements, or obstructions as required to allow installation of new construction. Remove similar items elsewhere on site or premises as specifically indicated. "Removal" includes digging out and off-site disposal of stumps and roots to a depth of 1.5' below subgrade.

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- B. Use necessary means to prevent spread of dust during the project construction. Moisten surfaces as required to prevent dust from being a nuisance to the public, neighbors, and concurrent performance of other work on site.
- C. Cut minor roots and branches of trees indicated to remain in a clean and careful manner where such roots and branches obstruct installation of new construction.
- D. Clearing and Grubbing: Clear site of trees, shrubs, and other vegetation, except for those indicated to be left standing by the Architect/Engineer or the Project Manager and or adjoining the project site. In the event of damage to any existing objects designated to remain, contractor shall repair or replace at no additional cost to the Owner.
- E. Removal of stumps, roots, and other debris shall be required of all areas of excavation to a depth of 18" below the excavation elevation. On areas of embankment, stumps, roots and other debris shall be removed to a depth of 18" below the existing ground surface. The contractor shall accomplish this requirement by root plowing, raking, piling and proper disposal.
- F. Use only hand methods for grubbing inside drip line of trees indicated to remain.
- G. Fill depressions caused by clearing and grubbing operations with satisfactory soil material, unless further excavation or earthwork is indicated.
- H. Place fill material in horizontal layers not exceeding 8" loose depth, and thoroughly compact to a density equal to adjacent original ground.
- I. All areas requiring backfill such as abutting to curbs shall have a minimum 5:1 slope ratio unless otherwise indicated. The backfill material used shall be obtained from approved sources and suitable to support plant growth. It will be fertile loam, easily cultivated, and free from roots, weeds, stones, or other objectionable material.
- J. Removal of Improvements: Remove existing above-grade and below-grade improvements as indicated and as necessary to facilitate new construction. The project drawings do not purport to show all objects existing on the project site. The contractor shall be responsible for verifying all objects to be removed, adjusted or preserved before his start of work.
- K. When required and allowed by the Owner, apply herbicide to any remaining stumps to inhibit growth.

3.04 REMOVAL

- A. Remove debris, rock, extracted plant life, and demolished materials from site.
- B. Remove designated paving, curbs, and sidewalks as indicated on the Drawings. Neatly saw cut edges at right angle to surface.
- C. Remove abandoned utilities. Indicate removal termination point of underground utilities on Record Documents.
- D. Continuously clean-up and remove waste materials from site. Do not allow materials to accumulate on site.

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- E. Do not burn or bury materials on site. Leave site in clean condition.
- F. Removal from Owner's property: Remove waste materials from Owner's property. All off-site transport and disposal of waste shall be the sole responsibility of the Contractor and shall be performed within all legal and applicable laws and regulations.
- G. Provide manifest for off-site transport and disposal of wastes.

3.05 TOPSOIL STRIPPING, STOCKPILING, AND RE-PLACEMENT

- A. Strip excavate topsoil from areas to be further excavated, and otherwise identified on the Drawings, without mixing with foreign materials for use in finish grading. Do not excavate wet topsoil.
- B. Topsoil Stripping: Topsoil shall be stripped from the existing surface soil after vegetation and trees have been removed. Where existing trees are indicated to remain, leave existing surface soil in place within drip lines to prevent possible damage to root systems.
- C. Striping of topsoil shall be accomplished by the following procedure: In areas requiring less than 3" of cut or fill, stripping of topsoil shall not be done. In areas of more than 3" of cut or fill, topsoil may be stripped to whatever depths it is encountered, but not to exceed 12", in a manner to prevent intermingling with underlying subsoil or other objectionable material. Areas with more than 3" of cut, the contractor shall "over excavate" 6" below finish grade and replace with 6" of topsoil. In areas requiring more than 6" of fill, the top 6" shall be topsoil.
- D. Stockpile topsoil in storage piles in areas indicated or as directed by the Architect/Engineer to depth not exceeding eight feet and protect from erosion. Construct storage piles to provide free drainage of surface water.
- E. Topsoil shall be placed and spread in the areas required with a depth of not less than 6". Once the topsoil has been placed and spread, it shall be compacted to 82 - 88% of maximum density as determined by the Texas Department of Transportation (TxDOT) test method, TEX-114E. Final grading of topsoil shall be accomplished by placing grade stakes (blue tops) on a maximum 50' grid to ensure proper grade control.

For use of on-site topsoil, the following shall apply:

- 1. After proper compaction and final grading, the surface shall be tilled with a "landscape rake" to remove rocks, roots, or other objectionable material larger than 3/4". This machine shall gently till the top 1" of soil, breaking up clumps and clods, leveling uneven ground, and preparing the topsoil surface for turf or landscape installation.
- 2. The "landscape rake" shall consist of Model 5A or 6A attachment equipment manufactured by "bobcat" to be mounted on traditional "bobcat" skid-steer loaders. Similar equipment may be used with approval of the Architect/Engineer.
- F. Dispose of unsuitable or excess topsoil as specified for disposal of waste material.

END OF SECTION

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SECTION 31 23 16 - EXCAVATION AND FILL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section Includes:
 - 1. Preparing subgrades for slabs-on-grade, walks, pavements, lawns and grasses, and exterior plants.
 - 2. Excavating and backfilling for buildings and structures.
 - 3. Drainage course for slabs-on-grade.
 - 4. Subbase course for concrete walks and pavements.
 - 5. Subbase and base course for asphalt and concrete paving.
 - 6. Subsurface drainage backfill for walls and trenches.
 - 7. Excavating and backfilling for utility trenches.
 - 8. Excavating and backfilling trenches for buried mechanical and electrical utilities and pits for buried utility structures.
 - 9. Excavating and Fill for landscaping.
 - 10. Dewatering Systems for excavations and trenches.
 - 11. Topsoil for turf and landscaping.
- B. Related Sections:
 - 1. Section 31 10 00 – Site Clearing
 - 2. Section 32 12 16 – Hot Mix Asphalt Paving
 - 3. Section 33 31 00 – Sanitary Sewer
 - 4. Section 33 41 00 – Storm Sewerage
 - 5. Section 32 13 13 – Portland Cement Concrete Paving

1.03 DEFINITIONS

- A. Backfill: Soil material or controlled low-strength material used to fill an excavation.

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1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
2. Final Backfill: Backfill placed over initial backfill to fill a trench.
- B. Base Course: Course placed between the subgrade or subbase course and hot-mix asphalt paving or concrete paving.
- C. Bedding Course: Course placed over the excavated subgrade in a trench before laying pipe.
- D. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.
- E. Drainage Course: Course supporting the slab-on-grade that also minimizes upward capillary flow of pore water.
- F. Excavation: Excavation consists of the removal of rock or soil material encountered to subgrade elevations and the reuse or disposal of materials removed.
 1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Architect/Engineer.
 2. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Architect/Engineer. Unauthorized excavation, as well as remedial work directed by Architect/Engineer, shall be without additional compensation.
- G. Fill: Soil materials used to raise existing grades.
- H. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
- I. Subbase Course: Course placed between the subgrade and base course for hot-mix asphalt pavement, or course placed between the subgrade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.
- J. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.
- K. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.
- L. Dewatering: Dewatering includes the following:
 1. Lowering of ground water table and intercepting horizontal water seepage to prevent ground water from entering excavations, trenches, tunnels, or shafts.
 2. Reducing piezometric pressure within strata to prevent failure or heaving of excavations, trenches, tunnels, or shafts.
 3. Disposing of removed water

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1.04 REFERENCES

A. ASTM International and TxDOT:

1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)).
2. ASTM D1556 - Standard Test Method for Density of Soil in Place by the Sand-Cone Method.
3. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
4. ASTM D6938 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
5. ASTM D3017 – Moisture Content of Soil and Soil Aggregates in place by Nuclear Methods.
6. ASTM D1557 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (6,000 ft-lbf/ft³ (2,700 kN-m/m³)).
7. ASTM D2487 - Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).
8. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
9. ASTM D4318 - Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

B. TxDOT – Standard Material and Testing Specifications

C. Local utility standards when working within 24 inches of utility lines.

1.05 SUBMITTALS

A. Excavation Protection Plan: Describe sheeting, shoring, and bracing materials and installation required to protect excavations and adjacent structures and property; include structural calculations to support plan.

B. Dewatering Plan: Describe dewatering equipment, associated pumps piping, valves and appurtenances, wells and well points, monitoring wells and piezometers, groundwater table elevation reduction rates, influence zones and associated pumping flow rates, backup equipment and systems, and groundwater treatment and disposal plan.

C. Product data for the following:

1. Flexible base material.
2. Sand and Gravel material.

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3. Topsoil.
 4. Each type of plastic warning tape.
 5. Filter fabric, if applicable.
 6. Samples of the following:
 - a. 20-lb samples, sealed in air-tight containers, of each proposed fill and backfill soil material from on-site or borrow sources.
 - b. 12-by-12-inch sample of filter fabric.
- D. Test Reports: In addition to test reports required under field quality control, submit the following:
1. Laboratory analysis of each soil material proposed for fill and backfill from on-site and borrow sources. One optimum moisture-maximum density curve for each soil material.
 2. Report of actual unconfined compressive strength and/or results of bearing tests of each stratum tested.
 3. Laboratory analysis of each base material proposed for fill and backfill from on-site and borrow sources. One optimum moisture-maximum density curve for each soil material.

1.06 QUALITY ASSURANCE

- A. Codes and Standards: Perform earthwork complying with requirements of authorities having jurisdiction.
- B. Testing and Inspection Service: The Owner will employ a qualified independent geotechnical engineering testing agency to classify proposed on- site and borrow soils to verify that soils comply with specified requirements and to perform required field and laboratory testing.
- C. Profile check for gravity utility facilities: Contractor shall check design inverts, slopes, and distances to ensure positive grades and consistent design information prior to utility construction initiation. Contractor shall notify Architect/Engineer if any discrepancies or irregularities are discovered.
- D. Pre-installation Conference: Conduct conference at Project site to comply with requirements of Division 1 Section "Project Meetings."
- E. Before commencing earthwork, meet with representatives of the governing authorities, Owner, Architect/Engineer, consultants, Geotechnical Engineer, independent testing agency, and other concerned entities. Review earthwork procedures and responsibilities including testing and inspection procedures and requirements. Notify participants at least 3 working days prior to convening conference. Record discussions and agreements and furnish a copy to each participant.

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1.07 QUALIFICATIONS

- A. Prepare excavation protection plan under direct supervision of Professional Architect/Engineer experienced in design of this Work and licensed in State of Texas.
- B. Dewatering System Installer: Company specializing in performing dewatering work with minimum of 10 years documented experience, and responsible for design, operation, and maintenance of dewatering system.
 - 1. Assume sole responsibility for dewatering and surface water control systems and for loss or damage resulting from partial or complete failure of protective measures and settlement or resultant damage caused by ground water control operations.
 - 2. Design, install, and monitor operation of dewatering under direct supervision of Professional Architect/Engineer experienced in design of this Work and licensed in State of Texas.

1.08 PROJECT CONDITIONS

- A. Existing Utilities: Do not interrupt existing utilities serving facilities occupied by the Owner or others except when permitted in writing by the Architect/Engineer and then only after acceptable temporary utility services have been provided.
 - 1. Notify Architect/Engineer not less than two days in advance of proposed utility interruptions.
 - 2. Do not proceed with utility interruptions without Architect's/Engineer's written permission.
 - 3. Contact utility-locator service for area where Project is located before excavating.
- B. Provide a minimum 48-hours' notice to the Architect/Engineer and receive written notice to proceed before interrupting any utility.
- C. Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies to shutoff services if lines are active.

PART 2 - PRODUCTS

2.01 SOIL MATERIALS

- A. General: Provide approved borrow soil materials from off-site when sufficient approved soil materials are not available from excavations.
- B. Satisfactory Soil Materials: ASTM D 2487 soil classification groups GW, GP, GM, SW, SP, and SM; free of rock or gravel larger than 2 inches in any dimension, debris, waste, frozen materials, vegetation and other deleterious matter.
- C. Unsatisfactory Soil Materials: ASTM D 2487 soil classification groups GC, SC, ML, MH, CL, CH, OL, OH, and PT, or a combination of these groups.

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- D. Backfill and Fill Materials: Satisfactory soil materials.
- E. Select Fill/Subbase Material: Select fill shall be crushed stone or gravel aggregate meeting the TxDOT 2014 Standard Specification for Construction and Maintenance of Highways, Streets, and Bridges, Item 247, Flexible Base, Type A, Type B, or Type C, Grades 1 through 5.
- F. Base Course Aggregate: The flexible base course shall be crushed limestone conforming to 2014 Texas Department of Transportation Standard Specifications, Item 247, Type A, Grade 1 or 2, and shall have no more than 15 percent of the material passing the No. 200 sieve.
- G. Engineered Fill: Select Fill / Subbase or base materials.
- H. Sand Bedding and Backfill Material: Naturally or artificially graded mixture of natural or crushed sand, with 100 percent passing a No. 16 sieve and not more than 8 percent passing a No. 200 sieve.
- I. Gravel Bedding and Backfill Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; except with 100 percent passing a 1-inch sieve and not more than 8 percent passing a No. 200 sieve.
- J. Drainage Fill: Narrowly graded mixture of crushed stone, or crushed gravel; ASTM D 448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch sieve and 0 to 5 percent passing a No. 8 sieve.
- K. Filtering Material: Narrowly graded mixture of natural or crushed gravel, or crushed stone and natural sand; ASTM D 448; coarse-aggregate grading Size 67; with 100 percent passing a 1-inch sieve and 0 to 5 percent passing a No. 4 sieve.
- L. Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state.
- M. Topsoil: Topsoil shall be free of roots, rocks larger than ½ inch, clay lumps, debris, large weeds and foreign matter. On-site topsoil may be stripped, stockpiled and re-used when shown on the Drawings and approved by the Architect/Engineer. Imported topsoil shall be friable loam or sandy loam, with an acidity range (pH) of 5.5 to 7.5, containing minimum of 5 percent and maximum of 25 percent inorganic matter.

2.02 CONTROLLED LOW-STRENGTH MATERIAL (FLOWABLE FILL)

- A. Controlled Low-Strength Material: Low-density, self-compacting, flowable concrete material as follows:
 - 1. Portland Cement: ASTM C 150, Type I II or III.
 - 2. Fly Ash: ASTM C 618, Class C or F.
 - 3. Normal-Weight Aggregate: ASTM C 33, 3/8-inch nominal maximum aggregate size.
 - 4. Foaming Agent: ASTM C 869.
 - 5. Water: ASTM C 94/C 94M.

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6. Air-Entraining Admixture: ASTM C 260.

B. Produce conventional-weight, controlled low-strength material with 80-psi to 140-psi compressive strength when tested according to ASTM C 495.

2.03 ACCESSORIES

A. Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility.

B. Detectable Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches deep; colored as follows:

C. Tape Colors: Provide tape colors to utilities as follows:

1. Red: Electric.
2. Yellow: Gas, oil, steam, and dangerous materials.
3. Orange: Telephone and other communications.
4. Blue: Water systems.

D. Filter Fabric: Manufacturer's standard nonwoven pervious geotextile fabric of polypropylene, nylon or polyester fibers, or a combination. Provide geotextile fabric as provided by:

1. Alkzo Nobel Geosynthetic Co.
2. Huesker, Inc.
3. TC Mirafi.
4. Tenax Corp.
5. Tensar Earth Technologies, Inc.
6. Or equal.

E. Provide filter fabrics that meet or exceed the listed minimum physical properties determined according to ASTM D 4759 and the referenced standard test method in parentheses:

1. Grab Tensile Strength (ASTM D 4632): 90 lb.
2. Apparent Opening Size (ASTM D 4751): #70 - 80 U.S. Standard sieve.
3. Permeability (ASTM D 4491): 120 gallons per minute per sq. ft.

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PART 3 - EXECUTION

3.01 PREPARATION

- A. Call Local Utility Line Information service not less than ten working days before performing Work.
 - 1. Request underground utilities to be located and marked within and surrounding construction areas.
 - 2. Local Utility Locator contact numbers include:
 - a. Sewer and Water: Hondo Water Department (830) 426-2125
 - b. Texas State Wide One Call Locator, 1-800-545-6005.
 - c. Gas and Electric: City of Hondo Electric Utility – (830) 426-3378
 - d. Telephone Service: AT&T, 1-800-545-6005.
 - e. Cable Service: Time Warner Cable, 1-800-545-6005.
- B. Identify required lines, levels, contours, and datum.
- C. Notify utility company and coordinate any utilities to remove or relocate for execution of the Work.
- D. Protect utilities indicated to remain from damage.
- E. Protect plant life, lawns, and other features remaining as portion of final landscaping. Tree protection is further specified in the Section 31 1000 - Site Clearing.
- F. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.
- G. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- H. Protect subgrades and foundation soils against freezing temperatures or frost. Provide protective insulating materials as necessary.
- I. Underpin adjacent structures which may be damaged by excavation work.
- J. Provide erosion control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.02 DEWATERING SYSTEM DESCRIPTION

- A. Provide dewatering and surface water control systems to permit Work to be completed on dry and stable subgrade.

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1. Install well points or wells to dewater and relieve hydrostatic pressure within strata identified as saturated or subject to seasonally high groundwater elevations in the subsurface investigation report.
- B. Provide monitoring wells and monitoring equipment to obtain meaningful observations of conditions affecting excavation, adjacent structures, and any adjacent water wells.
 1. Furnish standby equipment stored at Project site and ready for immediate use upon failure of dewatering equipment.
- C. Remove and disposal of all dewatering equipment, wells, monitoring wells, piezometers and other system components upon completion of area backfilling. Any dewatering system components allowed to be abandoned-in-place by the Owner shall be properly abandoned in accordance with TCEQ well abandonment requirements, and recorded on the Record As-Built Drawings.

3.03 DEWATERING PERFORMANCE REQUIREMENTS

- A. Design dewatering systems to:
 1. Lower water table within areas of excavation to a minimum of 1 foot below bottom of excavation, or as otherwise required to permit Work to be completed on dry and stable subgrade.
 2. Relieve hydrostatic pressures in confined water bearing strata below excavation to eliminate risk of uplift or other instability of excavation.
 3. Prevent damage to adjacent properties, buildings, structures, utilities, and facilities from construction operations.
 4. Prevent loss of fines, quick condition, or softening of foundation subgrade.
 5. Maintain stability of sides and bottoms of excavations and trenches, face, walls, and bottoms of tunnels, sides and bottoms of shafts.
- B. Design surface water control systems to:
 1. Collect and remove surface water and seepage entering excavation.
- C. Prevent surface water and subsurface or ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- D. Protect subgrades and foundation soils from softening and damage by rain or water accumulation.

3.04 EXCAVATION

- A. Explosives: Do not use explosives.
- B. Unclassified Excavation: All excavation is unclassified, and includes excavation to required subgrade elevations regardless of the character of materials and obstructions encountered.

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3.05 STABILITY OF EXCAVATIONS

- A. Comply with local codes, ordinances, and requirements of authorities having jurisdiction to maintain stable excavations.

3.06 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 0.10 foot. Extend excavations a sufficient distance from structures for placing and removing concrete formwork, installing services and other construction, and for inspections.
- B. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.
- C. Excavation for Underground Tanks, Basins, and Mechanical or Electrical Appurtenances: Excavate to elevations and dimensions indicated within a tolerance of plus or minus 0.10 foot. Do not disturb bottom of excavations intended for bearing surface.

3.07 EXCAVATION FOR WALKS AND PAVEMENTS

- A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and grades.

3.08 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated slopes, lines, depths, and invert elevations.
- B. Excavate trenches to uniform widths to provide a working clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit, unless otherwise indicated.
- C. Clearance: 4 inch to 15 inch diameter pipe; 4 inches minimum and 8 inches maximum each side of pipe or conduit.
- D. Clearance: Larger than 15 inch diameter pipe; 8 inches minimum and 15 inches maximum each side pipe or conduit.
- E. Trench Bottoms: Where bedding is not required, excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.
- F. Trench Bottoms: Where bedding is required, excavate trenches deeper than bottom of pipe elevation to allow for bedding course thickness. Hand excavate for bell of pipe.
- G. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.
- H. Provide trench protection in accordance with Section 31 20 10 – Trench Excavation Protection, and OSHA requirements.

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3.09 APPROVAL OF SUBGRADE

- A. Subgrade preparation shall extend at least three (3) feet beyond the limits of the pavements and all adjacent sidewalks, canopies and other improvements.
- B. After site stripping and excavating to the recommended depths, the exposed subgrade in the pavement areas shall be proof-rolled with appropriate construction equipment weighing at least fifteen (15) tons to check the subgrade for weak or soft areas prior to fill/base placement and compaction. This operation shall be observed and evaluated by qualified geotechnical personnel experienced in earthwork operations.
- C. Weak / soft spots shall be excavated and replaced with stable compactable select fill material in accordance with geotechnical recommendations.
- D. Wet subgrades shall be scarified and/or opened up to a minimum depth of eight (8) inches, allowed to dry, and re-compacted to meet standard compaction specifications.
- E. Dry subgrades shall be scarified, moisture conditioned, and re-compacted to meet standard compaction specifications.
- F. All subgrades shall be tested for density and moisture content prior to placement of base or subbase material.
- G. Fill unauthorized excavation under foundations or wall footings by extending indicated bottom elevation of concrete foundation or footing to excavation bottom, without altering required top elevation. Lean concrete fill may be used to bring elevations to proper position when acceptable to the Architect/Engineer.
- H. Fill unauthorized excavations under other construction as directed by the Architect/Engineer.
- I. Where indicated widths of utility trenches are exceeded, provide stronger pipe, or special installation procedures, as required by the Architect/Engineer.

3.10 UNAUTHORIZED EXCAVATION

- A. Fill unauthorized excavation under foundations or wall footings by extending indicated bottom elevation of concrete foundation or footing to excavation bottom, without altering required top elevation. Lean concrete fill may be used to bring elevations to proper position when acceptable to the Architect/Engineer.
- B. Fill unauthorized excavations under other construction as directed by the Architect/Engineer.
- C. Where indicated widths of utility trenches are exceeded, provide stronger pipe, or special installation procedures, as required by the Architect/Engineer.

3.11 STORAGE OF SOIL MATERIALS

- A. Stockpile excavated materials acceptable for backfill and fill soil materials, including acceptable borrow materials. Stockpile soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent wind-blown dust.

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- B. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.
- C. Stockpile stripped topsoil to be re-used separately from other stored materials to prevent inter-mixing with other materials.

3.12 BACKFILL

- A. Backfill excavations promptly, but not before completing the following:
 - 1. Acceptance of construction below finish grade including, where applicable, subdrainage, damp-proofing, waterproofing, and perimeter insulation.
 - 2. Surveying locations of underground utilities for record documents.
 - 3. Testing, inspecting, and approval of underground utilities.
 - 4. Concrete formwork removal.
 - 5. Removal of trash and debris from excavation.
 - 6. Removal of temporary shoring and bracing, and sheeting.
 - 7. Installing permanent or temporary horizontal bracing on horizontally supported walls.

3.13 UTILITY TRENCH BACKFILL

- A. Water, Sanitary Sewer, and Gas Piping: Unless otherwise noted on the Drawings, provide 6 inches minimum gravel bedding course under pipe or conduit and extend up the sides of the pipe sufficient to embed the lower quadrant of the pipe. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Place and compact initial backfill of gravel to a height of 6" over the utility pipe or conduit. Place and compact final backfill of satisfactory soil material to final subgrade.
- B. Storm Sewer Piping: Unless otherwise noted on the drawings, provide 6 inches minimum gravel bedding course under pipe or conduit and extend up the sides of the pipe sufficient to embed the lower quadrant of the pipe. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Carefully compact material under pipe haunches and bring backfill evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of utility system. Place and compact initial backfill of gravel to a height of 6" over the utility pipe or conduit. Place and compact final backfill of satisfactory soil material to final subgrade.
- C. Reinforced Concrete Pipe (RCP) Storm Sewer/Culvert Piping: In satisfactory soil conditions, Contractor may elect not to provide bedding material. If bedding material is not used, Contractor shall shape trench bottom so that approximately 0.5 of the pipe outside diameter will bear on trench bottom. Shape trench bottom to provide continuous support for bells, joints, and barrels of pipes. Carefully compact material under pipe haunches and bring backfill evenly up on both sides and along the full length of piping to avoid damage or displacement of system. Place and compact initial backfill of gravel to a height of 6 inches

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over the utility or conduit. Place and compact final backfill of satisfactory soil material or gravel backfill material to final subgrade.

- D. Concrete backfill trenches that carry below or pass under footings and that are excavated within 18 inches of footings. Place concrete to level of bottom of footings.
- E. Provide 4 inch-thick concrete base slab support for piping or conduit less than 1'-6" below surface of roadways. After installation and testing, completely encase piping or conduit in a minimum of 6 inches of concrete before backfilling or placing roadway subbase.
- F. Carefully compact material under pipe haunches and bring backfill evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of utility system.
- G. Coordinate backfilling with utilities testing.
- H. Fill voids with approved backfill materials as shoring and bracing, and sheeting is removed.
- I. Place and compact final backfill of satisfactory soil material to final subgrade.
- J. Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.

3.14 FILL

- A. Preparation: Remove vegetation, topsoil, debris, wet, and unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placing fills.
- B. Plow strip, or break up sloped surfaces steeper than one vertical to four horizontal (1:4) so fill material will bond with existing surface.
- C. When subgrade or existing ground surface to receive fill has a density less than that required for fill, break up ground surface to depth required, pulverize, moisture-condition or aerate soil and recompact to required density.
- D. Place fill material in layers to required elevations for each location listed below.
- E. Under grass, use satisfactory excavated or borrow soil material.
- F. Under walks and pavements, use select fill/subbase or base material, or satisfactory excavated or borrow soil material.
- G. Under steps and ramps, use select fill/subbase or engineered fill material.
- H. Under building slabs, use engineered fill material.
- I. Under footings and foundations, use engineered fill.

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3.15 MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill layer before compaction between optimum moisture content and plus four (+4) percent above optimum moisture content and maintain this moisture content until the fill is covered.
- B. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
- C. Remove and replace, or scarify and air-dry satisfactory soil material that is too wet to compact to specified density.
- D. Stockpile or spread and dry removed wet satisfactory soil material.

3.16 COMPACTION

- A. Place backfill and fill materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.
- B. Place backfill and fill materials evenly on all sides of structures to required elevations. Place backfill and fill uniformly along the full length of each structure.
- C. Percentage of Maximum Dry Density Requirements: Compact soil to not less than the following percentages of maximum dry density according to TxDOT Tex-114-E or ASTM D698:
 - 1. Under structures, steps, and pavements, compact the top 6 inches below subgrade and each layer of backfill or fill material at a minimum of 95 percent maximum dry density.
 - 2. Under walkways, compact the top 6 inches below subgrade and each layer of backfill or fill material at a minimum of 95 percent maximum dry density.
 - 3. Under lawn or unpaved areas, compact the top 6 inches below subgrade and each layer of backfill or fill material at a minimum of 90 percent maximum dry density.
 - 4. For utility trenches, compact each layer of initial and final backfill soil material at 90 percent maximum dry density.

3.17 GRADING

- A. General: Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
- B. Provide a smooth transition between existing adjacent grades and new grades.
- C. Cut out soft spots, fill low spots, and trim high spots to conform to required surface tolerances.
- D. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:

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1. Lawn or Unpaved Areas: Plus or minus 1 inch.
2. Walks: Plus or minus 1 inch.
3. Pavements: Plus or minus ½ inch.
4. Grading Inside Building Lines: Finish subgrade to a tolerance of 1/2 inch when tested with a 10-foot straightedge.

3.18 SUBSURFACE DRAINAGE

- A. Subdrainage Pipe: Specified in Section 02620 - "Subdrainage."
- B. Subsurface Drain: Place subsurface drainage geotextile around perimeter of subdrainage trench. Place a 6-inch course of filter material on subsurface drainage geotextile to support subdrainage pipe. Encase subdrainage pipe in a minimum of 12 inches of filter material, placed in compacted layers 6 inches thick, and wrap in subsurface drainage geotextile, overlapping sides and ends at least 6 inches.
- C. Compact each filter material layer to 90 percent of maximum dry unit weight.
- D. Drainage Backfill: Place and compact filter material over subsurface drain, in width indicated, to within 12 inches of final subgrade, in compacted layers 6 inches thick. Overlay drainage backfill with 1 layer of subsurface drainage geotextile, overlapping sides and ends at least 6 inches.
- E. Compact each filter material layer to 90 percent of maximum dry unit weight.
- F. Place and compact impervious fill over drainage backfill in 6-inch thick compacted layers to final subgrade.

3.19 SELECT FILL/SUBBASE AND BASE COURSES

- A. Under pavements and walks (if applicable), place select fill/subbase course material on prepared subgrades. Place base course material over subgrades or subbases to pavements.
- B. Compact select fill/subbase and base courses in the range of two (-2) percent below and three (+3) percent above optimum moisture content to required grades, lines, cross sections and thickness to not less than 95 percent of maximum density as determined by TxDOT Tex-113-E or ASTM D1557.
- C. Compact asphalt treated base to a minimum of 95% of maximum density as determined by TxDOT Tex-126-E.
- D. Shape select fill/subbase and base to required crown elevations and cross- slope grades.
- E. When thickness of compacted select fill/subbase or base course is 6 inches or less, place materials in a single layer.

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- F. When thickness of compacted select fill/subbase or base course exceeds 6 inches, place materials in equal layers, with no layer more than 6 inches thick or less than 3 inches thick when compacted.
- G. Pavement Shoulders: Place shoulders along edges of select fill/subbase and base course to prevent lateral movement. Construct shoulders at least 12 inches wide of acceptable soil materials and compact simultaneously with each select fill/subbase and base layer.

3.20 DRAINAGE COURSE

- A. Place drainage course on subgrades free of mud, frost, snow, or ice.
- B. On prepared subgrade, place and compact drainage course under cast-in-place concrete slabs-on-grade as follows:
 - 1. Install subdrainage geotextile on prepared subgrade according to manufacturer's written instructions, overlapping sides and ends.
 - 2. Place drainage course 6 inches or less in compacted thickness in a single layer.
 - 3. Place drainage course that exceeds 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.
 - 4. Compact each layer of drainage course to required cross sections and thicknesses to not less than 95 percent of maximum dry unit weight.

3.21 FIELD QUALITY CONTROL

- A. Testing Agency Services: Allow testing agency to inspect and test each subgrade and each fill or backfill layer. Do not proceed until test results for previously completed work verify compliance with requirements.
- B. Perform field in-place density tests according to test methods identified for each material.
- C. Field in-place density tests may also be performed by the nuclear method according to ASTM D 6938, provided that calibration curves are periodically checked and adjusted to correlate to tests performed using TxDOT Tex-113-E/Tex-114-E or ASTM D 698/1557.
- D. When field in-place density tests are performed using nuclear methods, make calibration checks of both density and moisture gages at beginning of work, on each different type of material encountered, and at intervals as directed by the Architect/Engineer.
- E. Footing Subgrade: At footing subgrades, perform at least one test of each soil stratum to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of each subgrade with related tested strata when acceptable to the Architect/Engineer.
- F. Paved Areas: At subgrade and at each compacted fill, backfill, and base layer, perform at least one field in-place density test for every 2,000 sq. ft. of building area and 3,000 sq. ft. or less of paved area, but in no case fewer than three tests.

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- G. Foundation Wall Backfill: In each compacted backfill layer, perform at least one field in-place density test for each 100 feet or less of wall length, but no fewer than two tests along a wall face.
- H. Trench Backfill: In each compacted initial and final backfill layer, perform at least one field in-place density test for each 150 feet or less of trench, but no fewer than two tests.
- I. When testing agency reports that subgrades, fills, or backfills are below specified density, scarify and moisten or aerate, or remove and replace soil to the depth required, re-compact and retest until required density is obtained.

3.22 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and re-establish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or lose compaction due to subsequent construction operations or weather conditions.
- C. Scarify or remove and replace material to depth directed by the Architect/Engineer; reshape and re-compact at optimum moisture content to the required density.
- D. Prevent displacement or loose soil from falling into excavation; maintain soil stability.
- E. Protect structures, utilities and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth operations.
- F. Settling: Where settling occurs during the Project correction period, remove finished surfacing, backfill with additional approved material, compact, and reconstruct surfacing.
- G. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to the greatest extent possible.

3.23 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Remove waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off the Owner's property.

END OF SECTION

SECTION 32 12 16 - HOT-MIX ASPHALT PAVING

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section includes provisions for hot-mixed asphalt (HMA) paving over prepared subgrade or base. Section includes:
 - 1. Asphalt Paving Base Course.
 - 2. Asphalt Paving Surface Course.
 - 3. Prepared flexible base is specified in Section 322316, Excavation and Fill.
 - 4. Proof rolling of prepared base is included in this Section.
 - 5. Concrete wheel stops.
 - 6. This Section includes saw-cutting of edges of existing pavement, and other site preparations required to complete paving.
- B. Related Sections:
 - 1. Section 32 17 23, Pavement Markings.
 - 2. Section 31 23 16, Excavation and Fill.

1.02 SUBMITTALS

- A. Material Certificates and mix design signed by material producer and Contractor, certifying that each material item and the mix design complies with or exceeds specified requirements. Submittals to include:
 - 1. Mix design for each type asphalt material with laboratory results supporting design.
 - 2. Prime Coat material certificate
 - 3. Tack Coat material certificate
 - 4. Wheel Stop product submittal
 - 5. Mirafi Filter Fabric for surfacing of tennis courts on concrete

1.03 SITE CONDITIONS

- A. Weather Limitations – Prime Coat: Apply prime coats when ambient temperature is above 60° F, or above 50° F and rising. Measure air temperature in the shade away from artificial heat. Do not apply when base is wet or contains an excess of moisture.
- B. Weather Limitations – Tack Coat and HMA Paving: Apply tack coat and construct hot-mixed asphalt base and surface courses when the roadway surface temperature is at or above 60°F unless otherwise approved. Measure the roadway surface temperature with a hand-held thermal camera or infrared thermometer. The Engineer may allow mixture placement to begin before the roadway surface reaches the required temperature if conditions are such that the roadway surface will reach the required

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temperature within 2 hours of beginning placement operations. Place mixtures only when weather conditions and moisture conditions of the roadway surface are suitable as determined by the Engineer. The Engineer may restrict the Contractor from paving if the ambient temperature is likely to drop below 32°F within 12 hours of paving.

- C. Grade Control: Establish and maintain required lines and elevations. Verify subgrade, subbase, or base surface grading and design elevations prior to placing any asphalt material.

1.04 REFERENCES

- A. Texas Department of Transportation (TxDOT):
 - 1. Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges – 2014.
 - 2. Standard Test Procedures – 100-E Series, 200-F Series, 300-D series, 400-A Series, and 500-C Series.
- B. Asphalt Institute:
 - 1. AI MS-2 - Mix Design Methods for Asphalt Concrete and Other Hot- Mix Types.
 - 2. AI MS-19 - Basic Asphalt Emulsion Manual.
- C. ASTM International:
 - 1. ASTM D1188 - Standard Test Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Coated Samples
 - 2. ASTM D2027 - Standard Specification for Cutback Asphalt (Medium-Curing Type).
 - 3. ASTM D2397 - Standard Specification for Cationic Emulsified Asphalt.
 - 4. ASTM D2726 - Standard Test Method for Bulk Specific Gravity and Density of Non-Absorptive Compacted Bituminous Mixtures.
 - 5. ASTM D2950 - Standard Test Method for Density of Bituminous Concrete in Place by Nuclear Methods.
 - 6. ASTM D3381 - Standard Specification for Viscosity-Graded Asphalt Cement for Use in Pavement Construction.
 - 7. ASTM D3515 - Standard Specification for Hot-Mixed, Hot-Laid Bituminous Paving Mixtures.
 - 8. ASTM D3549 - Standard Test Method for Thickness or Height of Compacted Bituminous Paving Mixture Specimens.
 - 9. ASTM D946 - Standard Specification for Penetration-Graded Asphalt Cement for Use in Pavement Construction.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. General: Use locally available materials and gradations that exhibit a satisfactory record of previous installations.

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- B. Asphalt Fine Grade Base Course for Streets, Roadways, and Parking Areas: The asphaltic concrete base course shall be plant mixed, Hot Laid, Type B (Fine Grade Base Course) meeting the specification requirements of 2014 TxDOT Standard Specifications, Item 340. The mix shall be compacted between 91 and 96 percent of the maximum theoretical density as measured by TEX-227-F. The asphalt cement content by percent of total mixture weight should fall within a tolerance of ± 0.3 percent asphalt cement from the job-mix formula (JMF). The grade of the asphalt cement should be PG 64-22 or higher. In addition, the mix should be designed so 77 to 87 percent of the voids in the mineral aggregate (VMA) are filled with asphalt cement. The mix shall have at least 70 percent strength retention when tested in accordance with TEX-531-C.
- C. Asphalt Fine Grade Surface Course for Streets, Roadways, Parking Areas, and Tennis Courts: The asphaltic concrete surface course shall be plant mixed, Hot Laid, Type D (Fine Grade Surface Course) meeting the specification requirements of 2014 TxDOT Standard Specifications, Item 340. The mix shall be designed for a stability of at least 40 and shall be compacted between 91 and 96 percent of the maximum theoretical density as measured by TEX-227-F. The asphalt cement content by percent of total mixture weight should fall within a tolerance of ± 0.3 percent asphalt cement from the specific mix. The grade of the asphalt cement should be PG 64-22. In addition, the mix should be designed so 75 to 85 percent of the voids in the mineral aggregate (VMA) are filled with asphalt cement. The mix shall have at least 70 percent strength retention when tested in accordance with TEX-531-C.
- D. Prime Coat: The asphaltic material for Prime Coat on streets, roadways, and parking lots shall meet the requirements for Cut-Back-Asphalt, "MC-30", Emulsified Asphalts, "AE-P", "EAP&T", or other asphalts or emulsions as approved by the Engineer. Prime coat applications on concrete for tennis courts shall meet the requirements for AC-20, MS2, or other asphalts or emulsions as approved by the Engineer. Asphalts and Emulsions shall conform to the requirements of Item 300, "Asphalts, Oils and Emulsions" of the 2014 TxDOT Standard Specifications.
- E. Tack Coat shall be a Performance Graded Binder Asphalt (PG Binder), Emulsified Asphalt, "SS-1H", "EAP&T", Cationic Emulsified Asphalt, "CSS-1H", or other asphalts or emulsions as approved by the Engineer. Asphalts and Emulsions shall conform to the requirements of Item 300, "Asphalts, Oils and Emulsions" of the TxDOT Standard Specifications.
- F. Parking Lane Marking Paint: See Specification Section 02763. Color as specified on the Drawings.
- G. Wheel Stops: 3,000-psi compressive strength precast, air- entrained concrete with steel dowels, as detailed on the Drawings.
- H. Mirafi Filter Fabric (MPV 500) or approved equal.

PART 3 - EXECUTION

3.01 MANUFACTURING QUALITY CONTROL

- A. **Provide plant-mixed, hot-laid asphalt**-aggregate mixture complying with TxDOT Item 340, Dense Graded Hov-Mix Asphalt and as recommended by local paving authorities to suit project conditions.

3.02 SURFACE PREPARATION

- A. General: Remove loose material from compacted base surface immediately before applying prime coat.
- B. Proof-roll prepared base surface to check for unstable areas and areas requiring additional compaction.
- C. Notify Architect/Engineer of unsatisfactory conditions. Do not begin paving work until deficient base areas have been corrected and are ready to receive paving.
- D. Subgrade and flexible base areas left open for extended periods before covering or asphaltting shall be retested per Section 02300 immediately prior to covering.
- E. Contractor shall sawcut a straight, neat edge at all tie-ins to existing pavements. Broken or damaged edges shall be re-sawed before paving initiation.
- F. Prime Coat: Apply at rate of 0.20 gal. to 0.50 gal. per sq. yd., over compacted flexible base course. Apply material to penetrate and seal, but not flood surface. For applications on concrete for tennis courts, apply at a rate between 0.04 gal. to 0.20 gal. per sq. yd. or as directed by the Engineer. Cure and dry as long as necessary to attain penetration and/or evaporation of volatile, typically 24 hours minimum.
- G. Tack Coat: Apply to contact surfaces of previously constructed asphalt, asphalt base course, Portland cement concrete pavement, curbs, joints, and surfaces abutting or projecting into hot-mixed asphalt pavement. Distribute at a rate of 0.04 gal. to 0.10 gal. per sq. yd. of surface. Apply the tack coat in a thin, uniform manner to avoid streaks and other irregular patterns. Allow adequate time for emulsion to break completely before placing any material. Prevent splattering of tack coat when placed adjacent to curb, gutter, and structures. Roll the tack coat with a pneumatic-tire roller to remove streaks and other irregular patterns when directed.
- H. Allow to dry until at proper condition to receive paving.
- I. Exercise care in applying bituminous materials to avoid smearing of adjoining concrete surfaces. Remove and clean damaged surfaces.

3.03 PLACING MIX

- A. General: Place hot-mixed asphalt mixture on prepared surface, spread, and strike off. Spread mixture at a minimum temperature of 260° F. Place areas inaccessible to equipment by hand.
- B. Paver Placing: Place in strips not less than 10 feet wide, unless otherwise acceptable to Architect/Engineer. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips.
- C. Immediately correct surface irregularities in finish course behind paver. Remove excess material forming high spots with shovel or lute.
- D. Joints: Make joints between old and new pavements, or between successive days' work, to ensure continuous bond between adjoining works. Construct joints to have same texture, density, and smoothness as other sections of hot-mixed asphalt course. Clean contact surfaces and apply tack coat.

3.04 ROLLING

- A. General: Begin rolling when mixture will bear roller weight without excessive displacement.
- B. Compact mixture with hot hand tampers or vibrating plate compactors in areas inaccessible to rollers.
- C. Breakdown Rolling: Accomplish breakdown or initial rolling immediately following rolling of joints and outside edge. Check surface after breakdown rolling and repair displaced areas by loosening and filling, if required, with hot material.
- D. Second Rolling: Follow breakdown rolling as soon as possible, while mixture is hot. Continue second rolling until mixture has been evenly compacted.
- E. Finish Rolling: Perform finish rolling while mixture is still warm enough for removal of roller marks. Continue rolling until roller marks are eliminated and course has attained at least 91 percent of laboratory density.
- F. Density Testing: Verify minimum pavement density using nuclear gauge methods, TxDOT Test Specification Tx-207-F.
- G. Patching: Remove and replace paving areas mixed with foreign materials and defective areas. Cut out such areas and fill with fresh, hot-mixed asphalt. Compact by rolling to specified surface density and smoothness.
- H. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.
- I. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.05 TRAFFIC AND LANE MARKINGS

- A. Provide pavement markings in accordance with Section 02763, Pavement Markings.
- B. Cleaning: Sweep and clean surface to eliminate loose material and dust.
- C. Striping: Use traffic lane-marking paint as specified in Section 02763, factory-mixed, quick-drying, and nonbleeding.
- D. Do not apply traffic and lane marking paint until layout and placement have been verified with Architect/Engineer.
- E. Apply paint with mechanical equipment to produce uniform straight edges. Apply at manufacturer's recommended rates to provide minimum 15 mils dry thickness.

3.06 WHEEL STOPS

- A. General: Secure wheel stops with steel rods as detailed on plans.

3.07 FIELD QUALITY CONTROL

- A. General: Testing in-place hot-mixed asphalt courses for compliance with requirements for material temperature, compacted density, thickness, and surface smoothness will be done by Owner's testing laboratory. Repair or remove and replace unacceptable paving as directed by Architect/Engineer.

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- B. Asphalt Paving Mix Temperature: Measure temperature at time of placement, acceptable range is 260° F (minimum) and 325° F (maximum). Notify Architect/Engineer if temperatures are not within the acceptable range.
- C. Asphalt Paving - Density Field Testing: Field test freshly placed asphalt paving using nuclear gage method, TxDOT Test Specification Tex-207-F. This testing shall be performed during paving operation to ensure proper equipment and methods are utilized to achieve minimum compaction requirements. These field density tests shall be performed on each pavement layer at a rate of one test per 2,000 square feet, but no fewer than 3 tests. Compaction shall achieve 91 percent minimum and 96 percent maximum.
- C. Asphalt Paving - In-Place Density Testing: After completion of asphalt paving, Testing Agency shall take core samples of each pavement layer for every 4,000 sq. ft. of pavement area, with no fewer than 3 cores taken. Compaction shall be between 91 and 96 percent of the maximum theoretical density as measured by Tex-227-F.
- D. Thickness Testing: Using the core samples, Testing Agency shall measure the in-place compacted thickness of each pavement layer. Compacted thicknesses are acceptable if meeting the following tolerances:
 - 1. Asphalt Base Course: Plus 1 ½ inches or minus 3/8 inch
 - 2. Asphalt Surface Course: Plus ¾ inch or minus 1/8 inch.
- E. Surface Smoothness: Test finished surface of hot-mixed asphalt course for smoothness, using 10-foot straightedge applied parallel with and at right angles to centerline of paved area. Surfaces will not be acceptable if exceeding the following tolerances for smoothness:
 - 1. Roadway / Driveway and Parking Areas - Surface Course 3/16".
 - 2. Tennis Courts – Nickel Test (See spec. section 32 2542 Asphalt Tennis Court Color Coating)
 - 3. Check surface areas at intervals as directed by Architect/Engineer.
- F. Remove and replace or install additional hot-mix asphalt, as directed by the Architect/Engineer, where test results or measurements indicate that it does not comply with specified requirements.

END OF SECTION

SECTION 32 13 13 - PORTLAND CEMENT CONCRETE PAVING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes exterior Portland cement concrete paving for the following:
 - 1. Driveways and roadways.
 - 2. Parking lots.
 - 3. Curbs and gutters.
 - 4. Walkways and Stairs.
 - 5. Slope protection.
 - 6. Unit paver base
 - 7. Wheel stops
- B. Related Sections:
 - 1. Section 31 10 00, Excavation and Fill
 - 2. Section 32 17 23, Pavement Markings.
 - 3. Division 03 30 00 Section "Cast-in-Place Concrete" for general building applications of concrete, when applicable.
 - 4. Division 32 13 40 Section "Concrete Paving Joint Sealants" for joint sealants of joints in concrete pavement and at isolation joints of concrete pavement with adjacent construction.

1.03 REFERENCES

- A. American Concrete Institute:
 - 1. ACI 301 - Specifications for Structural Concrete.
 - 2. ACI 304 - Guide for Measuring, Mixing, Transporting, and Placing Concrete.
- B. ASTM International:
 - 1. ASTM A185 - Standard Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.
 - 2. ASTM A497 - Standard Specification for Steel Welded Wire Fabric, Deformed, for Concrete Reinforcement.
 - 3. ASTM A 615/A 615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
 - 4. ASTM C 33 - Standard Specification for Concrete Aggregates.

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5. ASTM C 94/C 94M - Standard Specification for Ready-Mixed Concrete.
6. ASTM C 150 - Standard Specification for Portland Cement.
7. ASTM C 260 - Standard Specification for Air-Entraining Admixtures for Concrete.
8. ASTM C 309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
9. ASTM C 494/C 494M - Standard Specification for Chemical Admixtures for Concrete.
10. ASTM C 1315 - Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete.
11. ASTM D 1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types).
12. ASTM D 1752 - Standard Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.

1.04 SUBMITTALS

- A. Material Certificates signed by material producer and Contractor, certifying that each material item complies with or exceeds specified requirements.
- B. Submit the following according to the Conditions of the Contract:
 1. Concrete Mix Design.
 2. Product data for proprietary materials and items, including reinforcement and forming accessories, admixtures, joint systems, curing compounds, dry-shake finish materials, and others if requested by Architect/Engineer.
 3. Field quality control test reports.

1.05 PROJECT CONDITIONS

- A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.
- B. Weather Limitations: Construct concrete paving and improvements when atmospheric temperature is above 35° F (2° C). Base course may be placed when air temperature is above 30° F (minus 1° C) and rising.
- C. Grade Control: Establish and maintain required lines and elevations.

1.06 QUALITY ASSURANCE

- A. Concrete Standards: Comply with provisions of the following standards, except where more stringent requirements are indicated.
 1. American Concrete Institute (ACI) 301, "Specifications for Structural Concrete for Buildings."
 2. ACI 318, "Building Code Requirements for Reinforced Concrete."

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3. Concrete Reinforcing Steel Institute (CRSI) "Manual of Standard Practice."
4. Concrete Manufacturer Qualifications: Manufacturer of ready- mixed concrete products complying with ASTM C 94/C 94M requirements for production facilities and equipment.
5. Concrete Testing Service: The Owner will engage a qualified independent testing agency to perform materials evaluation tests and review design concrete mixes.

PART 2 - PRODUCTS

2.01 FORMS

- A. Form Materials: Plywood, metal, metal-framed plywood, or other acceptable panel-type materials to provide full-depth, continuous, straight, smooth exposed surfaces.
- B. Use flexible or curved forms for curves of a 100-foot or less radius.
- C. Form Release Agent: Provide commercial formulation form-release agent with a maximum of 350 mg/l volatile organic compounds (VOCs) that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

2.02 REINFORCING MATERIALS

- A. Reinforcing Bars and Tie Bars: ASTM A 615, Grade 60, deformed.
- B. Plain, Cold-Drawn Steel Wire: ASTM A 82.
- C. Welded Steel Wire Fabric: ASTM A 185.
- D. Furnish in flat sheets, not rolls, unless otherwise acceptable to Architect/Engineer.
- E. Deformed-Steel Welded Wire Fabric: ASTM A 497.
- F. Fabricated Bar Mats: Welded or clip-assembled steel bar mats, ASTM A 184. Use ASTM A 615, Grade 60 steel bars, unless otherwise indicated.
- G. Joint Dowel Bars: Plain steel bars, ASTM A 615/A 615M, Grade 60. Cut bars true to length with ends square and free of burrs.
- H. Tie Bars: ASTM A 615/A 615M, Grade 60, deformed.
- I. Hook Bolts: ASTM A 307, Grade A, internally and externally threaded. Design hook-bolt joint assembly to hold coupling against pavement form and in position during concreting operations, and to permit removal without damage to concrete or hook bolt.
- J. Supports for Reinforcement: Chairs, spacers, dowel bar supports and other devices for spacing, supporting, and fastening reinforcing bars, welded wire fabric, and dowels in place. Use wire bar-type supports complying with CRSI specifications.
- K. Use supports with sand plates or horizontal runners where base material will not support chair legs.

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2.03 CONCRETE MATERIALS

- A. Portland Cement: ASTM C 150, Type I.
- B. Use one brand of cement throughout Project unless otherwise acceptable to Architect/Engineer.
- C. Fly Ash: ASTM C 618, Type F.
- D. Normal-Weight Aggregates: ASTM C 33, Class 4, and as follows. Provide aggregates from a single source.
- E. Maximum Aggregate Size: 1-1/2 inches.
- F. Do not use fine or coarse aggregates that contain substances that cause spalling.
- G. Local aggregates not complying with ASTM C 33 that have been shown to produce concrete of adequate strength and durability by special tests or actual service may be used when acceptable to Architect/Engineer.
- H. Water: Potable.

2.04 ADMIXTURES

- A. Provide concrete admixtures that contains not more than 0.1 percent chloride ions.
- B. Air-Entraining Admixture: ASTM C 260, certified by manufacturer to be compatible with other required admixtures.
- C. Water-Reducing Admixture: ASTM C 494, Type A.
- D. High-Range Water-Reducing Admixture: ASTM C 494, Type F or Type G.
- E. Water-Reducing and Accelerating Admixture: ASTM C 494, Type E.
- F. Water-Reducing and Retarding Admixture: ASTM C 494, Type D.

2.05 CURING MATERIALS

- A. Clear Solvent-Borne Liquid Membrane-Forming Curing Compound: ASTM C 309, Type I, Class A or B, wax free. Moisture loss not less than 0.055 gr./sq.cm when applied at 200 sq.ft./gal.
- B. Clear Waterborne Membrane-Forming Curing Compound: ASTM C 309, Type I, Class B.
- C. Evaporation Control: Monomolecular film-forming compound applied to exposed concrete slab surfaces for temporary protection from rapid moisture loss.

2.06 RELATED MATERIALS

- A. Boiled Linseed Oil Mixture: Combination of boiled linseed oil and mineral spirits, complying with AASHTO M-233.
- B. Traffic Paint: Chlorinated rubber traffic marking paint. See Specification Section 02578.
- C. Color: White.

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2.07 CONCRETE MIX

- A. Limit use of fly ash to 20 percent of cement content by weight.
- B. Proportion mixes according to ACI 211.1 and ACI 301 to provide normal-weight concrete with the following properties:
 - 1. Compressive Strength (28-Day): 3000 psi for sidewalks, curbs, and flatwork, 4000 psi for driveways, parking, and median barriers.
 - 2. Maximum Water-Cement Ratio at Point of Placement: 0.45.
 - 3. Slump Limits at Point of Placement: 3 - 5 inches.
- C. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having an air content as follows with a tolerance of plus or minus 1-1/2 percent, and Air Content: 3.5 percent for 1-1/2-inch maximum aggregate.

2.08 CONCRETE MIXING

- A. Ready-Mixed Concrete: Comply with requirements and with ASTM C 94.
- B. When air temperature is between 85 F (30 C) and 90 F (32 C), reduce mixing and delivery time from 90 minutes to 75 minutes; when air temperature is above 90 F (32 C), reduce mixing and delivery time to 60 minutes.

2.09 WHEEL STOPS

- A. Wheel Stops: 3,000-psi compressive strength precast, air- entrained concrete, as defined on the Drawings.

PART 3 - EXECUTION

3.01 SURFACE PREPARATION

- A. Proof-roll prepared base surface to check for unstable areas and verify need for additional compaction. Do not begin paving work until such conditions have been corrected and are ready to receive paving.
- B. Remove loose material from compacted base surface immediately before placing concrete.

3.02 EDGE FORMS AND SCREED CONSTRUCTION

- A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides for paving to required lines, grades, and elevations. Install forms to allow continuous progress of work and so that forms can remain in place at least 24 hours after concrete placement.
- B. Check completed formwork and screeds for grade and alignment to following tolerances:
 - 1. Top of Forms: Not more than 1/8 inch in 10 feet.
 - 2. Vertical Face on Longitudinal Axis: Not more than 1/4 inch in 10 feet.

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- C. Clean forms after each use and coat with form release agent as required to ensure separation from concrete without damage.

3.03 PLACING REINFORCEMENT

- D. General: Comply with Concrete Reinforcing Steel Institute's recommended practice for "Placing Reinforcing Bars" for placing and supporting reinforcement.
- E. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.
- F. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.
- G. Install welded wire fabric in lengths as long as practicable. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.
- H. Install fabricated bar mats in lengths as long as practicable. Handle units to keep them flat and free of distortions. Straighten bends, kinks, and other irregularities or replace units as required before placement. Set mats for a minimum 2- inch overlap to adjacent mats.

3.04 JOINTS

- A. General: Construct contraction, construction, and isolation joints true to line with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to the centerline, unless indicated otherwise.
- B. When joining existing paving, place transverse joints to align with previously placed joints, unless indicated otherwise.
- C. When joining existing concrete pavements or sidewalks, Contractor shall install dowel tie bars as follows:

<u>Pavement Thickness</u>	<u>Dowel Size & Length</u>	<u>Dowel Spacing</u>
4"	#4 Bars x 12"	12"
5"	#5 Bars x 12"	12"
6"	#6 Bars x 18"	12"
7"	#6 Bars x 20"	12"
8"	#7 Bars x 24"	12"

unless otherwise indicated.

- D. Contraction Joints: Provide weakened-plane contraction joints, sectioning concrete into areas as noted on the plans. Construct contraction joints for a depth equal to at least 1/4 of the concrete thickness, as follows: equal to width of sidewalk or flatwork or maximum of 10' spacing, unless otherwise noted on the plans..
- E. Tooled Joints: Form contraction joints in fresh concrete by grooving and finishing each edge of joint with a radius jointer tool.
- F. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch-wide joints into hardened

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- concrete when cutting action will not tear, abrade, or otherwise damage surface and before development of random contraction cracks.
- G. Construction Joints: Set construction joints at side and end terminations of paving and at locations where paving operations are stopped for more than ½ hour, unless paving terminates at isolation joints.
 - H. Provide preformed galvanized steel or plastic keyway-section forms or bulkhead forms with keys, unless indicated otherwise. Embed keys at least 1-1/2 inches into concrete.
 - I. Continue reinforcement across construction joints unless indicated otherwise. Do not continue reinforcement through sides of strip paving unless indicated.
 - J. Use bonding agent on existing concrete surfaces that will be joined with fresh concrete.
 - K. Isolation Joints: Form isolation joints of preformed joint filler strips abutting concrete structures, buildings, other fixed objects, and where indicated.
 - L. Locate expansion joints at intervals of 100 feet, unless indicated otherwise.
 - M. Extend joint fillers full width and depth of joint, not less than ½ inch or more than 1 inch below finished surface where joint sealant is indicated. Place top of joint filler flush with finished concrete surface when no joint sealant is required.
 - N. Furnish joint fillers in one-piece lengths for full width being placed wherever possible. Where more than one length is required, lace or clip joint filler sections together.
 - O. Protect top edge of joint filler during concrete placement with a metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.
 - P. Provide joint sealant in all isolation joints abutting buildings, structures, all roadway pavements, all courtyard pavements, all site flatwork excluding typical sidewalks, and as indicated in the plans or details.

3.05 CONCRETE PLACEMENT

- A. Inspection: Before placing concrete, inspect and complete formwork installation, reinforcing steel, and items to be embedded or cast in. Notify other trades to permit installation of their work.
- B. Remove snow, ice, or frost from base surface and reinforcing before placing concrete. Do not place concrete on surfaces that are frozen.
- C. Moisten base to provide a uniform dampened condition at the time concrete is placed. Do not place concrete around manholes or other structures until they are at the required finish elevation and alignment.
- D. Comply with requirements and with ACI 304R for measuring, mixing, transporting, and placing concrete.

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- E. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.
- F. When concrete placing is interrupted for more than ½ hour, place a construction joint.
- G. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- H. Consolidate concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures to consolidate concrete complying with ACI 309R.
- I. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand-spreading and consolidation. Consolidate with care to prevent dislocating reinforcing, dowels, and joint devices.
- J. Screed paved surfaces with a straightedge and strike off. Use bull floats or darbies to form a smooth surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces prior to beginning finishing operations.
- K. Place concrete in two operations; strike off initial pour for entire width of placement and to the required depth below finish surface. Lay welded wire fabric or fabricated bar mats immediately in final position. Place top layer of concrete, strike off, and screed.
- L. Remove and replace portions of bottom layer of concrete that have been placed more than 15 minutes without being covered by top layer or use bonding agent if acceptable to Architect/Engineer.
- M. Curbs and Gutters: When automatic machine placement is used for curb and gutter placement, submit revised mix design and laboratory test results that meet or exceed requirements. Produce curbs and gutters to required cross section, lines, grades, finish, and jointing as specified for formed concrete. If results are not acceptable, remove and replace with formed concrete.
- N. Slip-Form Pavers: When automatic machine placement is used for paving, submit revised mix design and laboratory test results that meet or exceed requirements. Produce paving to required thickness, lines, grades, finish, and jointing as required for formed paving.
- O. Cold Weather Placement: Comply with provisions of ACI 306R and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
- P. When air temperature has fallen to or is expected to fall below 40 F (4 C), uniformly heat water and aggregates before mixing to obtain a concrete mixture

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temperature of not less than 50 F (10 C) and not more than 80 F (27 C) at point of placement.

- Q. Do not use frozen materials or materials containing ice or snow.
- R. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise accepted in mix designs.
- S. Hot-Weather Placement: Place concrete complying with ACI 305R and as specified when hot weather conditions exist.
- T. Cool ingredients before mixing to maintain concrete temperature at time of placement to below 90 F (32 C). Mixing water may be chilled or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
- U. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embedding in concrete.
- V. Fog spray forms, reinforcing steel, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

3.06 CONCRETE FINISHING

- A. Float Finish: Begin floating when bleed water sheen has disappeared and the concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats, or by hand-floating if area is small or inaccessible to power units. Finish surfaces to true planes within a tolerance of 1/4 inch in 10 feet as determined by a 10-foot-long straightedge placed anywhere on the surface in any direction. Cut down high spots and fill low spots. Refloat surface immediately to a uniform granular texture.
- B. Medium-to-Fine-Textured Broom Finish: Draw a soft bristle broom across concrete surface perpendicular to line of traffic to provide a uniform fine line texture finish. (Sidewalks, curbs, drainage structures).
- C. Medium-to-Coarse-Textured Broom Finish: Provide a coarse finish by striating surface 1/16 inch to 1/8 inch deep with a stiff-bristled broom, perpendicular to line of traffic. (Medium Paving).
- D. Final Tooling: Tool edges of paving, gutters, curbs, and joints formed in fresh concrete with a jointing tool to the following radius. Repeat tooling of edges and joints after applying surface finishes. Eliminate tool marks on concrete surfaces.
- E. Radius: 3/8 inch.
- F. After final floating, apply a light hand-trowel finish followed by a medium broom finish to concrete. Cure concrete with a curing compound recommended by the

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dry-shake material manufacturer. Apply the curing compound immediately after final finishing.

- G. Stairs and ramps (slope in excess of 5%) are to have a non-slip aggregate such as aluminum oxide or emery grip applied during floating for long term skid resistance.

3.07 CONCRETE PROTECTION AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with the recommendations of ACI 306R for cold weather protection and ACI 305R for hot weather protection during curing.
- B. Evaporation Control: In hot, dry, and windy weather, protect concrete from rapid moisture loss before and during finishing operations with an evaporation-control material. Apply according to manufacturer's instructions after screeding and bull floating, but before floating.
- C. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.
- D. Curing Methods: Cure concrete by moisture curing, moisture- retaining-cover curing, curing compound, or a combination of these as follows:
- E. Moisture Curing: Keep surfaces continuously moist for not less than 7 days with the following materials:
- F. Water. Continuous water-fog spray.
- G. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with a 12-inch lap over adjacent absorptive covers.
- H. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
- I. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's directions. Recoat areas subjected to heavy rainfall within 3 hours after initial application. Maintain continuity of coating and repair damage during curing period.

3.08 TRAFFIC PAINT

- A. Traffic Paint: Apply traffic paint for striping and other markings with mechanical equipment to produce uniform straight edges. Apply at manufacturer's recommended rates to provide a 15-mil minimum wet film thickness. Comply with requirements of Section 32 1723, Pavement Markings, when applicable.

3.09 FIELD QUALITY CONTROL TESTING

- A. The Owner will employ a qualified independent testing and inspection agency to sample materials, perform tests, and submit test reports during concrete placement as follows:

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- B. Sampling Fresh Concrete: ASTM C 172, except modified for slump to comply with ASTM C 94.
- C. Slump: ASTM C 143; one test at point of placement for each compressive-strength test but no less than one test for each day's pour of each type of concrete. Additional tests will be required when concrete consistency changes.
- D. Air Content: ASTM C 231, pressure method; one test for each compressive-strength test but no less than one test for each day's pour of each type of air-entrained concrete.
- E. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 F (4 C) and below and when 80 F (27 C) and above, and one test for each set of compressive-strength specimens.
- F. Compression Test Specimens: ASTM C 31; one set of four standard cylinders for each compressive-strength test, unless directed otherwise.
- G. Compressive-Strength Tests: ASTM C 39; one set for each day's pour of each concrete class exceeding 5 cu. yd. but less than 25 cu. yd., plus one set for each additional 25 cu. yd. Test one specimen at 7 days, test two specimens at 28 days, and retain one specimen in reserve for later testing if required.
- H. When frequency of testing will provide fewer than five strength tests for a given class of concrete, conduct testing from at least five randomly selected batches or from each batch if fewer than five are used.
- I. When total quantity of a given class of concrete is less than 25 cu. yd., Architect/Engineer may waive strength testing if adequate evidence of satisfactory strength is provided.
- J. Strength level of concrete will be considered satisfactory if averages of sets of three consecutive strength test results equal or exceed specified compressive strength and no individual strength test result falls below specified compressive strength by more than 500 psi.
- K. Test results will be reported in writing to Architect/Engineer, concrete manufacturer, and Contractor within 24 hours of testing. Reports of compressive strength tests shall contain the Project identification name and number, date of concrete placement, name of concrete testing agency, concrete type and class, location of concrete batch in paving, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7-day and 28-day tests.
- L. Additional Tests: The testing agency will make additional tests of the concrete when test results indicate slump, air entrainment, concrete strengths, or other requirements have not been met, as directed by Architect/Engineer. Testing agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed.

3.10 REPAIRS AND PROTECTION

- A. Remove and replace concrete paving that is broken, damaged, or defective, or does not meet the requirements of this Section.

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- B. Drill test cores where directed by Architect/Engineer when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory pavement areas with Portland cement concrete bonded to paving with epoxy adhesive.
- C. Protect concrete from damage. Exclude traffic from paving for at least 14 days after placement. When construction traffic is permitted, maintain paving as clean as possible by removing surface stains and spillage of materials as they occur.
- D. Maintain concrete paving free of stains, discoloration, dirt, and other foreign material. Sweep concrete paving not more than 2 days prior to date scheduled for Substantial Completion inspections.

END OF SECTION

SECTION 32 13 40 - CONCRETE PAVING JOINT SEALANTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes the following:
 - 1. Expansion and contraction joints within cement concrete pavement.
 - 2. Joints between cement concrete and asphalt pavement.
- B. Related Sections include the following:
 - 1. Section 32 17 23 "Portland Cement Concrete Paving" for constructing joints in concrete pavement.

1.03 SUBMITTALS

- A. Product Data: For each joint-sealant product indicated or used on the project.
- B. Product Certificates: For each type of joint sealant and accessory, signed by product manufacturer.
- C. Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:
 - 1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
 - 2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.
- D. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for sealants.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: An employer of workers trained and approved by manufacturer.
- B. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.
- C. Product Testing: Obtain test results for "Product Test Reports" Paragraph in "Submittals" Article from a qualified testing agency based on testing of current sealant products within a 36-month period preceding the commencement of the Work.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration date, pot life, curing time, and mixing instructions for multi-component materials.
- B. Store and handle materials to comply with manufacturer's written instructions to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

1.06 PROJECT CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:
 - 1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 F (4.4 C).
 - 2. When joint substrates are wet or covered with frost.
 - 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
 - 4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Products: Subject to compliance with requirements, provide one of the products listed in other Part 2 articles.

2.02 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, backing materials, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer based on testing and field experience.

2.03 COLD-APPLIED JOINT SEALANTS

- A. Type NS Silicone Sealant for Concrete: Single-component, low-modulus, neutral-curing, nonsag silicone sealant complying with ASTM D 5893 for Type NS.
 - 1. Products:
 - a. Crafcoc Inc.; RoadSaver Silicone.
 - b. Dow Corning Corporation; 888.
 - c. Approved Equal
- B. Type SL Silicone Sealant for Concrete and Asphalt: Single-component, low-modulus, neutral-curing, self-leveling silicone sealant complying with ASTM D 5893 for Type SL.
 - 1. Products:

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- a. Crafcoc Inc.; RoadSaver Silicone SL.
- b. Dow Corning Corporation; 890-SL.
- c. Approved Equal

2.04 HOT-APPLIED JOINT SEALANTS

- A. Jet-Fuel-Resistant Elastomeric Sealant for Concrete: Single-component formulation complying with ASTM D 3569.
 - 1. Products:
 - Crafcoc Inc.; Superseal 444/777.
 - Meadows, W. R., Inc.; Poly-Jet 3569.
 - Approved Equal

2.05 JOINT-SEALANT BACKER MATERIALS

- A. General: Provide joint-sealant backer materials that are non-staining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by joint-sealant manufacturer based on field experience and laboratory testing.
- B. Round Backer Rods for Cold- and Hot-Applied Sealants: ASTM D 5249, Type 1, of diameter and density required to control sealant depth and prevent bottom-side adhesion of sealant.
- C. Backer Strips for Cold- and Hot-Applied Sealants: ASTM D 5249; Type 2; of thickness and width required to control sealant depth, prevent bottom-side adhesion of sealant, and fill remainder of joint opening under sealant.

2.06 PRIMERS

- A. Primers: Product recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.
 - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions.

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- B. Joint Priming: Prime joint substrates where indicated or where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

3.03 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install backer materials of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 - 1. Do not leave gaps between ends of backer materials.
 - 2. Do not stretch, twist, puncture, or tear backer materials.
 - 3. Remove absorbent backer materials that have become wet before sealant application and replace them with dry materials.
- D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
 - 1. Place sealants so they directly contact and fully wet joint substrates.
 - 2. Completely fill recesses provided for each joint configuration.
 - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- E. Tooling of Non-sag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
 - 1. Remove excess sealants from surfaces adjacent to joint.
 - 2. Use tooling agents that are approved in writing by joint-sealant manufacturer and that do not discolor sealants or adjacent surfaces.
- F. Provide joint configuration to comply with joint-sealant manufacturer's written instructions, unless otherwise indicated.
- G. Provide recessed joint configuration for silicone sealants of recess depth and at locations indicated.

3.04 CLEANING

- A. Clean off excess sealants or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved by manufacturers of joint sealants and of products in which joints occur.

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3.05 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately and replace with joint sealant so installations with repaired areas are indistinguishable from the original work.

END OF SECTION

SECTION 32 17 23 - PAVEMENT MARKINGS

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section covers the furnishing of all paint, labor, equipment, and materials and in performing all operations in connection with paint striping and marking, complete in accordance with the specifications and the applicable plans, and subject to the Contract requirements. The Work included under this section shall not be commenced until areas to be painted are in proper condition to receive the striping and marking paint.
- B. Related Sections:
 - 1. Section 32 12 16, Hot-Mixed Asphalt Pavement
 - 2. Section 32 13 13, Portland Cement Concrete Pavement.

1.02 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
- B. Material Certificates signed by material producer and Contractor, certifying that each material item complies with or exceeds specified requirements.
- C. Manufacturer's Installation Instructions: Submit instructions for application temperatures, eradication requirements, application rate, line thickness, and any other data on proper installation.

1.03 SITE CONDITIONS

- A. Weather Limitations: Painting shall be performed only when the existing surface is dry and clean, when the atmospheric temperature is above 50° F and rising, and when the weather is not excessively windy, dusty, or foggy.

1.04 REFERENCES

- A. ASTM International:
 - 1. ASTM D34 - Standard Guide for Chemical Analysis of White Pigments.
 - 2. ASTM D126 - Standard Test Methods for Analysis of Yellow, Orange, and Green Pigments Containing Lead Chromate and Chromium Oxide Green.
 - 3. ASTM D562 - Standard Test Method for Consistency of Paints Using the Stormer Viscometer.
 - 4. ASTM D711 - Standard Test Method for No-Pick-Up Time of Traffic Paint.
 - 5. ASTM D713 - Standard Practice for Conducting Road Service Tests on Fluid Traffic Marking Materials.

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- 6. ASTM D969 - Standard Test Method for Laboratory Determination of Degree of Bleeding of Traffic Paint.
- 7. ASTM D1301 - Standard Test Methods for Chemical Analysis of White Lead Pigments.
- 8. ASTM D1394 - Standard Test Methods for Chemical Analysis of White Titanium Pigments.
- 9. ASTM D1475 - Standard test Method for Density of Liquid Coatings, Inks, and Related Products.
- 10. ASTM D1640 - Standard Test Methods for Drying, Curing, or Film Formation of Organic Coatings at Room Temperature.
- 11. ASTM D2202 - Standard Test Method for Slump of Sealants.
- 12. ASTM D2371 - Standard Test Method for Pigment Content of Solvent-Reducible Paints.
- 13. ASTM D2621 - Standard Test Method for Infrared Identification of Vehicle Solids From Solvent-Reducible Paints.
- 14. ASTM D2743 - Standard Practices for Uniformity of Traffic Paint Vehicle Solids by Spectroscopy and Gas Chromatography.

1.05 PERFORMANCE REQUIREMENTS

- A. Paint Adhesion: Adhere to road surface forming smooth continuous film one minute after application.
- B. Paint Drying: Tack free by touch so as not to require coning or other traffic control devices to prevent transfer by vehicle tires within two minutes after application.

1.06 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum ten years documented experience.
- B. Applicator: Company specializing in performing work of this section with minimum five years documented experience, including manufacturer’s certification when appropriate.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Invert containers several days prior to use when paint has been stored more than 2 months. Minimize exposure to air when transferring paint. Seal drums and tanks when not in use.

1.08 WARRANTY

- A. Furnish three year manufacturer’s warranty for traffic paints.

1.09 MAINTENANCE SERVICE

- A. Furnish service and maintenance of traffic paints for one year from Date of Substantial Completion.

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PART 2 - PRODUCTS

2.01 MATERIALS

- A. Traffic Paint: Traffic paint shall be Acrylic Latex of the color noted in the plans.
- B. Thinner: Paint is formulated to be applied as packaged and ordinarily thinning will not be allowed. Should thinning become necessary, only the thinner recommended by the manufacturer of the paint shall be used.

2.02 EQUIPMENT

- A. The striping machine shall be of the type and manufacture regularly used in the striping of pavements. It shall apply paint by means of a compressor or actuator spray gun and shall be provided with controls to accurately regulate the amount of paint to be applied to the finished stripe. The design of the machine shall be such as to produce sharp edge stripes of uniform density with square cut beginnings and endings. The machine shall further be equipped with hand spray attachments for use where required.

PART 3 - EXECUTION

3.01 GENERAL

- A. The work of striping and marking shall be performed by experienced personnel in a neat and workmanlike manner. All work shall be carried out under favorable weather conditions and no work shall be done unless the paving surfaces are clean and dry in all respects satisfactory for striping work.
- B. All work shall be carefully laid out by the Contractor and all lines shall be of the width, length and pattern shown on the drawings. All lines shall be straight and accurate regarding the angles and shall be marked with a chalk line or other approved method.
- C. All traffic paint shall be delivered on the job in new unbroken sealed containers and applied in accordance with the manufacturer's specifications.
- D. In the carrying out of these operations, care shall be taken to avoid spilling paint or otherwise disfiguring surfaces not required to be painted. Any paint spilled or completed striping not satisfactory to the Architect/Engineer shall be removed.
- E. The Contractor shall schedule his operations and conduct his work in accordance with a predetermined program that shall be approved by the Architect/Engineer.

3.02 PREPARATION

- A. Maintenance and Protection of Traffic:
 - 1. Provide short term traffic control as required to ensure safety.
 - 2. Prevent interference with marking operations and to prevent traffic on newly applied markings before markings dry.
 - 3. Maintain access to existing businesses, residences and other properties requiring access.

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- B. Surface Preparation.
 - 1. Clean and dry paved surface prior to painting.
 - 2. Blow or sweep surface free of dirt, debris, oil, grease or gasoline.
 - 3. Spot location of final pavement markings as specified and as indicated on the Drawings by applying chalk marks or other approved method.

3.03 EXISTING WORK

- A. Remove existing markings in an acceptable manner. Do not remove existing pavement markings by painting over with blank paint. Remove by methods that will cause least damage to pavement structure or pavement surface. Satisfactorily repair any pavement or surface damage caused by removal methods.
- B. Clean and repair existing lines and legends.

3.04 APPLICATION

- A. Agitate paint for 1-15 minutes prior to application to ensure even distribution of paint pigment.
- B. Dispense paint at ambient 110 to 125 degrees F, or as otherwise recommended by the paint manufacturer.
- C. Apply markings to indicated dimensions at indicated locations.
- D. Prevent splattering and over spray when applying markings.
- E. Unless material is track free at end of paint application convoy, use traffic cones to protect markings from traffic until track free. When vehicle crosses a marking and tracks it or when splattering or over spray occurs, eradicate affected marking and resultant tracking and apply new markings.
- F. Collect and legally dispose of residues from painting operations.
- G. Do not apply paint to concrete surfaces until concrete has cured for 28 days or as recommended by the manufacturer.
- H. Striping shall be minimum 2 each 3 mil coats of white traffic paint 4” wide.

3.05 APPLICATION TOLERANCES

- A. Maximum Variation from Wet Film Thickness: 2 mils.
- B. Maximum Variation from Wet Paint Line Width: Plus or minus 1/4 inch.
- C. Maintain cycle length for skip lines at tolerance of plus or minus 6 inches per 40 feet, and line length of plus or minus 3 inches per 10 feet.
- D. Maximum Variation from Specified Application Temperature: Plus or minus 5 degrees F.

3.06 FIELD QUALITY CONTROL

- A. Inspect for incorrect location, insufficient thickness, line width, coverage, retention, uncured or discolored material, and insufficient bonding.

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- B. Repair lines and markings, which after application and curing do not meet following criteria:
 - 1. Incorrect Location: Remove and replace incorrectly placed lines and patterns.
 - 2. Insufficient Thickness, Line Width, Paint Coverage, or Retention: Prepare defective material by acceptably blast cleaning to remove substantial amount of material and to roughen marking surface. Remove loose particles and debris. Apply new markings on cleaned surface in accordance with this Section.
 - 3. Uncured or Discolored Material, Insufficient Bonding: Remove defective markings in accordance with this Section and clean pavement surface one foot beyond affected area. Apply new markings on cleaned surface in accordance with this Section.
- C. Replace defective pavement markings as specified throughout the warranted period. Replace pavement marking material under warranty using original or better type material.

3.07 PROTECTION OF FINISHED WORK

- A. Protect painted pavement markings from vehicular and pedestrian traffic until paint is dry and tack free. Follow manufacturer's recommendations or use minimum of 30 minutes, whichever is greater. Consider barrier cones as satisfactory protection for materials requiring more than 2 minutes dry time.

END OF SECTION