



Addendum #01

IFB No. 130525 – Building 632
Camp San Luis Obispo - San Luis Obispo, CA
8/6/2026 at 5:00 PM

07/28/2026

Please review the following addendum to IFB No. 130525.

1. Attachment 1 – Fire Marshall Approved Drawings
2. Attachment 2 – Fire Marshall Approved Specifications
3. The bid due date remains unchanged.

Please note that no verbal information given will be binding upon the State unless such information is issued in writing as an official addendum.

Robert Hawkins
Contracting Administrator

ABBREVIATIONS

A		J	
AB	ANCHOR BOLT	JT	JOINT
AC, A/C	AIR CONDITIONER		
ADJ	ADJACENT	L	
AFF	ABOVE FINISHED FLOOR		
AHU	AIR HANDLING UNIT	L	LENGTH
AP	ACCESS PANEL	LB	POUND
APPROX	APPROXIMATE	M	
AUX	AUXILIARY		
B		MAS	MASONRY
BD	BOARD	MAX	MAXIMUM
BCW	BARE COPPER WIRE	MECH	MECHANICAL
BLDG	BUILDING	MFG	MANUFACTURER
BLK	BLOCK	MIN	MINIMUM
		MUA	MAKE-UP AIR
C		N	
CAP	CAPACITY	(N)	NEW
CERT	CERTIFIED	N.A.C.E.	NATIONAL ASSOCIATION
CI	CAST IRON		CORROSION ENGINEERS
CIP	CAST IN PLACE	N.C.	NORMALLY CLOSED
CJ	CONTROL JOINT	NIC	NOT IN CONTRACT
CL	CENTER LINE	N.O.	NORMALLY OPEN
CLG	CEILING	NTS	NOT TO SCALE
CMU	CONCRETE MASONRY UNIT		
CO	CONDUIT ONLY	O	
CONC	CONCRETE	OC	ON CENTER
CONST	CONSTRUCTION	OH	OVERHEAD
COR	CONTRACTING OFFICER'S REPRESENTATIVE	OPP.	OPPOSITE
	CENTER	P	
CTR	COLD WATER		
CW		PMF	PRESSED METAL FRAME
D	DOUBLE	PNL	PANEL
DBL		P.O.C.	POINT OF CONNECTION
DED	DEDICATED	PSF	POUNDS PER SQUARE FOOT
DEG	DEGREE	PSI	POUNDS PER SQUARE INCH
DEMO	DEMOLISH, DEMOLITION	Q	QUANTITY
DTL	DETAIL		
DF	DRINKING FOUNTAIN	QTY	
DIA	DIAMETER	R	
DIM	DIMENSION		
DN	DOWN	R	REFRIGERANT LINE
DS	DOWN SPOUT	RD	RADIUS
DWG	DRAWING	RD	ROOF DRAIN
E		REBAR	REINFORCING BAR
EA	EACH	RECP	RECEPTACLE
EC	EVAPORATIVE COOLER	REQ'D	REQUIRED
ECI	ENGINEERING CONSTRUCTION INSPECTOR	REV	REVISION (REVISED)
ELECT	ELECTRICAL	S	
EMERG (E)	EMERGENCY EXISTING	SC	SOLID CORE
EXIST	EXISTING	SCE	SOUTHERN CALIFORNIA EDISON
EJ	EXPANSION JOINT	SCHED	SCHEDULE
EXT	EXTERIOR	SECT	SECTION
		SH	SHEET
F		SIM	SIMILAR
FD	FLOOR DRAIN	SPEC	SPECIFICATION
FF	FINISHED FLOOR	SQ	SQUARE
FT	FEET	T	
FU	FAN UNIT	T&G	TONGUE & GROOVE
G		TBD	TO BE DETERMINED
GA	GAUGE	TEL	TELEPHONE
GALV	GALVANIZED	THK	THICK
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	TYP	TYPICAL
GFE	GOVERNMENT FURNISHED EQUIPMENT	U	
GYP	GYPSUM	UNO	UNLESS NOTED OTHERWISE
H		UTIL	UTILITY
HP	HEAT PUMP	V	
HT	HEIGHT	VAR	VARIABLE, VARIES
HTG	HEATING	VB	VAPOR BARRIER
HVAC	HEATING/VENTILATING/ AIR CONDITIONING	VRT	VERTICAL
HW	HOT WATER	W	
I		WC	WATER CLOSET
IN	INCHES	WD	WOOD
INSUL	INSULATION	WP (WP)	WEATHER PROOF
INT	INTERIOR	WT	WEIGHT
		Y	
		YD	YARD

LEGEND - PLAN SYMBOLS

	BUILDING SECTION SYMBOL
	WALL SECTION SYMBOL
	DETAIL SYMBOL
	ENLARGED PLAN SYMBOL
	EXTERIOR ELEVATION SYMBOL
	INTERIOR ELEVATION SYMBOL

	BUILDING SECTION SYMBOL
	WALL SECTION SYMBOL
	DETAIL SYMBOL
	ENLARGED PLAN SYMBOL
	EXTERIOR ELEVATION SYMBOL
	INTERIOR ELEVATION SYMBOL

HATCH SYMBOLS

	EARTHWORK		PLYWOOD
	GRAVEL		FINISH LUMBER
	PLASTER, SAND, GROUT		WOOD STUDS, BLOCKING
	CONCRETE		STEEL STUDS
	CONCRETE MASONRY		GYPSUM WALLBOARD
	CLAY MASONRY		ACOUSTICAL TILE
	PRECAST CONCRETE		BATT INSULATION
	METAL		RIGID INSULATION

BUILDING CODE INFORMATION

OCCUPANCY CLASSIFICATION:	B	S
WAREHOUSE	8,000 SQ. FT.	88,480 SQ. FT.
TOTAL OCCUPANT LOAD:	373	
CBC 2025 ALLOWABLE SQUARE FOOTAGE:	70,000	
BUILDING CONSTRUCTION TYPE:	TYPE II - B	
NUMBER OF STORIES:	1	
ACTUAL BUILDING HEIGHT:	14 FEET	
BUILDING AREA (S.F.):	96,480	
AREA OF PROJECT (S.F.):	96,480	
SEPARATED OR NON-SEPARATED USE:	NON-SEPARATED	
AREA INCREASE:	25% = 24,120 SQ. FT.	
HEIGHT INCREASE:	N/A	
FIRE SPRINKLERES:	YES	
FIRE ALARM:	YES	
SMOKE CONTROL SYSTEM:	NO	
YEAR BUILDING CONSTRUCTED:	1995	
EMERGENCY RESPONDER RADIO COVERAGE:	YES	
IS THE BUILDING IN A HIGH FIRE SEVERITY ZONE	NO	
SEISMIC JOINTS	YES	
HIGH RISE	NO	
BUILDING CODES:	2025 CALIFORNIA BUILDING CODE 2025 CALIFORNIA ELECTRICAL CODE 2025 CALIFORNIA FIRE CODE - APPLICABLE UNIFIED FACILITIES GUIDE SPECIFICATIONS	

GENERAL NOTES

- CONTRACTOR SHALL VISIT SITE AND VERIFY ALL ACTUAL CONDITIONS AND DIMENSIONS PRIOR TO SUBMITTING A BID FOR ANY PORTION OF WORK OF THIS PROJECT.
- CONTRACTOR SHALL COORDINATE ALL DEMOLITION WORK BETWEEN MECHANICAL AND ELECTRICAL TRADES AS SHOWN ON PROJECT DRAWINGS.
- ALL MATERIALS DEMOLISHED AS PART OF THE WORK OF THIS PROJECT SHALL BE REMOVED FROM SITE AND DISPOSED OF IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS.
- REPAIR PENETRATIONS AND HOLES WHERE CONDUIT AND ASSOCIATED HANGERS / FASTENERS HAVE BEEN PLACED. FILL PENETRATIONS AND HOLES WITH APPROVED MATERIALS (EITHER A HORIZONTAL APPLICATION MORTAR OR 1 HOUR FIRESTOPPING - DEPENDING WHETHER PENETRATION IS IN OCCUPANCY SEPARATION WALL). HOLES SHALL BE REPAIRED WITH MATERIALS AND METHODS DESCRIBED IN SPECIFICATIONS.
- ALL FINISHES SHALL CONFORM WITH 2025 CBC.
- APPLICABLE TO ALL PROVISIONS OF CONSTRUCTION WORK FOR THIS PROJECT. CONTRACTOR SHALL INCORPORATE REQUIREMENTS TO DIVERT ALL CONSTRUCTION AND DEMOLITION MATERIALS FROM LANDFILL DISPOSAL FOR THE PURPOSE OF RECYCLING AND / OR SALVAGE FOR REUSE. COMPLY WITH THE CA ARNG SOLID WASTE REDUCTION, REUSE AND RECYCLING GUIDE.
- THE OWNER OR THE OWNER'S AUTHORIZED AGENT SHALL BE RESPONSIBLE FOR THE DEVELOPMENT, IMPLEMENTATION AND MAINTENANCE OF AN APPROVED, WRITTEN SITE SAFETY PLAN ESTABLISHING A FIRE PREVENTION PROGRAM AT THE PROJECT SITE APPLICABLE THROUGHOUT ALL PHASES OF THE CONSTRUCTION, REPAIR, ALTERATION OR DEMOLITION WORK. PER CHAPTER 33 OF THE CALIFORNIA FIRE CODE.

SCOPE OF WORK

THE SCOPE OF WORK FOR THIS PROJECT IS:

- REMOVE & REPLACE EXISTING WAREHOUSE ROOF WITH A NEW TPO ROOF.
- REMOVE & REPLACE ALL FLASHING, VENT STACKS & COPING.
- ADD TWO ADDITIONAL ROOF ACCESS DOORS.
- PROVIDE NEW SUSPENDED ACOUSTICAL SYSTEMS IN THE TRAINING ROOMS.

SHEET INDEX

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G001	COVER SHEET
ARCHITECTURAL	
AD101	ROOF DEMOLITION PLAN
A101	PARTIAL FLOOR PLAN
A300	ROOF PLAN
A500	DETAILS
A501	DETAILS



LOCATION MAP

SCALE: NONE



California Military Department

CAMP SAN LUIS OBISPO BLDG. 632 ROOF REPLACEMENT

632 NAPA AVENUE
SAN LUIS OBISPO, CALIFORNIA 93405

PROJECT LOCATION



SITE PLAN

SCALE: NONE



VICINITY MAP

SCALE: NONE

OFFICE OF THE STATE FIRE MARSHAL
APPROVED FIRE AND PANIC ONLY



Approval of this plan does not authorize or approve any omission or deviation from applicable regulations. Final approval is subject to field inspection. One set of approved plans shall be available on the project site at all times.

CMD

California Military Department
Architecture & Engineering Section
State of California

10601 Bear Hollow Drive, Rancho
Cordova, California 95670



Issue		
No.	Date	Description
	2/5/25	35% DESIGN DRAWINGS

Project
CAMP SAN LUIS
OBISPO
BLDG. 632

ROOF REPLACEMENT

Supervisor	Designed	Drawn
NG	NG	NG

DATE:
05/01/2024

Sheet Title
COVER SHEET

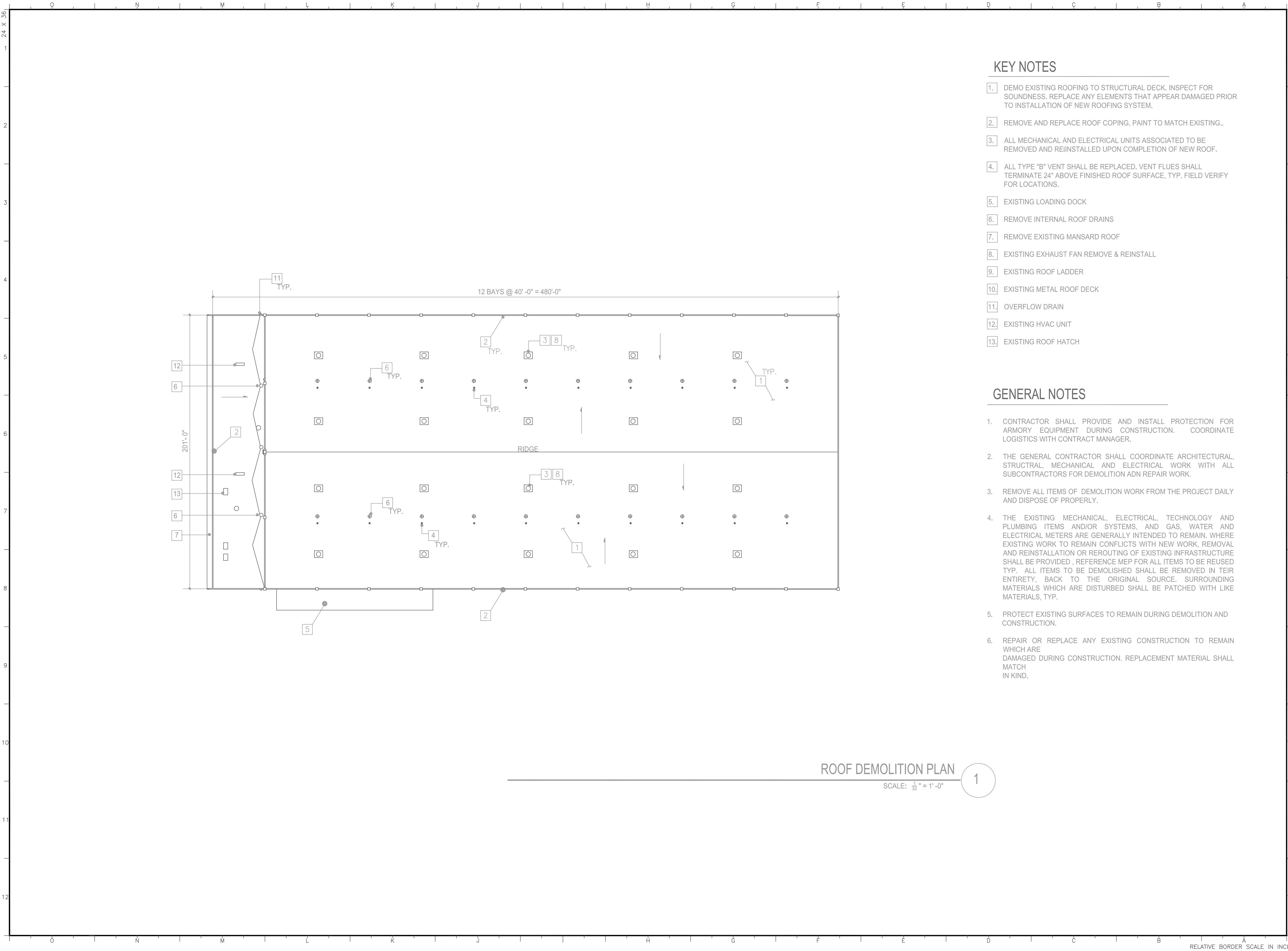
Project Number
06EXXXX

Reference North

Sheet Scale
AS NOTED

Sheet Number
G001

1 OF 6



KEY NOTES

- 1. DEMO EXISTING ROOFING TO STRUCTURAL DECK. INSPECT FOR SOUNDNESS. REPLACE ANY ELEMENTS THAT APPEAR DAMAGED PRIOR TO INSTALLATION OF NEW ROOFING SYSTEM.
- 2. REMOVE AND REPLACE ROOF COPING. PAINT TO MATCH EXISTING..
- 3. ALL MECHANICAL AND ELECTRICAL UNITS ASSOCIATED TO BE REMOVED AND REINSTALLED UPON COMPLETION OF NEW ROOF.
- 4. ALL TYPE "B" VENT SHALL BE REPLACED. VENT FLUES SHALL TERMINATE 24" ABOVE FINISHED ROOF SURFACE, TYP. FIELD VERIFY FOR LOCATIONS.
- 5. EXISTING LOADING DOCK
- 6. REMOVE INTERNAL ROOF DRAINS
- 7. REMOVE EXISTING MANSARD ROOF
- 8. EXISTING EXHAUST FAN REMOVE & REINSTALL
- 9. EXISTING ROOF LADDER
- 10. EXISTING METAL ROOF DECK
- 11. OVERFLOW DRAIN
- 12. EXISTING HVAC UNIT
- 13. EXISTING ROOF HATCH

GENERAL NOTES

- 1. CONTRACTOR SHALL PROVIDE AND INSTALL PROTECTION FOR ARMORY EQUIPMENT DURING CONSTRUCTION. COORDINATE LOGISTICS WITH CONTRACT MANAGER.
- 2. THE GENERAL CONTRACTOR SHALL COORDINATE ARCHITECTURAL, STRUCTRAL, MECHANICAL AND ELECTRICAL WORK WITH ALL SUBCONTRACTORS FOR DEMOLITION ADN REPAIR WORK.
- 3. REMOVE ALL ITEMS OF DEMOLITION WORK FROM THE PROJECT DAILY AND DISPOSE OF PROPERLY.
- 4. THE EXISTING MECHANICAL, ELECTRICAL, TECHNOLOGY AND PLUMBING ITEMS AND/OR SYSTEMS, AND GAS, WATER AND ELECTRICAL METERS ARE GENERALLY INTENDED TO REMAIN. WHERE EXISTING WORK TO REMAIN CONFLICTS WITH NEW WORK, REMOVAL AND REINSTALLATION OR REROUTING OF EXISTING INFRASTRUCTURE SHALL BE PROVIDED .REFERENCE MEP FOR ALL ITEMS TO BE REUSED TYP. ALL ITEMS TO BE DEMOLISHED SHALL BE REMOVED IN TEIR ENTIRETY, BACK TO THE ORIGINAL SOURCE. SURROUNDING MATERIALS WHICH ARE DISTURBED SHALL BE PATCHED WITH LIKE MATERIALS, TYP.
- 5. PROTECT EXISTING SURFACES TO REMAIN DURING DEMOLITION AND CONSTRUCTION.
- 6. REPAIR OR REPLACE ANY EXISTING CONSTRUCTION TO REMAIN WHICH ARE DAMAGED DURING CONSTRUCTION. REPLACEMENT MATERIAL SHALL MATCH IN KIND.

ROOF DEMOLITION PLAN

SCALE: 1/32" = 1'-0"

1



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Issue		
No.	Date	Description
	6/2/26	100% DESIGN

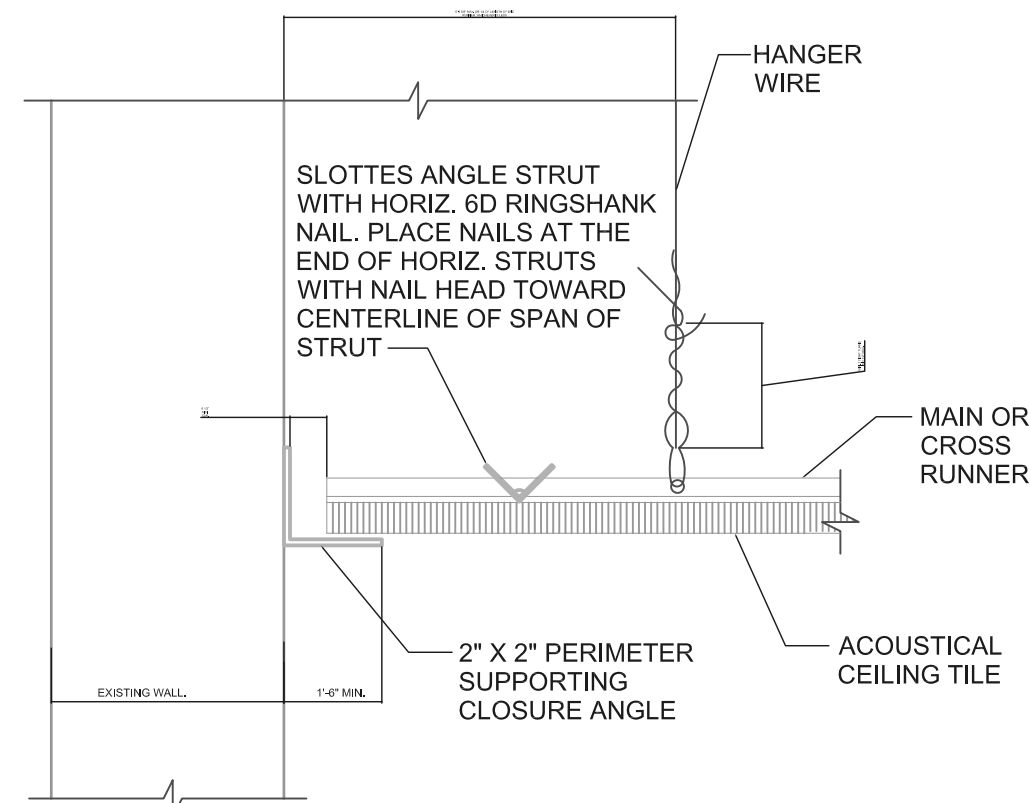
Project
CAMP SAN LUIS
OBISPO
BLDG 632
ROOF REPLACEMENT
632 NAPA AVE
SAN LUIS OBISPO,
CALIFORNIA 93405

Supervisor	Designed	Drawn
DSA App No.	SFM Permit No. XX-X-XXXX-X-X	

Sheet Title
ROOF DEMOLITION
PLAN

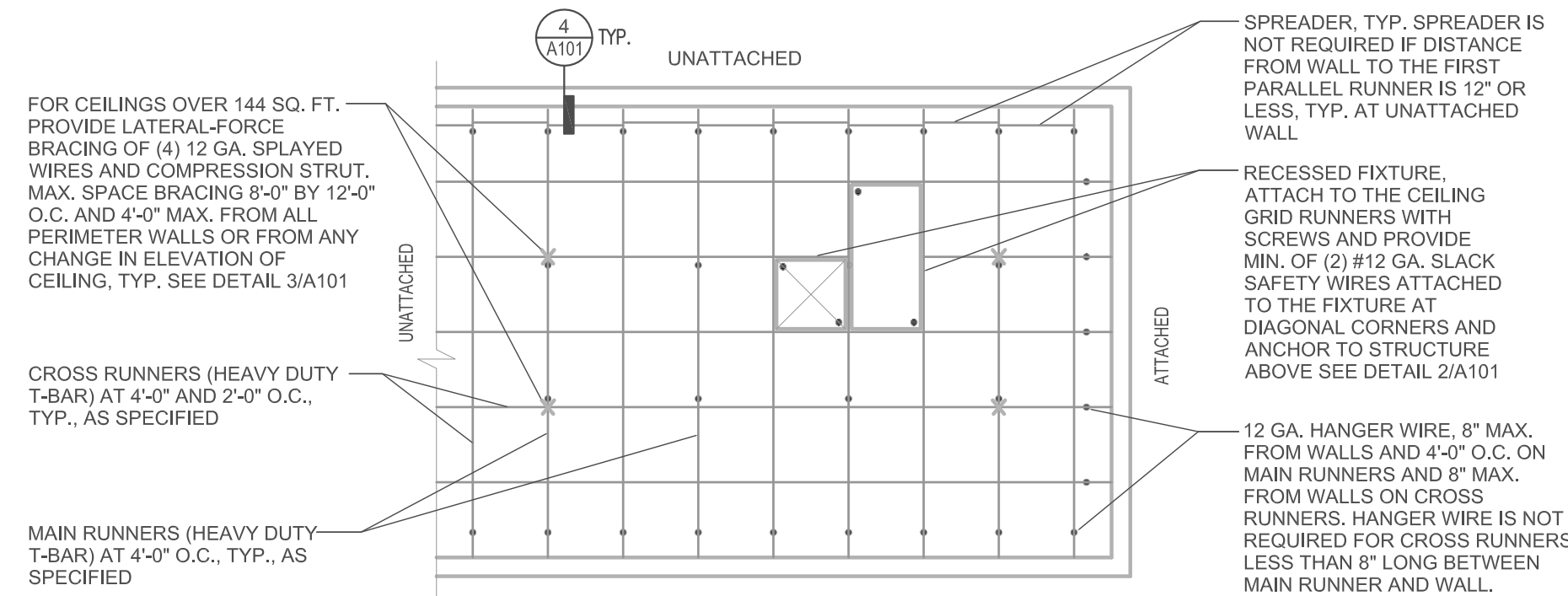
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Reference North	Sheet Scale
Sheet Number AD101	
2 OF 6	

RELATIVE BORDER SCALE IN INCHES



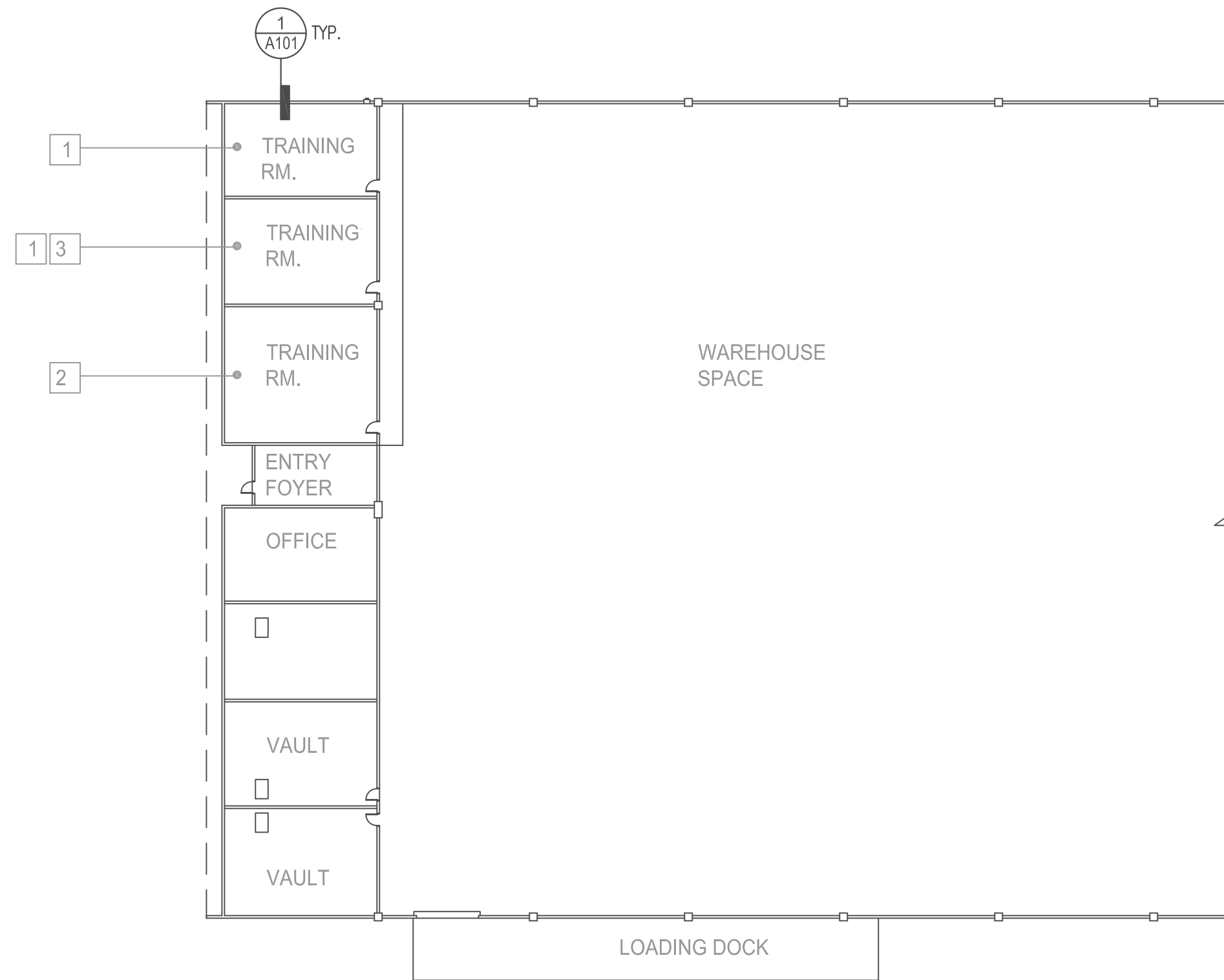
4
3" = 1'-0"

UNATTACHED SUSPENDED ACOUSTICAL CEILING TILE



1
1/4" = 1'-0"

TYPICAL SUSPENDED ACOUSTICAL CEILING TILE PLAN DETAIL



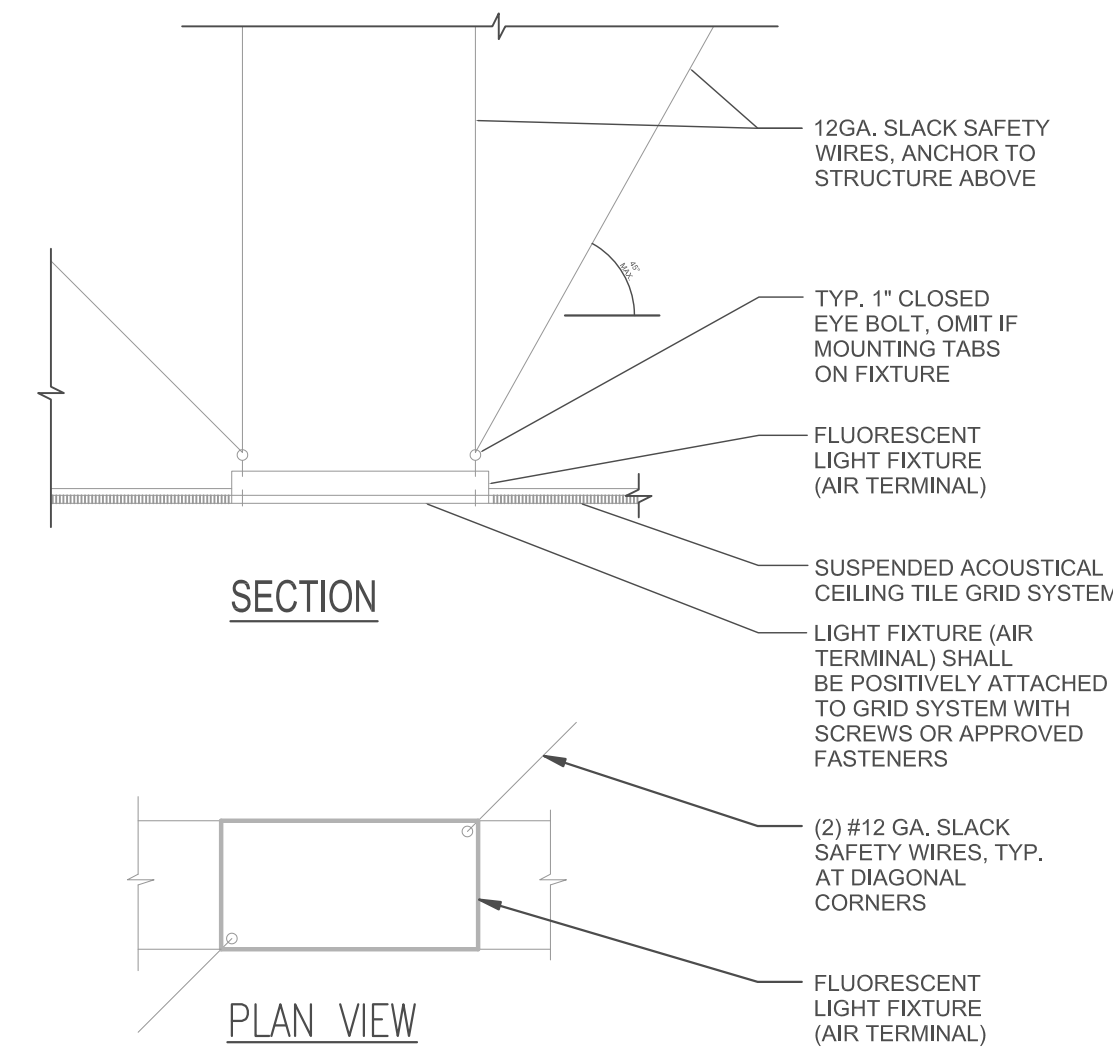
PARTIAL FLOOR PLAN

SCALE: 1/32" = 1'-0"

5

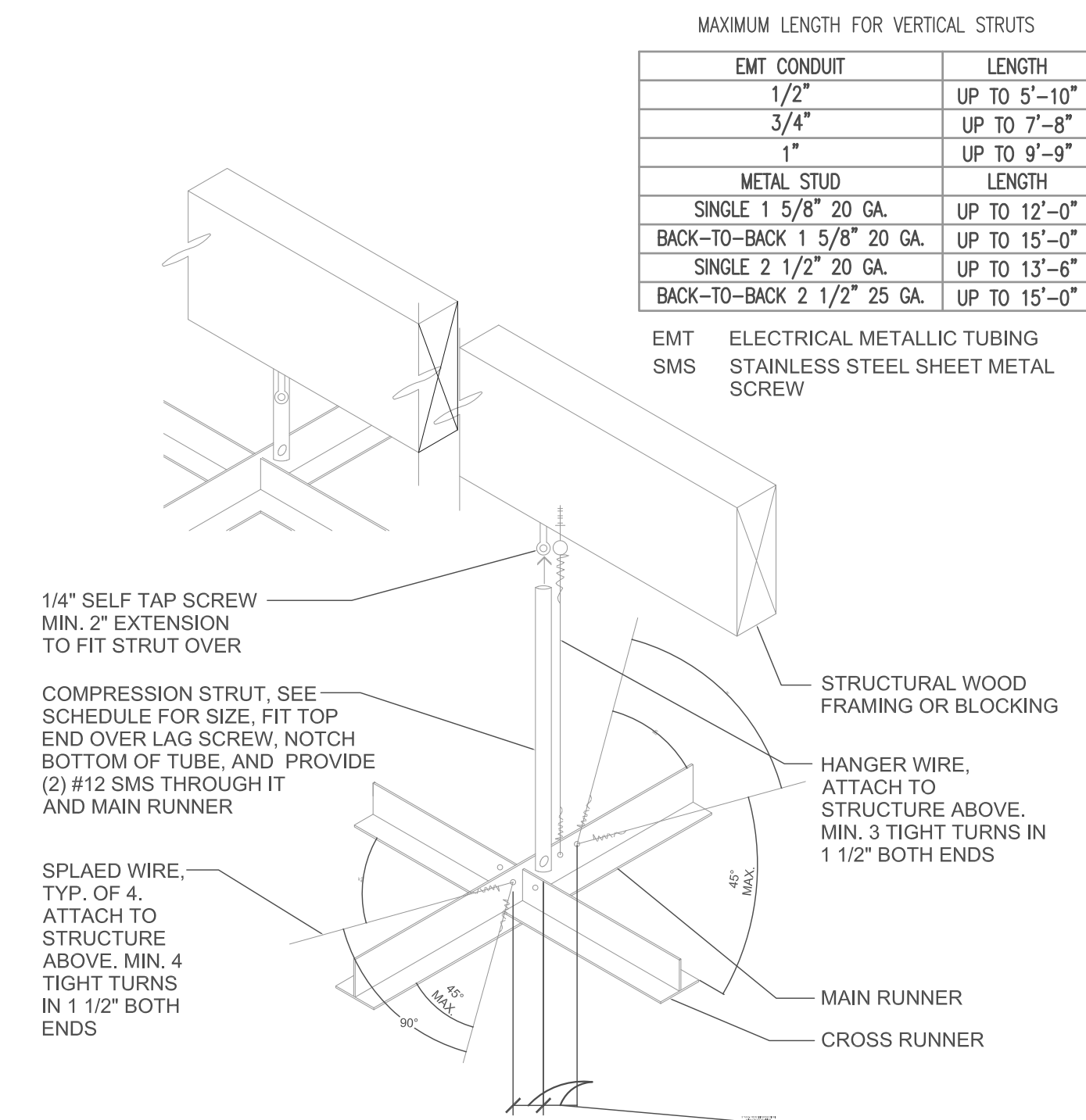
KEY NOTES

1. INSTALL NEW T-BAR SUSPENDED CEILING.
2. REPAIR EXISTING T-BAR CEILING AND REPLACE ALL CEILING TILES.
3. REMOVE CARPET. COVE BASE TO REMAIN.



2
3/8" = 1'-0"

TYP. T-BAR MOUNTED FIXTURE



3
NO SCALE

LATERAL FORCE BRACING

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	6/2/26	100% DESIGN

Project
CAMP SAN LUIS
OBISPO
BLDG 632
ROOF REPLACEMENT
632 NAPA AVE
SAN LUIS OBISPO,
CALIFORNIA 93405

Supervisor	Designed	Drawn
DSA App No.	SFM Permit No.	XX-X-XXXX-X-X

Sheet Title
PARTIAL FLOOR
PLAN

Project Number 06EXXXXX	
Reference North	Sheet Scale
	Sheet Number A101
	3 OF 6

RELATIVE BORDER SCALE IN INCHES 0 1 2 3

24 X 36
1
2
3
4
5
6
7
8
9
10
11
12



ROOF PLAN
SCALE: 1/32" = 1'-0"

SITE SAFETY PLAN

THE OWNER OR OWNER'S AUTHORIZED AGENT SHALL BE RESPONSIBLE FOR THE DEVELOPMENT, IMPLEMENTATION AND MAINTENANCE OF AN APPROVED, WRITTEN SITE SAFETY PLAN ESTABLISHING A FIRE PREVENTION PROGRAM AT THE PROJECT SITE APPLICABLE THROUGHOUT ALL PHASES OF THE CONSTRUCTION, REPAIR OR DEMOLITION WORK. THE PLAN SHALL ADDRESS THE REQUIREMENTS OF CHAPTER 33 OF THE 2025 CALIFORNIA FIRE CODE. PLAN SHALL INCORPORATE THE FOLLOWING COMPONENTS:

- NAME &CONTACT INFORMATION OF THE SITE SAFETY DIRECTOR
- DOCUMENTATION OF THE TRAINING OF THE SITE SAFETY DIRECTOR AND FIRE WATCH PERSONNEL.
- PROCEDURES FOR REPORTING EMERGENCIES.
- FIRE DEPARTMENT VEHICLE ACCESS ROUTES.
- LOCATION OF FIRE PROTECTION EQUIPMENT, INCLUDING PORTABLE FIRE EXTINGUISHERS, STANDPIPES, FIRE DEPARTMENT CONNECTIONS AND FIRE HYDRANTS.
- SMOKING AND COOKING POLICIES, DESIGNATED AREAS TO BE USED WHERE APPROVED, AND SIGNAGE LOCATIONS IN ACCORDANCE WITH SECTION 3305.8.
- LOCATION & SAFETY CONSIDERATIONS FOR TEMPORARY HEATING EQUIPMENT.
- HOT WORK PERMIT PLAN.
- PLANS FOR CONTROL OF COMBUSTIBLE WASTE MATERIAL.
- LOCATION & METHODS FOR STORAGE AND USE OF FLAMMABLE AND COMBUSTIBLE LIQUIDS AND OTHER HAZARDOUS MATERIALS.
- PROVISIONS FOR SITE SECURITY.
- CHANGES THAT AFFECT THIS PLAN.
- OTHER SITE-SPECIFIC INFORMATION REQUIRED BY THE FIRE CODE OFFICIAL.

KEY NOTES

- INSTALL A NEW TPO ROOF OVER POLYISOCYANURATE INSULATION. ENSURE BUILT UP INSULATION MAINTAINS PROPER SLOPE TO THE ROOF DRAINS.
- ROOF RIDGE.
- INSTALL NEW PREFINISHED METAL COPING
- REINSTALL EXISTING ROOF EXHAUST FANS W/ NEW CURBS.
- INSTALL NEW ROOF DRAINS
- REINSTALL VENTS
- LOADING DOCK ROOF TO RECEIVED NEW TPO ROOF W/ POLYISOCYANURATE INSULATION SLOPE TO NEW GUTTER.
- REPLACE (E) MANSARD TILES W/ STEEL STYLE SPANISH TILES.
- REPLACE SOFFIT W/ NEW ALUMINUM SOFFIT.
- REINSTALL EXISTING HVAC UNIT ROUTE CONDENSATE TO THE NEAREST SEWER VENT.
- REINSTALL EXISTING ROOF HATCH W/ NEW SAFETY RAILING.
- INSTALL NEW ROOF HATCHES MATCH SIZE OF EXISTING ROOF HATCH.
- INSTALL NEW SAFETY RAILING AT EXISTING &NEW ROOF HATCH LOCATIONS.
- EXISTING SCUPPERS TO BE REUSED WITH NEW ROOF.

GENERAL NOTES

- ALL ROOF PENETRATIONS TO BE ROUTED AND SEALED PER MANUFACTURER'S RECOMMENDATIONS.
- PROVIDE AND COORDINATE ROOF PAD/WALKWAYS WITH MECHANICAL EQUIPMENT LOCATIONS. ALL UNITS TO HAVE ACCESS AND PERIMETER WALKWAYS. MIN 30" WIDE. WALKWAY PADS SHALL NOT HINDER WATER FLOW TO SCUPPER LOCATIONS.
- FIELD VERIFY ALL DIMENSIONS, BRING ANY DISCREPANCIES TO THE ATTENTION OF THE ARCHITECT OF RECORD FOR FINAL DECISOIN.
- PROVIDE FLASHING AND COUNTER FLASHING AS REQUIRED FOR WATERTIGHT AND WATERPROOF INSTALLATION. PROVIDE SEALANT CONTINUOUS AT ALL ROOFING TERMINATIONS.
- CONTRACTOR SHALL PROVIDE AND INSTALL PROTECTION FOR ARMORY EQUIPMENT DURING CONSTRUCTION. COORDINATE LOGISTICS WITH CONTRACT MANAGER.
- THE GENERAL CONTRACTOR SHALL COORDINATE ARCHITECTURAL, STRUCTRAL, MECHANICAL AND ELECTRICAL WORK WITH ALL SUBCONTRACTORS FOR DEMOLITION ADN REPAIR WORK.
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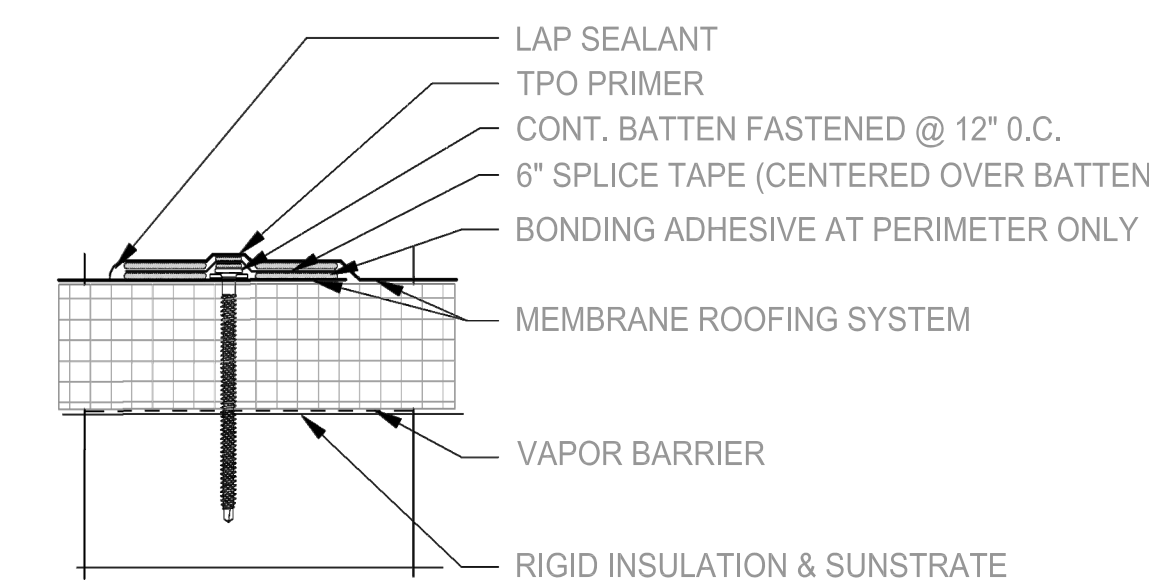
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No.	Date	Description
	6/2/26	100% DESIGN

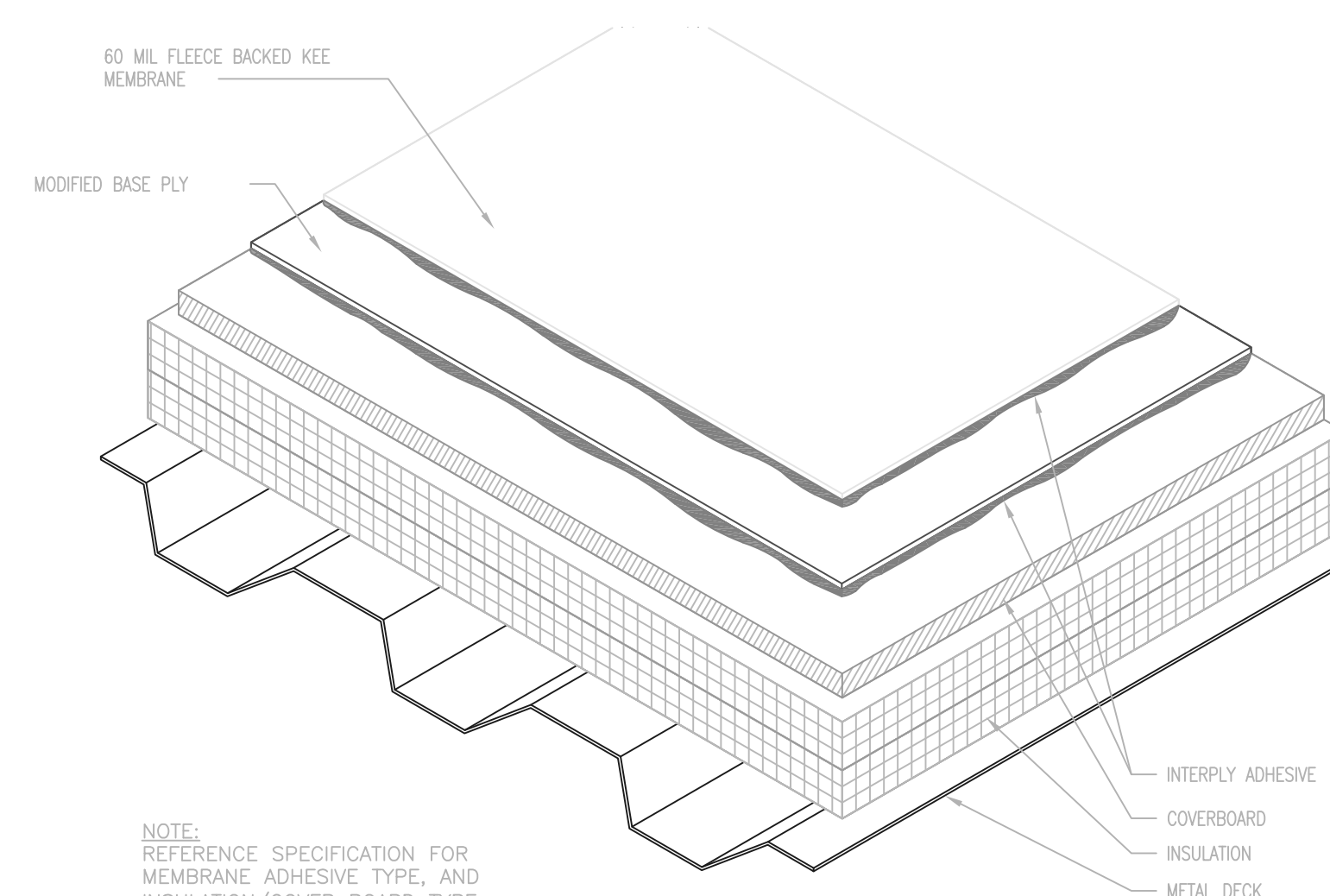
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CAMP SAN LUIS OBISPO BLDG 632 ROOF REPLACEMENT		
632 NAPA AVE SAN LUIS OBISPO, CALIFORNIA 93405		
Supervisor	Designed	Drawn
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Project Number 06EXXXX		
Reference North	Sheet Scale	
	Sheet Number A300	
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RELATIVE BORDER SCALE IN INCHES



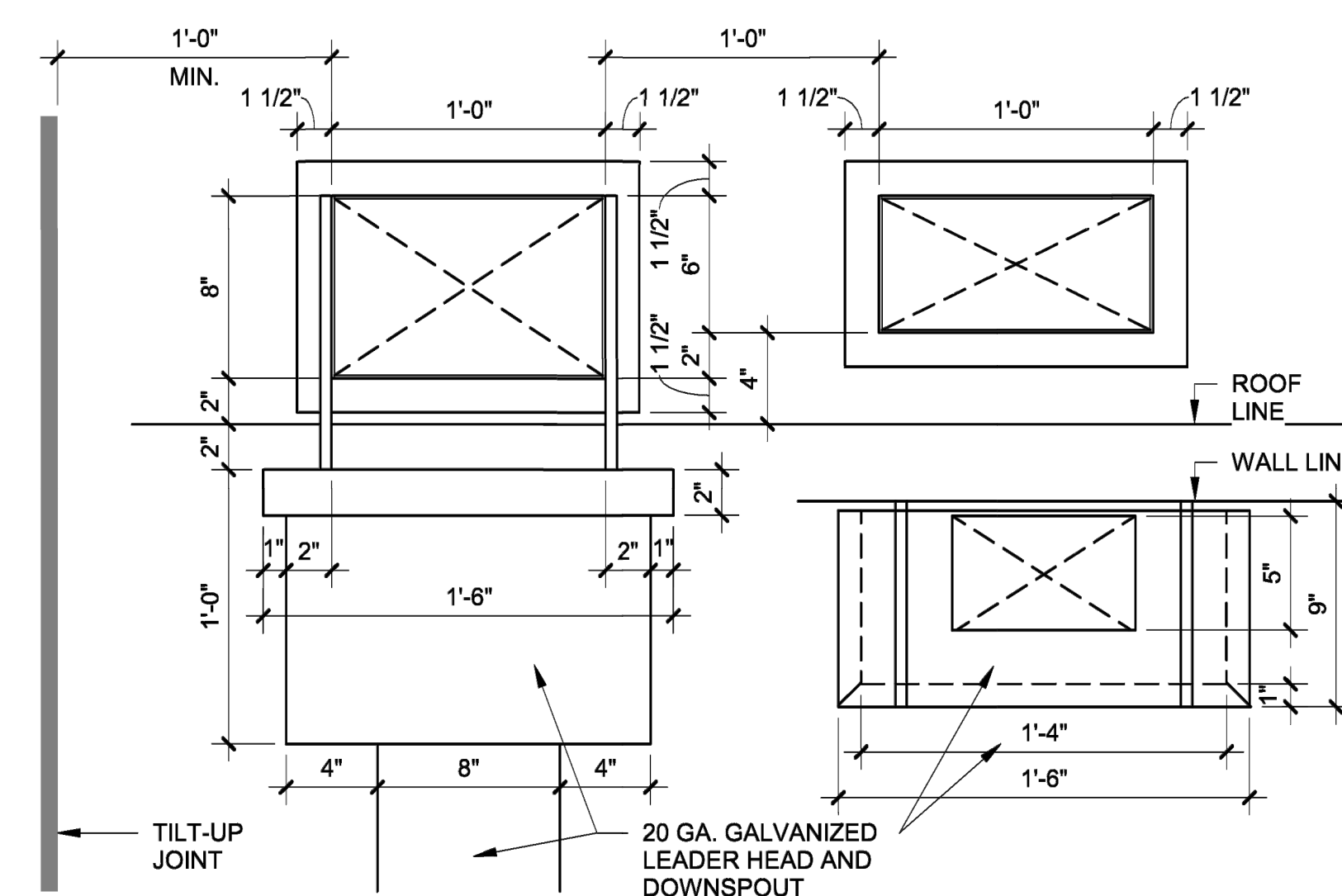
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7



SCALE: NTS

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SCALE: NTS

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10601 Bear Hollow Drive
Sacramento, California 95670

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Project

CAMP SAN LUIS
OBISPO
BLDG 632
ROOF REPLACEMENT

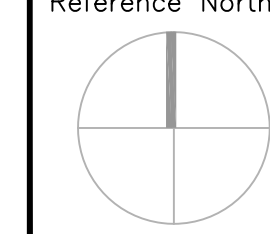
632 NAPA AVE
SAN LUIS OBISPO,
CALIFORNIA 93405

Supervisor	Designed	Drawn
DSA App No.	SFM Permit No. XX-X-XXXX-X-X	

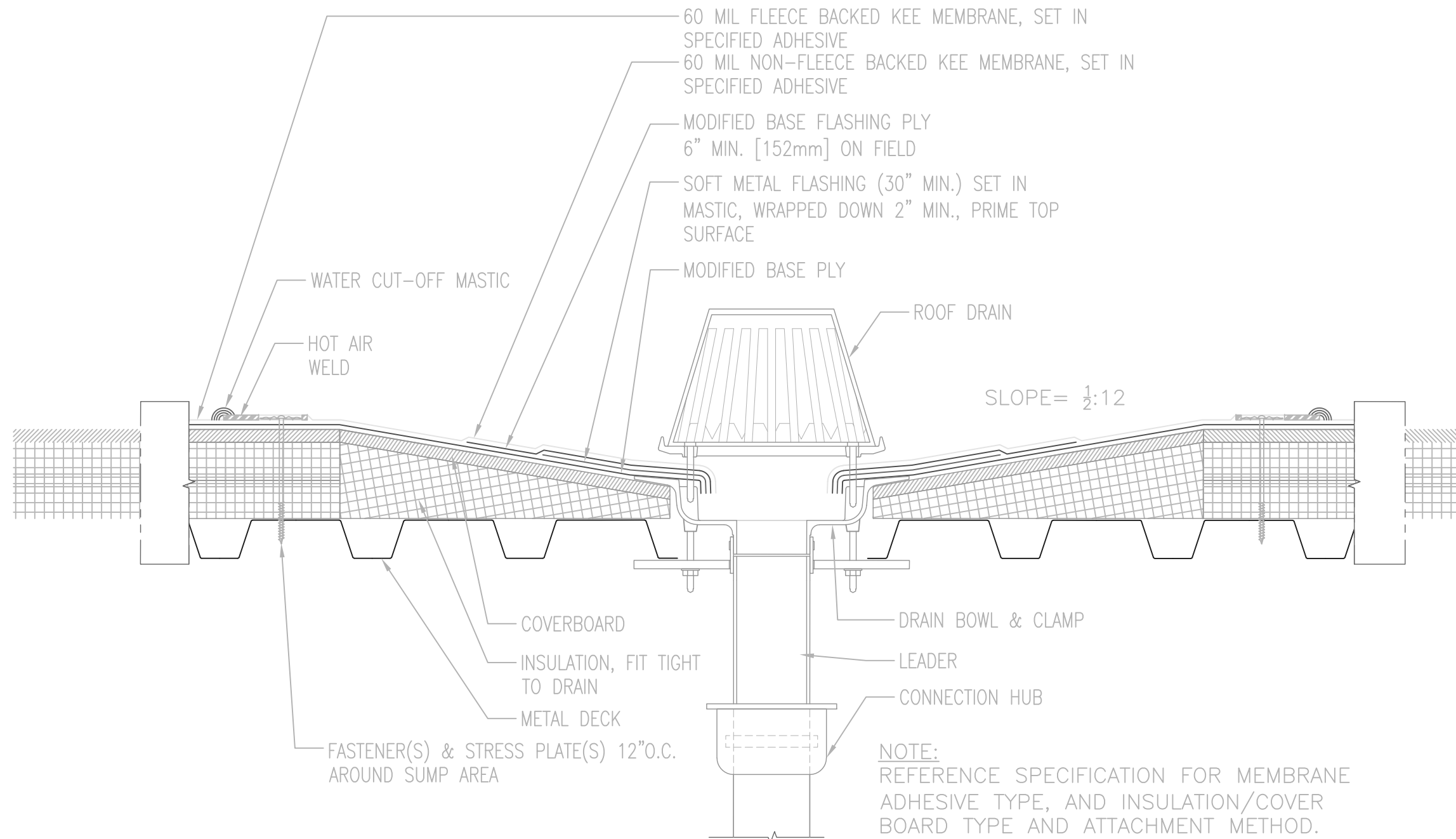
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ROOF DETAILS

Project Number 06EXXXX	
Reference North 	Sheet Scale
	Sheet Number A500
	5 OF 6



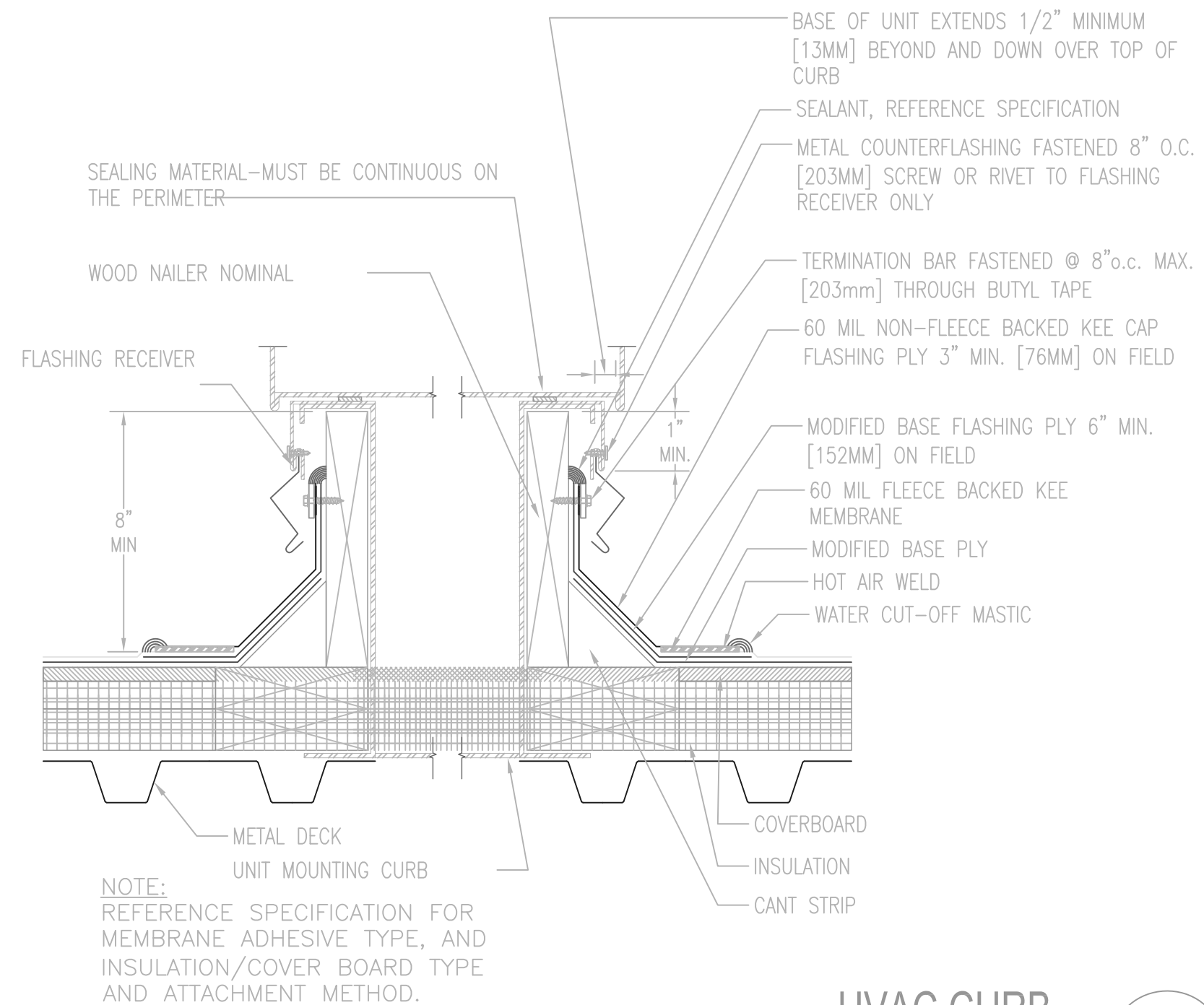
RELATIVE BORDER SCALE IN INCHES



ROOF DRAIN

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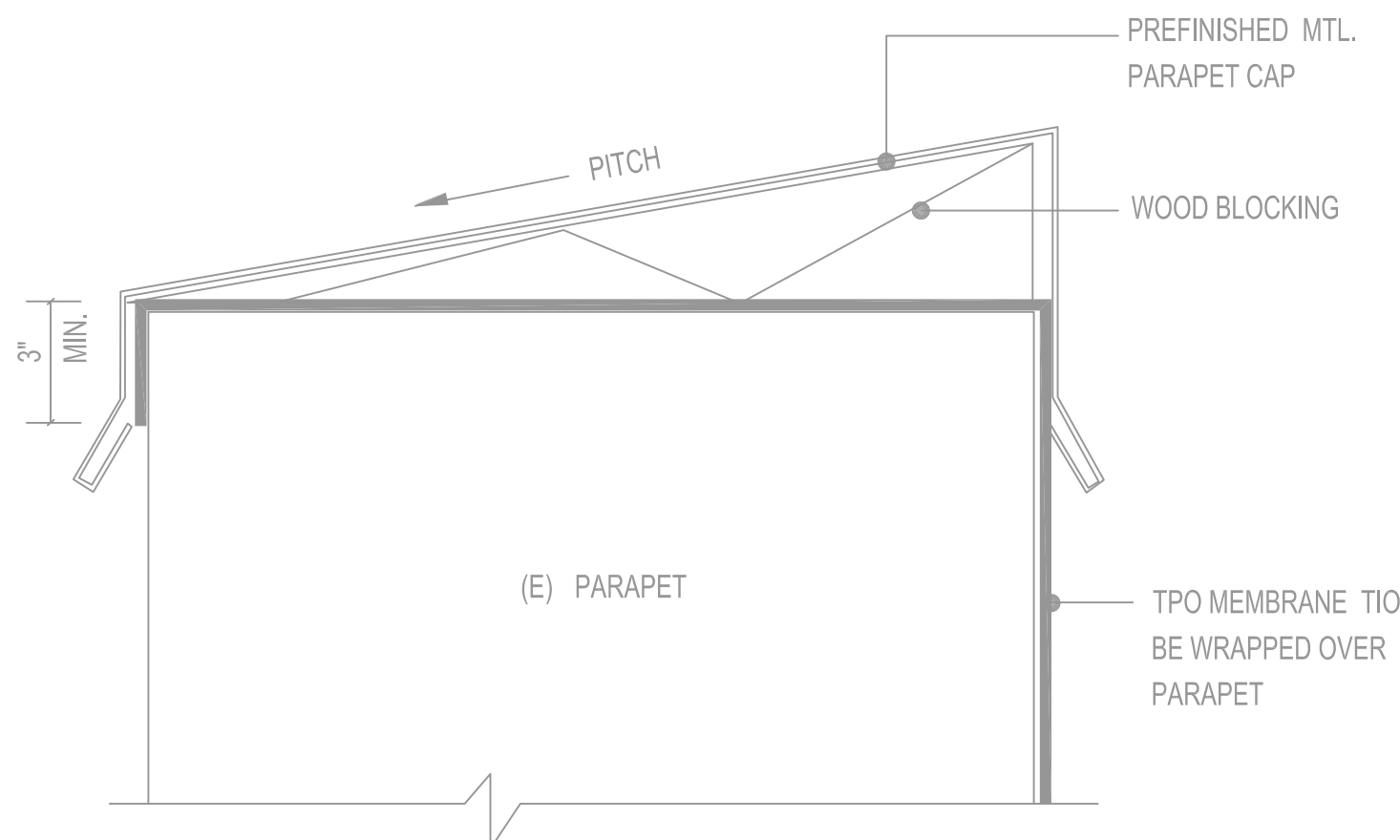
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HVAC CURB

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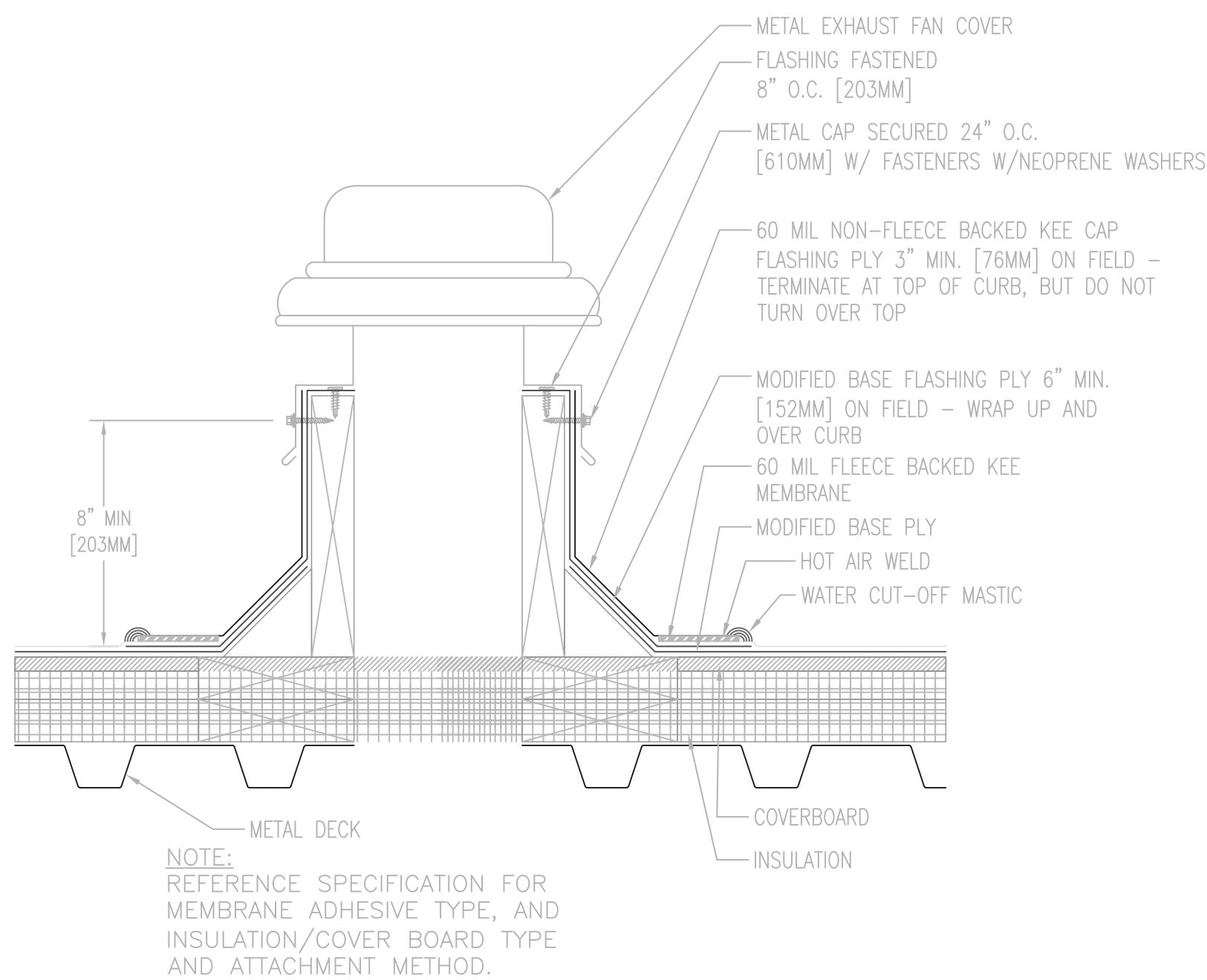
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PARAPET CAP

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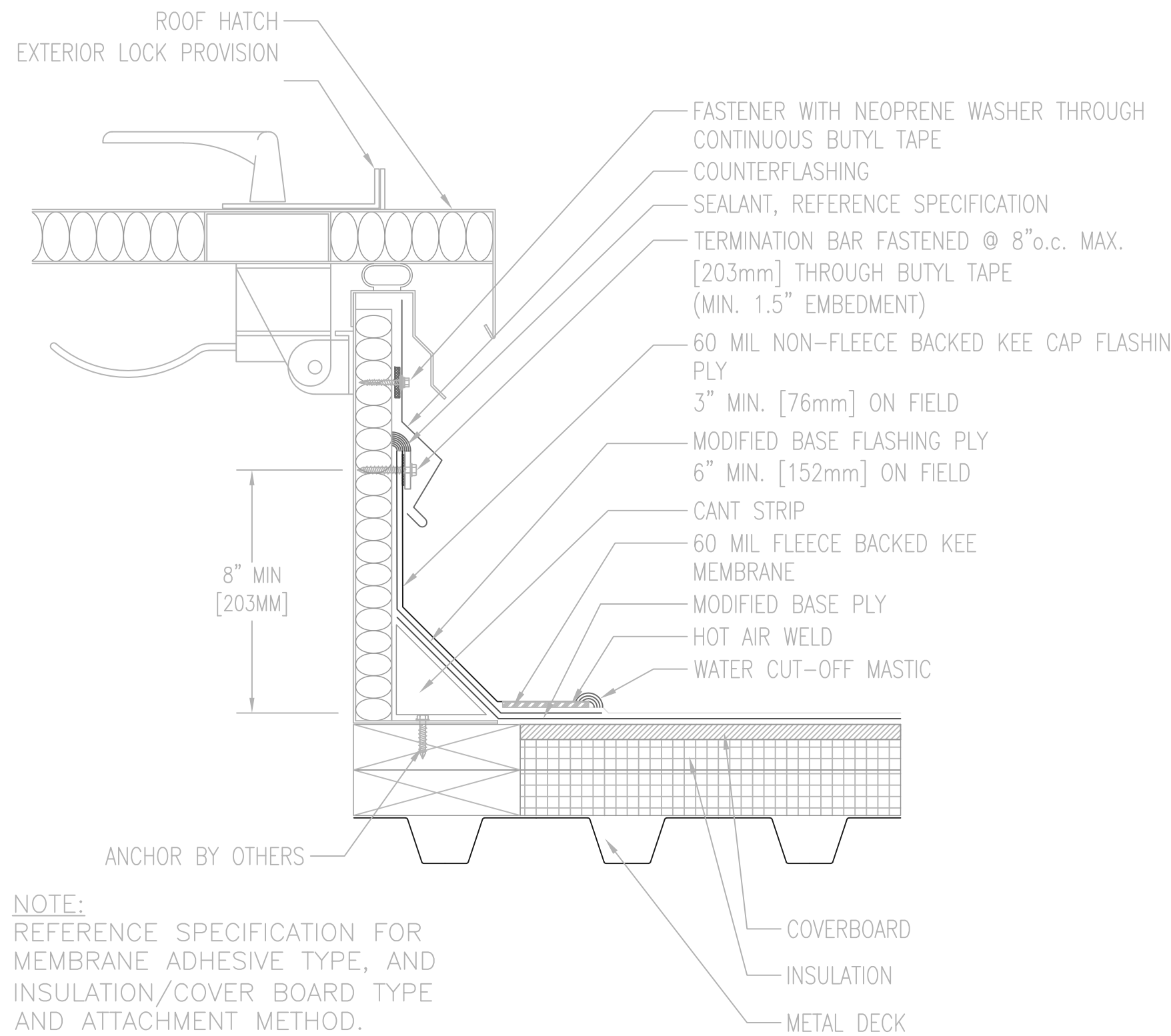
5



EXHAUST FAN CURB

SCALE: NTS

4



ROOF HATCH CURB

SCALE: NTS

2



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State of California

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Sacramento, California 95670



Issue		
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Project
**CAMP SAN LUIS
OBISPO
BLDG 632
ROOF REPLACEMENT**
632 NAPA AVE
SAN LUIS OBISPO,
CALIFORNIA 93405

Supervisor	Designed	Drawn
DSA App No.	SFM Permit No. XX-X-XXXX-X-X	

Sheet Title
ROOF DETAILS

Project Number 06EXXXX	
Reference North	Sheet Scale
	Sheet Number A501
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RELATIVE BORDER SCALE IN INCHES



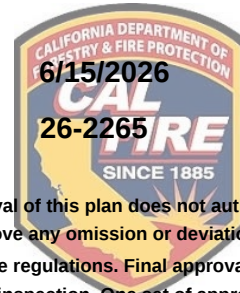
CALIFORNIA MILITARY DEPARTMENT CA Facilities Engineering

CAMP SAN LUIS OBISPO BUILDING 632 ROOF REPLACEMENT PROJECT MANUAL JUNE 2026

Camp San Luis Obispo
Highway 1
San Luis Obispo, California 93405



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SECTION 00 01 10

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01 33 00	Submittal Procedures
01 35 29	Occupational Health & Safety Requirements
01 45 00.10 20	Quality Control for Minor Construction
01 50 00	Temporary Facilities & Controls
01 55 00	Final Facility Cleaning
01 60 00	Product Requirements
01 65 00	Product Delivery Requirements
01 70 00	Contract Close Out
01 73 29	Cutting and Patching
01 74 19	Construction Waste Management and Disposal
01 78 00	Closeout Submittals

DIVISION 02 – EXISTING CONDITIONS

02 41 00	Demolition
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DIVISION 05 – METALS

05 52 00	Safety Railing
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DIVISION 06 – WOOD

06 10 00	Rough Carpentry
06 16 00	Sheathing

DIVISION 07 – THERMAL & MOISTURE PROTECTION

07 01 50.19	Preparation for Re-Roofing
07 22 00	Roof & Deck Insulation
07 41 13	Metal Roof Panels
07 52 00	Modified Bitumen Roofing
07 60 00	Flashing & Sheet Metal
07 90 00	Joint Protection

DIVISION 09 – FINISHES

09 01 90	Paint Maintenance
09 51 00	Acoustical Ceiling
09 65 00	Resilient Flooring

APPENDIX I – SUBMITTAL LOG

List of Required Submittals
Submittals Log

SECTION 01 11 00

SUMMARY

PART 1 GENERAL

1 SCOPE

- 1.1 Furnish and install all materials and labor required to remove and replace the roof at the Camp San Luis Obispo building 632 located in San Luis Obispo, California as shown on these plans and as described in these specifications.
- 1.2 Furnish & install all material and labor to replace the existing TPO roof system with a new TPO roof system inclusive of roof insulation, crickets, parapet coping, drains and new roof curbs.
- 1.3 Furnish & install two new roof access hatches with safety railing.
- 1.4 Furnish & install suspended T-Bar acoustical tile ceiling in designated training rooms. Remove carpet in designated training room.
- 1.5 Any materials that are suitable for recycling shall be recycled.
- 1.6 Accomplish all work in accordance with the drawings and specifications contained herein.
- 1.7 Accomplish all work in accordance with California Building Codes (2025 Editions).
- 1.8 Perform the above-mentioned work at Camp San Luis Obispo 632 Napa Avenue, San Luis Obispo, California, 93405.

2 CONTRACT MANAGER

- 2.1 Wherever in these specifications the abbreviation CM is referenced, it shall be the same as if the term Contract Manager is referenced.

3 ENGINEER/CONSTRUCTION INSPECTOR

- 3.1 Wherever the specifications direct the Contractor to the EINSPECTOR OF RECORD (IOR) for appropriate determination, the Contractor will direct his inquiries to the State Military Department, 10601 Bear Hollow Drive, Rancho Cordova, California 95670, ATTN: Chief of Engineering. Phone: (916) 854-3546.

4 CONTRACTOR'S RESPONSIBILITY

- 4.1 Nothing contained in these specifications shall relieve the contractor from the responsibility of visiting the site, accurately measuring the work or otherwise ensuring that the quantities used in preparing his bid are the actual quantities of the work to be accomplished under the contract.

By submitting a bid, the contractor confirms that he has visited the aforementioned site and verifies that the quantities used in preparing his bid are the actual quantities of the work to be accomplished under the contract.

- 4.2 The Contractor shall maintain a competent foreman, English speaking, to continuously supervise the work, with authority to discard unsuitable materials and remove unsatisfactory workmen from the project.

5 VEHICLE MOVEMENT

- 5.1 The following applies to all vehicles, except emergency vehicles responding to an emergency:

- 6 Vehicles shall observe posted speed limits on post at all times. Vehicles operated when in close proximity to military vehicles or buildings shall not exceed 5 MPH maximum.

- 6.1 Vehicles will not be backed without a ground guide.
- 6.2 All vehicles which do not require the engine to be running for contract purposes will have the ignition turned off and the parking brake set, and the vehicle's transmission placed in park.

7 CONTRACTOR'S STORAGE AREA AND PERSONNEL

- 7.1 The CM will designate an area that the contractor may use as a storage area. The contractor shall contact the CM for information regarding parking areas to be used for contractors' equipment and by contractor personnel and any restrictions that will be placed on contractor personnel while on the job site.

8 MATERIAL SUBMITTALS

- 8.1 Contractor shall submit to the CM for approval, one (1) copy in writing, of a complete list of material submittals and equipment to accomplish the work specified.
- 8.2 Submittals shall comply with Section 01 33 00 of these specifications. Transmit submittals (from Submittal List) on Submittal Log (the list and a blank log is provided after Section 01 33 00).
- 8.3 CM must receive submittals for Specification identified materials (no substitutions permitted) within ten (10) working days after receiving the "Proposed Contract" for signature.
- 8.4 Receipt of Submittals that substitute an "or equal" are required within fifteen (15) days after date of Contract Agreement.
- 8.5 Do not start work until CM approves all project submittals, issues special instructions, and a "Notice of Award" is received from the Contract Manager.

9 APPROVAL OF PROCEDURES

- 9.1 The manufacturer's recommended installation procedures and these specifications, will serve as a basis for inspection and acceptance or rejection of actual installation procedures used on the work.

- 9.2 Project Drawings are valid for construction only when stamped, signed, and approved for construction by the Architect/Engineer(s) of Record.
- 9.3 Project Specifications are valid for construction when:
- 9.4 The cover sheet is dated and signed by the Architect of Record.
- 9.5 ALL included Sections bear dates on or before that shown on the signed cover sheet.

10 ORDINANCES AND REGULATIONS

- 10.1 All work shall be accomplished in accordance with all local, State and Federal regulations. Permits and fees shall be the responsibility of the contractor at no additional cost to the Government.

11 WORKING HOURS

- 11.1 The work site will be available for contractor's activities from 8:00 a.m. until 4:30 p.m. Monday through Friday. The site will not be available for contractors' activities on weekends and State or Federal holidays.
- 11.2 The Contractor shall receive written approval from the Project Manager before implementing any form of compressed or alternative work schedule.
- 11.3 Contractor shall schedule operations so as not to conflict with airfield operations.

12 SCHEDULING AND INSPECTION

- 12.1 Within fifteen (15) calendar days after receipt of Notice to Proceed, and before commencing work, the contractor shall submit in writing to the Project Manager for approval, the complete scope of work and the procedures and sequence required to complete the work.
- 12.2 The contractor shall work directly with the CM and IOR on work scheduling and inspection procedures prior to starting any work.

13 AS-BUILT DRAWINGS/SUBMITTALS

- 13.1 The contractor shall provide one (2) full and accurate hardcopy sets of as-built drawings per Specification Sections 01 33 00 and 01 70 00, for the work accomplished by all trades for this contract marked up in a neat and understandable manner, submitted to the CM upon completion of the work and prior to issuance of a Certificate of Completion.

PART 2 PRODUCTS

14 MATERIALS

- 14.1 All materials for use under this project shall meet or exceed the standards of quality hereinafter set forth and per Section 01 60 00.

PART 3 EXECUTION

15 QUALITY CONTROL

- 15.1 To ensure proper project quality control and required record keeping, contractor shall comply with Section 01 45 00.10 20

16 CONTRACT CLOSEOUT

- 16.1 Contract closeout requires contractor compliance with Section 01 70 00.

END OF SECTION

SECTION 01 26 13

CHANGES IN THE WORK

PART 1 - GENERAL

1.1 SUMMARY

- A. Changes in the Plans and Specifications requested in writing by the Contractor, which do not materially affect the Work and which are not detrimental to the Work or to the interests of the Agency, may be granted by the CM. Nothing herein shall be construed as granting a right to the Contractor to demand acceptance of such changes.
- B. The CMD may change the Plans and Specifications, character of the work, or quantity of work provided the total arithmetic dollar value of all such changes, both additive and deductive, does not exceed 25 percent of the contract price. Should it become necessary to exceed this limitation, the change shall be by written Supplemental Agreement between the Contractor and the CMD, unless both parties agree to proceed with the change-by-change order.
- C. Change Orders shall be in writing and shall state the dollar value of the change or establish the method of payment, any adjustment in the Contract time of completion, and when negotiated prices are involved, shall provide for the Contractor's signature indicating acceptance.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 CHANGE ORDERS

- A. No cost change orders:
 - 1. Contract Documents are complementary; therefore, before starting each portion of Work, carefully study and compare various Drawings, Specifications and any other Contract Documents, coordination drawings, shop drawings, prior correspondence or documentation relative to that portion of Work, as well as information furnished by CMD.
 - 2. Contractor and Subcontractors shall evaluate and take field measurements of any existing conditions related to that portion of Work and shall observe any conditions at site affecting Work.
 - 3. Contractor and subcontractors acknowledge that all documents pertaining to Work have been examined, have examined character of site and any existing conditions, and are satisfied with nature of Work, and all other matters which can in any way affect Work.
 - 4. In event of inconsistency between portions of Contract Documents or within Contract Documents; provide better quality or greater quantity of Work, and comply with more stringent requirement, either or both in accordance with Architect's interpretation.
 - 5. Any errors, inconsistencies or omissions discovered in Contract Documents shall be reported promptly to Architect as a properly prepared and timely RFI.

6. Contractor and Subcontractors are not required to ascertain Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, and rules and regulations, unless they bear upon construction means, methods, techniques or safety and health precautions, but any nonconformity discovered by or made known shall be reported promptly as a RFI.
 7. If Contractor or Subcontractor fail to give such notice and knowingly proceeds with Work affected by errors or omissions in Contract Documents, Contractor shall correct any such errors, inconsistencies, or omissions at no additional cost.
- B. Contractor's and Subcontractor's Responsibilities:
1. When interpretation, clarification or explanation of portion of Construction Documents is needed by Contractor, Subcontractor, Vendor or Supplier, the request shall be processed through Contractor:
 - a. Review request for completeness, quality, proper referencing to drawing or specification section and reason submitted.
 - b. If request is not acceptable it shall be sent back to submitter with comments regarding reason for being returned.
 - c. Make every attempt to validate, resolve or respond to RFI by thoroughly researching and reviewing Contract Documents and field conditions.
 - d. Respond to RFI accordingly if review of RFI discloses a response or is related to coordination of construction or other issue not related to Contract Documents.
 - e. If unable to respond to request, it shall be restated in clear, concise, correct, complete and easily understood manner, and rewritten if necessary, additional information included if necessary, and only then submitted to Architect for response.
 2. Request for interpretation, clarification or explanation of Contract Documents shall be submitted to CMD in writing:
 - a. List specific Contract Documents reviewed when seeking information being requested.
 - b. Reference all applicable Contract Drawings by sheet number, section, detail, room number, door number, etc., Specifications by section and paragraph number, and reference any other relevant documents.
 - c. The field titled "Regarding" on attached RFI form must be clear for future reference in reports or correspondence.
 - d. Clearly state request and provide Contract Document references and any additional information needed so request can be fully understood, including sketches, photos or other reference material.
 - e. Fully assess issues, suggest any reasonable solutions and include various factors, including potential costs, schedule impacts, if any, and recommendations which will aid in determining a solution or response. If a reasonable solution cannot be suggested, a statement to that effect should be so stated.
 - f. Indicate reason request is being submitted.
 - g. Any critical RFI's requiring a rapid response shall clearly indicate such with an explanation as to why RFI is critical.
 - h. Priority for responses shall be indicated when multiple RFI's are submitted within short period of time.
 3. Copies of responses to RFI's shall be distributed to all parties affected.
 4. A response to RFI shall not be considered a notice to proceed with a change that may revise the Contract Sum or Contract Time, unless authorized by CMD in writing.
 5. If response to RFI is determined incomplete, it shall be resubmitted with reason response is unacceptable and any necessary additional information within five (5) days of time of receipt of response to RFI.

6. If determined or believed that additional cost or time is involved because of clarifications, interpretations or instructions issued by Architect in response to a RFI, resubmit RFI within five (5) days of receipt of response with reason and alternate solution or suggestion for performing work at no additional cost. If no other solution is possible or desirable, submit Claim in accordance with the Contract Documents with in twenty-one (21) days of receipt of response to the RFI.
- C. RFI Submittal Format:
1. Request for information shall be submitted to Architect on RFI form provided at end of this section, or form provided by Architect in electronic text file format, or in similar format acceptable to Architect:
 - a. RFI's shall be assigned unique numbers in sequential order (1, 2, 3, 4, etc.).
 - b. A resubmitted RFI or a previously answered RFI requiring revising or further clarification shall be submitted using original RFI number proceeded by ".1" to indicate revision one of RFI (i.e.: RFI No. 34.1 for revision 1 to RFI No. 34).
 - c. RFI form shall be electronically filled out and emailed to Architect's designated representative in text file format. Attachments shall be in electronic text or PDF file format. Photo attachments may be in JPG format.
- D. Architect's Response to Request for Information (RFI):
1. Clarifications, interpretations and decisions of Architect in response to RFI will be consistent with intent of and reasonably inferable from Contract Documents, and will be in writing, and if determined to be necessary by Architect, will be provided in form of drawings and other attachments or both.
 2. When making such interpretations and initial decisions, Architect will endeavor to secure faithful performance by both CMD and Contractor, will not show partiality to either and will not be liable for results of interpretations or decisions so rendered in good faith.
 3. Architect's decisions on matters related to aesthetic effects will be final if consistent with intent expressed in Contract Documents.
 4. Architect will not undertake to settle differences between Contractor, Subcontractors, trades suppliers, fabricator or manufacturer, or act as arbiter as to which Subcontractor, trade, supplier or manufacturer is to furnish or install various items indicated or required.
 5. Architect shall provide responses to RFI's with reasonable promptness, but will endeavor to respond within twenty-one (21) days from date of receipt:
 - a. If multiple RFI's are submitted on same day or within a five (5) day period, review time may be extended by mutual agreement of parties
 - b. Architect will provide a written response to RFI if Architect believes response only involves an interpretation, clarification, supplemental information or orders a minor change in Work not involving an adjustment in Contract Sum or extension of Contract Time, and is not inconsistent with intent of Contract Documents, and shall be binding.
 - c. If Architect believes response may result in a change to Contract Sum or Contract Time, response will indicate that a change document will be issued for the response, and appropriate change document will be issued indicating changes to Contract Documents.
 - d. Architect will provide any additional or supplemental drawings, specifications or other information as Architect may deem necessary to facilitate response.
 6. Architect may return RFI without response for following reasons:
 - a. Unclear.
 - b. Incomplete.
 - c. Detailed information not provided.
 - d. Is related to construction means, methods or techniques.

- e. Is related to health or safety measures.
 - f. Is due to Contractor's lack of adequate coordination.
 - g. Is considered a "Substitution Request."
 - h. Is due to non-conformance.
 - i. Response is required by another party.
- E. If requested information is available from careful study and comparison of Contract Documents, field conditions, other CMD-provided information, coordination drawings, or prior Project correspondence or documentation, Architect may invoice CMD as a change in services for costs involved in Architect's review, analysis, responding and processing of such RFI:
- 1. Contractor shall reimburse CMD for such costs.

END OF SECTION

SECTION 01 30 00

ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

A. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA)

- | | | |
|----|-------------|--|
| 1. | 29 CFR 1910 | Safety and Health Regulation in General Industry |
| 2. | 29 CFR 1926 | Safety and Health Regulations for Construction |

1.2 SUBMITTALS

Government approval is required for submittals. Refer to section 01 33 00 Submittal Procedures for instruction.

1.3 PROGRESS AND COMPLETION PICTURES

Photographically document site conditions prior to start of construction operations. Provide monthly, and within one month of the completion of work, digital photographs, 1600x1200x24 bit true color 300 minimum resolution in [JPEG] file format showing the sequence and progress of work. Take a minimum of 2 digital photographs each week throughout the entire project from a minimum of two views from points located by the Contract Manager. Submit with the monthly invoice one set of digital photographs on a thumb drive cumulative of all photos to date or as directed by the Project Manager.

1.4 MINIMUM INSURANCE REQUIREMENTS

Provide the minimum insurance coverage required by the contract, during the entire period of performance under this contract. Provide other insurance coverage as required by California state law.

1.5 FIRST TIER CONTRACTOR REQUIREMENTS FOR ASBESTOS CONTAINING MATERIALS

Accomplish all contract requirements of Section 02 82 00 Asbestos Remediation, assigned to the Private Qualified Person, Designated Competent Person, directly with a first-tier subcontractor.

1.6 SUPERVISION

1.6.1 Minimum Communication Requirements

Have at least one qualified superintendent, or competent alternate, capable of reading, writing, and conversing fluently in the English language, on the jobsite at all times during the performance of contract work. In addition, if a Quality Control (QC) representative is required on the contract, then that individual must also have fluent English communication skills.

1.6.2 Superintendent Qualifications

The project superintendent must have a minimum of 5 years' experience in construction with at least 5 of those years as a superintendent on projects similar in size and complexity. The individual must be familiar with the requirements of OSHA 29 CFR 1910. The individual must be capable of interpreting a critical path schedule and construction drawings. The qualification requirements for the alternate superintendent are the same as for the project superintendent. The Contract Manager may request proof of the superintendent's qualifications at any point in the project if the performance of the superintendent is in question.

For routine projects where the superintendent is permitted to also serve as the Quality Control (QC) Manager as established in Section 01 45 00.10.20 Quality Control, the superintendent must have qualifications in accordance with that section.

1.6.2.1 Duties

The project superintendent is primarily responsible for managing and coordinating day-to-day production and schedule adherence on the project. Project superintendent shall attend project meetings and quality control meetings. The superintendent or qualified alternative must be on-site at all times during the performance of this contract until the work is completed and accepted.

1.6.3.1 Contract Manager/Project Manager Qualifications

The Project Manager must have a minimum of 5 years' experience as a Project Manager or Superintendent on projects of similar size and complexity.

1.6.4 Non-Compliance Actions

The Project Superintendent is subject to removal by the Contract Manager for non-compliance with requirements specified in the contract and for failure to manage the project to insure timely completion. Furthermore, the Contract Manager may issue an order stopping all or part of the work until satisfactory corrective action has been taken.

No part of the time lost due to such stop orders is acceptable as the subject of claim for extension of time for excess costs or damages by the Contractor.

1.7 MEETINGS

1.7.1 PRECONSTRUCTION MEETING

- A. After award of the contract but prior to commencement of any work at the site. The CM will schedule and preside over meetings at the Project Site prior to Contractor occupancy.
- B. Attendance Required: CM, Architect/Engineer, Contractor, major Subcontractors, and Inspector of Record.
- C. The meeting will be chaired by the CM and minutes taken by the contractor.
- D. Location, time, and date will be determined by the Project Manager.

- E. The subjects to be reviewed include, but are not limited to:
1. Introduction.
 2. Construction Coordination.
 3. Correspondence.
 4. Submittals.
 5. Permits.
 6. Dust Control.
 7. Schedule.
 8. Survey Control.
 9. Contractor's Representative.
 10. Testing and Inspection.
 11. Contractor Reporting Requirements.
 12. Changes and Clarifications.
 13. Clean-up.
 14. As-Built Documents.
 15. Prevailing Wage Requirements.
 16. Environmental Protection, Plan and Procedures.
 17. Temporary Facilities Construction.
 18. Notice of Labor Disputes.
 19. Progress Payments.
 20. Site Regulations.
 21. Security.
 22. Operation and Maintenance Data.
 23. Training Requirements.
 24. General Discussion.
- F. Contractor Representative: Record minutes and distribute copies to participants within two days after meeting, with one copy each to Architect/Engineer, and those affected by decisions made.

1.7.2 WEEKLY CONTRACTOR MEETINGS

- A. Once a week during the Contract period, the Contractor shall meet at the Work Site with the CM.
- B. Time and location of the meeting will be determined during the Preconstruction Conference.
- C. The Contractor will serve as chairman and take minutes of meetings.
- D. Topics for discussion will include schedule, requests for information, disputed items, Potential Change Order (PCO) and Change Order (CO) status, Quality control, submittals, exception notices, and other topics as required.

1.7.3 PREINSTALLATION CONFERENCES

- A. Prime Contractor shall convene a preconstruction conference for items of Work contained in each Division of the Specifications, each trade within the Division, and each subcontractor within the Division.
 1. Convene a preconstruction conference prior to commencing the Work of the Section, trade, or subcontractor.
 2. Require attendance of each subcontractor and each trade directly affecting or affected by the Work within the Division.
 3. Convene additional conferences when required by the individual Section.

4. Prepare an agenda, preside over the conference, and record minutes, and distribute copies within two days after the conference to participants, with two copies to the Project Manager.
 5. Review conditions of installation, coordination, preparation, approved submittals, Contract Documents, and means and methods planned to be used to perform the Work.
- ii. Within 15 days after Notice to Proceed, submit a proposed list of preconstruction conferences, and items of Work to be covered, for approval by the Project Manager.

1.7.4 CONTRACT CLOSEOUT MEETING

- A. Schedule Project closeout meeting with sufficient time to prepare for requesting Substantial Completion. Preside over meeting and be responsible for minutes.
- B. Attendance Required: Contractor, Project Manager, Inspector of Record and Architect/Engineer, and others appropriate to agenda.
- C. Notify Facility Representative five days in advance of meeting date.
- D. Minimum Agenda:
 1. Start-up of facilities and systems.
 2. Operations and maintenance manuals.
 3. Testing, adjusting, and balancing.
 4. System demonstration and observation.
 5. Operation and maintenance instructions for Owner's personnel.
 6. Contractor's inspection of Work.
 7. Contractor's preparation of an initial "punch list."
 8. Procedure to request Architect/Engineer inspection to determine date of Substantial Completion.
 9. Completion time for correcting deficiencies.
 10. Inspections by authorities having jurisdiction.
 11. Certificate of Occupancy and transfer of insurance responsibilities.
 12. Partial release of retainage.
 13. Final cleaning.
 14. Preparation for final inspection.
 15. Closeout Submittals:
 - a. Project record documents.
 - b. Operating and maintenance documents.
 - c. Operating and maintenance materials.
 - d. Affidavits.
 16. Final Application for Payment.
 17. Contractor's demobilization of Site.
 18. Maintenance.

1.14 ELECTRONIC MAIL (E-MAIL) ADDRESS

Establish and maintain electronic mail (e-mail) capability along with the capability to open various electronic attachments such as text files, pdf files, and other similar formats. Within 10 days after contract award, provide the CM a single (only one) e-mail address for electronic communications from the CM related to this contract including, but not limited to contract documents, invoice information, request for proposals, and other correspondence. The Contract Manager may also use email to notify the Contractor of base access conditions when emergency conditions warrant, such as hurricanes or terrorist threats. Multiple email addresses are not allowed.

It is the Contractor's responsibility to make timely distribution of all Project Manager initiated e-mail with its own organization including field office(s). Promptly notify the Contract Manager, in writing, of any changes to this email address.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.1 ALTERATION PROCEDURES

- A. Employ skilled and experienced installer to perform alteration and renovation Work.
- B. Remove unsuitable material not marked for salvage, including rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished Work.
- C. Remove debris and abandoned items from area and from concealed spaces.
- D. Prepare surface and remove surface finishes to permit installation of new Work and finishes.
- E. Close openings in exterior surfaces to protect existing Work from weather and extremes of temperature and humidity.
- F. Where new Work abuts or aligns with existing Work, provide smooth and even transition. Patch Work to match existing adjacent Work in texture and appearance.
- G. Patch or replace portions of existing surfaces that are damaged, lifted, discolored, or showing other imperfections.

End of Section

SECTION 01 30 10 15

CMD Amended November 2023

COLLABORATION SOFTWARE

1. SUMMARY

- a. Contractor shall utilize web-based construction project management collaboration software commonly known as Procore (www.procore.com) to submit, track, distribute and fully collaborate on project documentation and action items. Wherein this specification references Procore it shall mean the California Military Department (CMD) Procore account.
- b. The intent of utilizing a web-based construction management application is to reduce cost and schedule risk, improve quality and safety, and maintain a healthy team dynamic by improving information flow, reducing non-productive activities, reducing rework, and decreasing turnaround times.

2. SOFTWARE USAGE (including but not limited to)

a. Daily Log

- i. Using the Daily log tool within Procore, Contractor shall provide a separate daily log entry for the Superintendent, Site Safety and Health Officer and Quality Control team (as defined elsewhere in this contract). Should contractor already have an established process for documenting Daily work activities, Safety and QCM, the CMD may, at its sole discretion, permit the use of some or all of the contractors' reports provided they are uploaded at the end of each day into Procore Daily log tool as directed by the Department.
- ii. The contractor shall upload pictures daily when work is performed. A reasonable number of pictures shall be taken to illustrate the work of the project but in any event no less than 10 photos daily, if work is interior and exterior there shall be 10 of each area of work. Photos shall be made available to the entire project team, loaded directly into the Procore platform, using the "Photos" tool and provided relevant naming convention to permit search features at a later date. These uploads shall be in addition to those required in Section 01 30 00 (if addressed) and elsewhere in the contract.

b. Directory

- i. The contractor shall input and update (as required) the Procore project directory to include all key project team members. As directed by the CMD, subcontractors may not be required to participate within the Procore project. Should CMD require participation of subcontractors using Procore, participation will be at no additional cost or expense.

c. Deficiency Tracking

- i. The contractor shall respond promptly to deficiencies and observations identified in PROCORE and do so in accordance with the terms and conditions of this contract. This is in addition to other deficiency requirements of this contract.

01 30 00 10 - 1

06EXXX

Camp San Luis Obispo Bldg. 632 – Roof Replacement
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d. Documents

- i. Contractor will, as directed by the Department, utilize the Procore “Documents” storage location for miscellaneous project documents. The contractor shall not upload documents unless directed by the Department. Documents loaded shall have a naming convention of title/subject to permit search functions of the Procore system.
- ii. The contractor shall use proper version control and check out files, without compromising access to all previous revisions.

e. Drawings

- i. Project Drawings will be in the Drawings tool of Procore. All drawing revisions shall be made in Procore and it shall be the contractors' sole responsibility for contract adherence. The contractor shall, as directed by the Department, maintain the contractually required “as built” drawings in the Procore.

f. Invoicing

- i. If requested by the Department, the Contractor shall utilize Procore Invoicing tool for invoice submission. Invoicing shall be submitted as further defined in this contract using AIA forms uploaded as attachments to each submission.

g. Inspections

- i. Contractor shall utilize the Procore platform as directed by CMD for all project inspection requests. The inspection process shall be as defined elsewhere in the contract documents.

h. Meetings

- i. Contractor shall utilize Procore Meetings tool to create, edit, host, and post all meeting minutes. Prior Meeting minutes shall remain accessible through the duration of the project. At the sole discretion of the department, the contractor may be permitted to utilize existing meeting practices if they meet the intent of the government, in which case contractor shall ensure a record copy of any such meeting is posted in Procore within 24 hours of the event or as directed by the department.
- ii. Contractor will record and distribute meeting minutes and action items via the Meetings tool within the Procore software.

i. Mobile Accessibility

- i. Contractor shall provide at least one mobile (Apple or Android) tablet or computer (phone is not acceptable) with the Procore App installed for the use of Contractor’s team for the duration of the project. The contractor is responsible for ensuring a reliable internet connection for the device.

j. Photos

- i. The contractor shall utilize Procore Photos tool or other tools as directed to upload and view photos from web and mobile.
- ii. Contractor shall utilize Procore to markup or comment on photos to clarify the intent of RFI’s etc.

k. Punchlist

- i. All punch list items will be managed through the Procore software.
- ii. Contractor shall utilize Procore to create and manage punch list items utilizing mobile products and link them to specific locations on the drawings.
- iii. Punchlist items will be created by the Contractor while walking with the CMD and applicable consultants.
- iv. Contractor shall utilize Procore to distribute punch list items and to mark them as resolved with photographic proof of resolution as required.
- v. Unless otherwise agreed in writing, Punchlist Items may not be closed if a representative from the CMD or applicable consultant acting on behalf of CMD is not present.

l. Requests for Information (RFIs)

- i. Contractor shall utilize the RFI tool within Procore to create and process RFIs with assignees, due dates and attachments.
- ii. Contractor shall fully complete the RFI tool request form for each RFI, posting the RFI to the drawing(s) and link all relevant specifications, photos, etc. in the Procore RFI tool whenever submitting RFI's to the CMD. Failure to do so will result in immediate rejection and be deemed a review by the CMD as defined elsewhere in the contract documents.
- iii. If project includes design, drawings will be provided to the CMD in accordance with the following requirements:

<https://support.procore.com/faq/how-can-i-improve-the-accuracy-of-on-my-drawings>

m. Schedule

- i. The contractor shall provide native files as required by Procore and as defined elsewhere in the contract documents. Procore accepts typical scheduling software such as Microsoft Project, Primavera P3, or Primavera P6.

n. Specifications

- i. Project Specifications will be uploaded into Procore. Any project revisions will be made in Procore, and it shall be the contractors' sole responsibility to stay abreast of any changes including contract modifications.

o. Submittals

- i. The contractor shall maintain the submittal register in Procore of all submittals as directed by the CMD.
- ii. The contractor shall submit all submittals through the Procore "Submittals" tool utilizing the multi-step approval workflows predefined by the CMD and in accordance with the terms provided elsewhere in the contract documents.

- iii. Contractor shall fill out the submittals completely. A failure to do so will result in automatic rejections and be deemed a “review” as provided elsewhere in the contract.

3. TECHNOLOGY

- a. Contractor shall have PDF and the Microsoft suite software as they are a requirement of Procore. Attachments to RFIs, Submittals, Meetings, etc. should be uploaded in PDF as required by Procore.

4. TRAINING AND SUPPORT

- a. The contractor shall designate a minimum of one primary and one backup staff person to administer the contractors’ Procore responsibilities of this project. Those personnel will be trained as defined below and shall not rely on the CMD staff for training.
- b. The Contractor shall ensure adequate training of all staff utilizing the Procore software. Selected staff must complete all the required training necessary to fully function in the system and on this project. Training is offered in the form of self-paced learning videos as well as interactive webinars. Training is free and can be found at:

<https://education.procore.com/page/procore-certification-general-contractor-client>

- c. The contractor shall host a kickoff meeting with the CMD and applicable team members at the beginning of the project to discuss how the software will be used, routing & naming protocols, etc. Project Subcontractors should not be part of the Procore platform unless otherwise directed by the Department.

5. PROCEDURES

- a. RFIs and Submittals
 - i. The Contractor will be responsible for submitting all RFIs and Submittals through the Procore software tools and assigning them to the appropriate parties using predetermined workflows. All data fields shall be filled out completely and routed as defined in the project kickoff/Job Start meeting.
 - ii. All project team members including Architects / Engineers / Consultants etc. are responsible for posting all responses to these items via the Procore software, including uploading all relevant attachments.
 - iii. The Contractor will, as directed by CMD, distribute responses to all affected subcontractors and confirm agreement with the response by “close and distribute” action on the item.

b. Construction Documentation

- i. The Contractor will construct pursuant to Drawings, Specifications and Documents in the software and ensure that the current version of all applicable construction documentation is available to the entire team within Procore software.
- ii. The Contractor will ensure that all RFIs which modify the current drawings are posted/linked to the drawings and available in the Procore software immediately upon response from the department.

6. COST

- a. The Contractor's bid proposal shall be inclusive of full utilization of the Procore software. The program is hosted by the CMD and no adjustment to the contract will be made for utilization.

SECTION 01 32 16.00 20

SMALL PROJECT CONSTRUCTION PROGRESS SCHEDULES

PART 1 GENERAL

1.1 SUBMITTALS

Government approval is required for all submittals. Submit the following in accordance with Section 01 33 00 Submittal Procedures:

- A. Preconstruction Submittals
- B. Baseline Construction Schedule
- C. Monthly Updates

1.2 PRE-CONSTRUCTION SCHEDULE REQUIREMENT

Prior to the start of work, prepare and submit to the CM a Baseline Design Schedule and Baseline Construction Schedule. The approval of a Baseline Construction Schedule is a condition precedent to:

- a. The Contractor starting demolition work or construction stage(s) of the contract.
- b. Processing Contractor's invoice(s) for construction activities/items of work.
- c. Review of any schedule updates.

Submittal of the Baseline Design and Construction Schedule, and subsequent schedule updates, is understood to be the Contractor's certification that the submitted schedule meets the requirements of the Contract Documents, represents the Contractor's plan on how the work will be accomplished, and accurately reflects the work that has been accomplished and how it was sequenced (as-built logic).

1.3 SCHEDULE FORMAT

1.3.1 Project Schedule (NAS)

Use the critical path method (CPM) to schedule and control project activities. Prepare and maintain project schedules using Microsoft Project 2025. The scheduling software that will be utilized by the Government on this project is Microsoft 365 by Microsoft, Inc. Notwithstanding any other provision in the contract, schedules submitted for this project must be prepared using Microsoft Project. Submission of data from another software system where data conversion techniques or software is used to import into Microsoft Projects scheduling software is not acceptable and will be cause for rejection of the submitted schedule. Importing data into the scheduling program using data conversion techniques or third-party software is cause for rejection of the submitted schedule.

Within 15 calendar days after approval of the Initial Schedule or approval of the final design for a design build project, submit to the CM a final project schedule.

1.3.1.1 Activity Requirements

- a. At a minimum, identify the following in the schedule:
 - (1) Design and Construction time for major systems and components.
 - (2) Each activity assigned with its appropriate Responsibility Code
 - (3) Each activity assigned with its appropriate Phase and Area Codes
 - (4) Major submittals and submittal processing time
 - (5) Major equipment lead time
- b. Build the Schedule as follows:
 - (1) Show design periods, submittals, Government review periods, material/equipment delivery, utility outages, on-site construction, inspection, testing, and closeout activities. Government and Contractor on-site work activities must be driven by calendars that reflect Saturdays, Sundays and all Federal Holidays as non-work days for 5-day work week calendars. 6-day work week calendars must reflect Sundays and all Federal Holidays as non-work days. 7-day work week calendars must reflect all Federal Holidays as non-work days unless otherwise agreed to by the Contract Manager. Total work hours/day for all defined calendars is set to 8 unless otherwise agreed upon.]
 - (2) With the exception of the Contract Award and End Contract milestone activities, use of open-ended activities is not allowed; each activity must have predecessor and successor ties. No activity must have an open start or open finish (dangling) logic. Minimize redundant logic ties. Once an activity exists on the schedule it must not be deleted or renamed to change the scope of the activity and must not be removed from the schedule logic without approval from the Contract Manager.

While an activity cannot be deleted, where said activity is no longer applicable to the schedule but must remain within the logic stream for historical record, it can be changed to a milestone. Document any such change in the milestone's "Notebook," including a date and explanation for the change. The ID number for a deleted activity must not be re-used for another activity.
 - (3) Assign each activity its appropriate Responsibility Code and Area Code, indicating location and responsibility to accomplish the work indicated by the activity, Phase Code, and Work Location Code. Include anticipated tasks to be assigned Government responsibility.
 - (4) Date/time constraints or lags, other than those required by the contract, are not allowed unless approved by the CM. Include as the last activity in the contract schedule, a milestone activity named "Contract Completion Date".

(5) Include the following Contract Milestones:

- (a) Include as the first activity on the schedule a start milestone titled "Contract Award", which must have a Mandatory Start constraint equal to the Contract Award Date.
- (b) Include Interim or Phased Completion Milestones required by the Contract or as approved by the CM.
- (c) Include Facility Turnover Planning Meeting Milestones.
- (d) Include an unconstrained finish milestone on the schedule titled "Substantial Completion". Substantial Completion is defined as the point in time the Government would consider the project ready for beneficial occupancy wherein by mutual agreement of the Government and Contractor. Government use of the facility is allowed while construction access continues in order to complete remaining items (e.g. punch list and other close out submittals).
- (e) Include an unconstrained finish milestone on the schedule titled "Projected Completion". Projected Completion is defined as the point in time the Government would consider the project complete. This milestone must have the Contract Completion Date (CCD) milestone as its only successor.
- (f) Include as the last activity on the schedule a finish milestone titled "Contract Completion (CCD)" with constraint type "Must Finish No Later Than". Calculation of schedule updates must be such that if the finish of the "Projected Completion" milestone falls after the contract completion date, then negative float will be calculated on the longest path and if the finish of the "Projected Completion" milestone falls before the contract completion date, the float calculation must reflect positive float on the longest path. This milestone must be set to 5:00 pm.

(6) Provide lead time for major equipment.

1.3.1.2 Anticipated Weather Lost Work Days

Use the National Oceanic and Atmospheric Administration's (NOAA) Summary of Monthly Normals report to obtain the historical average number of days each month with precipitation, using a nominal 30-year, greater than 2.5 mm 0.10 inch precipitation amount parameter, as indicated on the Station Report for the NOAA location closest to the project site as the basis for establishing a "Weather Calendar" showing the number of anticipated non-workdays for each month due to adverse weather, in addition to Saturdays, Sundays and all Federal Holidays as non-work days.

Use the following schedule of anticipated monthly non-work days due to adverse weather as the basis for establishing a "Weather Calendar" showing the number of anticipated non-workdays for each month due to adverse weather, in addition to Saturdays, Sundays and all Federal and State Holidays as non-work days.

MONTHLY ANTICIPATED ADVERSE WEATHER DELAYS											
JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
[2] [_]	[2] [_]	[2] [_]	[2] [_]	[2] [_]	[2] [_]	[2] [_]	[2] [_]	[2] [_]	[2] [_]	[2] [_]	[2] [_]

Assign the Weather Calendar to any activity that could be impacted by adverse weather. The Contract Manager will issue a modification in accordance with the contract clauses, giving the Contractor a time extension for the difference of days between the anticipated and actual adverse weather delay if the number of actual adverse weather delay days exceeds the number of days anticipated for the month in which the delay occurs, and the adverse weather delayed activities are critical to contract completion.

A lost workday due to weather conditions is defined as a day in which the Contractor cannot work at least 50 percent of the day on the impacted activity.

1.3.1.3 Activity Identification

- Identify Government, Construction Quality Management (CQM), Construction activities planned for the project and other activities that could impact project completion if delayed.
- Identify administrative type activity/milestones including pre-construction submittal and permit requirements prior to demolition or construction stage.
- Create separate activities for each Phase, Area, Floor Level, and Location where the activity is occurring.
- Do not use construction category activity to represent non-work type reference (Such as, Serial Letter or Request for Information) in NAS.
- Place non-work reference within P6 activity details notebook. Activity categories included in the schedule are specified below.

1.3.1.4 Responsibility Code

Assign each activity its appropriate Responsibility Code indicating responsibility to accomplish the work indicated by the activity, Phase Code and Work Location Code.

1.3.1.5 Microsoft Project 2025 Settings and Parameters

Use the following MS Project 2025 settings and parameters in preparing the Baseline Schedule:

- The Network must have a minimum of 30 construction activities.
- No on-site construction activity may have durations in excess of 20 working days.
- Critical is defined as having zero days of Total Slack. Within the Baseline Schedule no more than 20 percent of the activities shall be critical.
- Logic: include the following setting: File, Options, Schedule tab - Split in-progress tasks - must be selected.

- e. Status Date gridline is displayed in the Gantt Chart view.
- f. Task Type is set to Fixed Work for "boots-on-the-ground" construction activities.
- g. Task Type is set to Fixed Duration for design activities, submittals, Government reviews, procurement, material/equipment delivery, and utility outages.
- h. "Effort Driven" is turned ON for Fixed Duration tasks.
- i. Time Periods established for the project are set to 8 Hrs/Day, 40 Hrs/Week and 20 days/month.
- j. Week starting on Monday must be selected.
- k. Default start time is set to 8am (0800).
- l. The default end time is set to 5pm (1700).

1.3.1.7 Cost Loading Microsoft Project 2010 Schedules

Assign material, labor, and equipment costs to their respective Construction Activities. Assign material and equipment costs, for which payment will be requested in advance of installation, to their respective procurement activity (i.e. the material/equipment on-site activity). Evenly disperse overhead and profit to each activity over the duration of the project. Cost loading must total to 100 percent of the value of the contract.

1.3.1.7.1 Software Settings

a. Resource Sheet

- (1) Resource Name: Enter each code and resource for the project.
- (2) Type: Set to "Material"
- (3) Material Label: Enter units of measurement for each resource
- (4) Std. Rate: Enter unit cost for each resource.
- (5) Accrue at: Set to "Prorated"

b. Assigning Resources to Each Activity

- (1) Select each activity in Gantt Chart
- (2) Assign resources, Resource Tab
- (3) Select each resource and enter the quantity of the units; then, assign the resource(s) to the activity.

c. Baseline for Earned Value Calculation, File Tab, Options, Advanced, Default task Earned Value method: Set to "Physical % Complete" or as directed by the Contract Manager.

1.3.1.7.2 Tabular Reports

1.3.1.7.2.1 Tracking Gantt Schedule with Cost Table

Submit a Tracking Gantt Schedule with each schedule update showing activity baseline cost, cost percent complete, and Budgeted Cost of Work Performed (BCWP), as directed by the Contract Manager.

1.3.1.7.2.2 Earned Value Over Time Report

- a. With each schedule submission, submit Earned Value Over Time Report S-Curves indicating Planned Value to the contract completion date based on projected early and late activity finish dates and Earned Value.
- b. Revise Earned Value Over Time Report S-Curves when the contract is modified, or as directed by the CM.

1.3.2 Bar Chart Schedule

The Bar Chart must, as a minimum, show work activities, submittals, Government review periods, material/equipment delivery, utility outages, on-site construction, inspection, testing, and closeout activities. The Bar Chart must be time scaled and generated using an electronic spreadsheet program.

1.3.3 Schedule Submittals and Procedures

Submit Schedules and updates in hard copy and on electronic media that is acceptable to the CM. Submit an electronic back-up of the project schedule in an import format compatible with the Government's scheduling program.

1.4 SCHEDULE MONTHLY UPDATES

Update the Design and Construction Schedule at monthly intervals or when the schedule has been revised. Keep the updated schedule current, reflecting actual activity progress and plan for completing the remaining work. Submit copies of purchase orders and confirmation of delivery dates as directed by the Contract Manager.

- a. Narrative Report: Identify and justify the following:
 - (1) Progress made in each area of the project.
 - (2) Longest Path: Include printed copy on 279 by 432 mm 11 by 17-inch paper, landscape setting.
 - (3) Date/time constraint(s), other than those required by the contract.
 - (4) Listing of changes made between the previous schedule and current updated schedule including added or removed activities, original and remaining durations for activities that have not started, logic (sequence, constraint, lag/lead), milestones, planned sequence of operations, longest path, calendars or calendar assignments, and cost loading.
 - (5) Any decrease in previously reported activity Earned Amount.
 - (6) Pending items and status thereof, including permits, changes orders, and

time extensions.

- (7) Status of Contract Completion Date and interim milestones.
- (8) Current and anticipated delays (describe cause of delay and corrective actions(s) and mitigation measures to minimize).
- (9) Description of current and future schedule problem areas.

For each entry in the narrative report, cite the respective Activity ID and Activity Name, the date and reason for the change, and description of the change.

1.5 CONTRACT MODIFICATION

Submit a Time Impact Analysis (TIA) with each cost and time proposal for a proposed change. TIA must illustrate the influence of each change or delay on the Contract Completion Date or milestones. No time extensions will be granted nor delay damages paid unless a delay occurs which consumes all available Project Float and extends the Projected Finish beyond the Contract Completion Date.

- a. Each TIA must be in both narrative and schedule form. The narrative must define the scope and conditions of the change; provide start and finish dates of impact, successor, and predecessor activity to impact period, responsible party, describe how it originated, and how it impacts the schedule. The schedule submission must consist of three native files:
 - (1) Fragnet used to define the scope of the changed condition.
 - (2) Most recently accepted schedule update as of the time of the proposal or claim submission that has been updated to show all activity progress as of the time of the impact start date.
 - (3) The impacted schedule that has the fragnet inserted in the updated schedule and the schedule "run" so that the new completion date is determined.
- b. For claimed as-built project delay, the inserted fragnet TIA method must be modified to account for as-built events known to occur after the data date of schedule update used.
- c. TIAs must include any mitigation and must determine the apportionment of the overall delay assignable to each individual delay. Apportionment must provide identification of delay type and classification of delay by compensable and non-compensable events. The associated narrative must clearly describe the analysis methodology used, and the findings in a chronological listing beginning with the earliest delay event.
 - (1) Identify and classify types of delays as follows:
 - (a) Force majeure delay (e.g. weather delay): Any delay event caused by something or someone other than the Government (including its agents) or the Contractor, or the risk of which has not been assigned solely to the Government or the Contractor. If the force majeure delay is on the critical path, in absence of other

types of concurrent delays, the Contractor is granted an extension of contract time, classified as a non-compensable event.

(b) A Contractor-delay: Any delay event caused by the Contractor, or the risk of which has been assigned solely to the Contractor. If the contractor-delay is on the critical path, in absence of other types of concurrent delays,

(c) Contractor is not granted extension of contract time and classified as a non-compensable event. Where absent other types of delays, and having impact to project completion, provide a Corrective Action Plan, identifying plan to mitigate delay, to the CM a Government delay: Any delay event caused by the Government, or the risk of which has been assigned solely to the Government. If the Government delay is on the longest path, in the absence of other types of concurrent delays, the Contractor is granted an extension of contract time and classified as a compensable event.

(2) Use functional theory to analyze concurrent delays, where: Separate delay issues delay project completion, do not necessarily occur at same time, rather occur within same monthly schedule update period at minimum, or within same as-built period under review. If a combination of functionally concurrent delay types occurs, it is considered Concurrent Delay, which is defined in the following combinations:

(a) Government-delay concurrent with Contractor-delay: Excusable time extension, classified non-compensable event.

(b) Government-delay concurrent with force majeure delay: Excusable time extension, classified non-compensable event.

(c) Contractor-delay concurrent with force majeure delay: Excusable time extension, classified as a non-compensable event.

(3) A pacing delay, reacting to another delay (parent delay) equally or more critical than paced activity, must be identified prior to pacing. The CM will notify Contractor prior to pacing. Contractor must notify Contract Manager prior to pacing. Notification must include identification of parent delay issue, estimated parent delay time period, paced activity(s) identity, and pacing reason(s). Pacing Concurrency is defined as follows:

(a) Government-delay concurrent with Contractor-pacing: Excusable time extension, classified compensable event.

(b) Contractor-delay concurrent with Government-pacing: Inexcusable time extension, classified non-compensable event.

1.6 3-WEEK LOOK AHEAD SCHEDULE

Prepare and issue a 3-Week Look Ahead schedule to provide a more detailed day-to-day plan of upcoming work identified on the Construction Schedule. Key the work plans to activity numbers when a NAS is required and update each week to show the planned work for the current and following two-week period. Additionally, include upcoming outages, closures, preparatory meetings, and initial meetings.

Identify critical path activities on the Three-Week Look Ahead Schedule. The detail work plans are to be bar chart type schedules, maintained separately from the Construction Schedule on an electronic spreadsheet program and printed on 216 by 279 mm 8-1/2 by 11-inch sheets as directed by the CM. Activities must not exceed 5 working days in duration and have sufficient level of detail to assign crews, tools and equipment required to complete the work. Deliver three hard copies and one electronic file of the 3-Week Look Ahead Schedule to the CM no later than 8 a.m. each Monday, and review during the weekly CQC Coordination or Production Meeting.

1.7 CORRESPONDENCE AND TEST REPORTS:

Correspondence (e.g., letters, Requests for Information (RFIs), e-mails, meeting minute items, Production and QC Daily Reports, material delivery tickets, photographs) must reference Schedule Activities that are being addressed. Test reports (e.g., concrete, soil compaction, weld, pressure) must reference Schedule Activities that are being addressed.

1.8 ADDITIONAL SCHEDULING REQUIREMENTS

Any references to additional scheduling requirements, including systems to be inspected, tested and commissioned, that are located throughout the remainder of the Contract Documents, are subject to all requirements of this section.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

1.1.1 Submittal Information

The Contract Manager may request submittals in addition to those specified when deemed necessary to adequately describe the work covered in the respective sections. Each submittal is to be complete and in sufficient detail to allow ready determination of compliance with contract requirements.

Units of weights and measures used on all submittals are to be the same as those used in the contract drawings.

1.1.2 Project Type

The Contractor's Quality Control (CQC) System Manager are to check and approve all items before submittal and stamp, sign, and date indicating action taken. Proposed deviations from the contract requirements are to be clearly identified. Include within submittals items such as: Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts, or curves; test reports; test cylinders; samples; O&M manuals (including parts list); certifications; warranties; and other such required submittals.

The Contractor and the Designer of Record (DOR), if applicable, are to check and approve all items before submittal and stamp, sign, and date indicating action taken. Proposed deviations from the contract requirements are to be clearly identified. Include within submittals items such as: Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts, or curves; test reports; test cylinders; samples; O&M manuals (including parts list); certifications; warranties; and other such required submittals.

1.1.3 Submission of Submittals

Schedule and provide submittals requiring Government approval before acquiring the material or equipment covered thereby. Pick up and dispose of samples not incorporated into the work in accordance with manufacturer's Safety Data Sheets (SDS) and in compliance with existing laws and regulations.

1.2 DEFINITIONS

1.2.1 Submittal Descriptions (SD)

SD-01 Preconstruction Submittals

Submittals that are required prior to or commencing with the start of work on site. Submittals that are required prior to or at the start of construction (work) or the next major phase of the construction on a multiphase contract.

Preconstruction Submittals include schedules and a tabular list of locations, features, and other pertinent information regarding products, materials, equipment, or components to be used in the work.

Certificates of Insurance

Surety Bonds

List of Proposed Subcontractors

Submittal Register

Schedule of Values Report

SD-02 Shop Drawings

Drawings, diagrams and schedules specifically prepared to illustrate some portion of the work.

Diagrams and instructions from a manufacturer or fabricator for use in producing the product and as aids to the Contractor for integrating the product or system into the project.

Drawings prepared by or for the Contractor to show how multiple systems and interdisciplinary work will be coordinated.

SD-03 Product Data

Catalog cuts, illustrations, schedules, diagrams, performance charts, instructions and brochures illustrating size, physical appearance and other characteristics of materials, systems or equipment for some portion of the work.

Samples of warranty language when the contract requires extended product warranties.

SD-04 Samples

Fabricated or unfabricated physical examples of materials, equipment or workmanship that illustrate functional and aesthetic characteristics of a material or product and establish standards by which the work can be judged.

Color samples from the manufacturer's standard line (or custom color samples if specified) to be used in selecting or approving colors for the project.

Field samples and mock-ups constructed on the project site establish standards ensuring work can be judged. Includes assemblies or portions of assemblies that are to be incorporated into the project and those that will be removed at conclusion of the work.

SD-06 Test Reports

Report signed by authorized official of testing laboratory that a material, product or system identical to the material,

product or system to be provided has been tested in accord with specified requirements. Unless specified in another section, testing must have been within three years of date of contract award for the project.

Report that includes findings of a test required to be performed on an actual portion of the work or prototype prepared for the project before shipment to job site.

Report that includes finding of a test made at the job site or on sample taken from the job site, on portion of work during or after installation.

Investigation reports Daily logs and checklists.

Final acceptance test and operational test procedure

SD-07 Certificates

Statements printed on the manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that the product, system, or material meets specification requirements. Must be dated after award of project contract and clearly name the project.

Document required of Contractor, or of a manufacturer, supplier, installer, or Subcontractor through Contractor. The document's purpose is to further promote the orderly progression of a portion of the work by documenting procedures, acceptability of methods, or personnel qualifications.

Confined space entry permits

Text of posted operating instructions SD-08

Manufacturer's Instructions

Preprinted material describing installation of a product, system or material, including special notices and (SDS) concerning impedances, hazards and safety precautions.

SD-08 Manufacturer's Field Reports

Documentation of the testing and verification actions taken by manufacturer's representative at the job site, in the vicinity of the job site, or on a sample taken from the job site, on a portion of the work, during or after installation, to confirm compliance with manufacturer's standards or instructions. The documentation must be signed by an authorized official of a testing laboratory or agency and state the test results; and indicate whether the material, product, or system has passed or failed the test.
Factory test reports.

SD-9 Operation and Maintenance Data

Data provided by the manufacturer, or the system provider, including manufacturer's help and product line documentation, necessary to maintain and install equipment, for operating and maintenance use by facility personnel.

Data required by operating and maintenance personnel for the safe and efficient operation, maintenance, and repair of the item.

Data incorporated in an operations and maintenance manual or control system.

SD-10 Closeout Submittals

Documentation to record compliance with technical or administrative requirements or to establish an administrative mechanism.

Special requirements necessary to properly close out a construction contract. For example, Record Drawings and as-built drawings. Also, submittal requirements are necessary to properly close out a major phase of construction on a multi-phase contract.

1.2.2 Approving Authority

Office or designated person authorized to approve the submittal.

1.2.3 Work

As used in this section, on-site and off-site construction is required by contract documents, including labor necessary to produce submittals, construction, materials, products, equipment, and systems incorporated or to be incorporated in such construction. In exception, excludes work to produce SD-01 submittals.

1.3 SUBMITTAL CLASSIFICATION

1.3.1 Government Approved (G)

Government approval is required for extensions of design, critical materials, variations, equipment whose compatibility with the entire system must be checked, and other items as designated by the Government.

Government approval is required for any variations from the Solicitation or the Accepted Proposal and for other items as designated by the Government.

1.4 FORWARDING SUBMITTALS REQUIRING GOVERNMENT APPROVAL

1.4.1 O&M Data

Submit data specified for a given item within 30 calendar days after the item is delivered to the contract site. In the event the Contractor fails to deliver O&M data within the time limits specified, the Contract Manager may withhold from progress payments 50 percent of the price of the items to which such O&M data apply.

1.6 PREPARATION

1.6.1 Transmittal Form

Transmit each submittal, except sample installations and sample panels to the office of the approving authority using the transmittal form prescribed by the Contract Manager. Include all information prescribed by the transmittal form and required in paragraph Identifying Submittals. Use the submittal transmittal forms to record actions regarding samples.

Use the transmittal form for submitting both Government-approved and information-only submittals. Submit in accordance with the instructions on the reverse side of the form. These forms will be furnished to the Contractor. Properly complete the form by filling out all the heading blank spaces and identifying each item submitted. Exercise special care to ensure proper listing of the specification paragraph and sheet number of the contract drawings pertinent to the data submitted for each item.

1.6.2 Identifying Submittals

The Contractor's Quality Control Manager must prepare, review and stamp submittals, including those provided by a subcontractor, before submittal to the Government.

Identify submittals, except sample installations and sample panels, with the following information permanently adhered to or noted on each separate component of each submittal and noted on transmittal form. Mark each copy of each submittal identically, with the following:

- a. Project title and location
- b. Construction contract number
- c. Dates of the drawings and revisions
- d. Name, address, and telephone number of Subcontractor, supplier, manufacturer, and any other Subcontractor associated with the submittal.
- e. Section number of the specification by which submittal is required.
- f. Submittal description (SD) number of each component of submittal
- g. For a resubmission, add alphabetic suffix on submittal description, for example, submittal 18 would become 18A, to indicate resubmission.
- h. Product identification and location in project.

1.6.3 Submittal Format

1.6.3.1 Format for SD-02 Shop Drawings

Provide shop drawings not less than 8 1/2 by 11 inches nor more than 30 by 42 inches, except for full-size patterns or templates.

Prepare drawings to accurate size, with scale indicated, unless another form is required. Ensure drawings are suitable for reproduction and of a quality to produce clear, distinct lines and letters, with dark lines on a white background.

- a. Include the nameplate data, size, and capacity on drawings. Also include applicable federal, military, industry, and technical society publication references.
- b. Dimension drawings, except diagrams and schematic drawings. Prepare drawings demonstrating interface with other trades to scale. Use the same unit of measure for shop drawings as indicated on the contract drawings. Identify materials and products for work shown.

Present shop drawings sized 8 1/2 by 11 inches as part of the bound volume for submittals. Present larger drawings in sets. Submit an electronic copy of drawings in PDF format.

1.6.3.2.1 Drawing Identification

Include on each drawing the drawing title, number, date, and revision numbers and dates, in addition to information required in paragraph IDENTIFYING SUBMITTALS.

Number drawings in a logical sequence. Each drawing is to bear the number of the submittal in a uniform location next to the title block. Place the Government contract number in the margin, immediately below the title block, for each drawing.

Reserve a blank space on the right-hand side of each sheet for the Government disposition stamp.

1.6.3.3 Format of SD-03 Product Data

Present product data submittals for each section as a complete, bound volume. Include a table of contents, listing the page and catalog item numbers for product data.

Indicate, by prominent notation, each product that is being submitted; indicate the specification section number and paragraph number to which it pertains.

1.6.3.3.1 Product Information

Supplement product data with material prepared for the project to satisfy the submittal requirements where product data does not exist. Identify this material as developed specifically for the project, with information and format as required for submission of SD-07 Certificates.

Provide product data in metric dimensions. Where product data are included in preprinted catalogs with English units only, submit metric dimensions on separate sheet.

Provide product data in units used in the Contract documents. Where product data are included in preprinted catalogs with another unit, submit the dimensions in contract document units, on a separate sheet.

1.6.3.3.2 Standards

Where equipment or materials are specified to conform to industry or technical-society reference standards of such organizations as the American National Standards Institute (ANSI), ASTM International (ASTM),

National Electrical Manufacturer's Association (NEMA), Underwriters Laboratories (UL), or Association of Edison Illuminating Companies (AEIC), submit proof of such compliance. The label or listing by the specified organization will be acceptable evidence of compliance.

In lieu of the label or listing, submit a certificate from an independent testing organization, competent to perform testing, and approved by the Contract Manager. State on the certificate that the item has been tested in accordance with the specified organization's test methods and that the item complies with the specified organization's reference standard.

1.6.3.3.3 Data Submission

Collect required data submittals for each specific material, product, unit of work, or system into a single submittal that is marked for choices, options, and portions applicable to the submittal. Mark each copy of the product data identically. Partial submittals will [not] be accepted for expedition of the construction effort.

Submit the manufacturer's instructions before installation.

1.6.3.4 Format of SD-04 Samples

1.6.3.4.1 Sample Characteristics

Furnish samples in the following sizes, unless otherwise specified or unless the manufacturer has prepackaged samples of approximately the same size as specified:

- a. Sample of Equipment or Device: Full size.
- b. Sample of Materials Less Than 2 by 3 inches: Built up to 8 1/2 by 11 inches.
- c. Sample of Materials Exceeding 8 1/2 by 11 inches: Cut down to 8 1/2 by 11 inches and adequate to indicate color, texture, and material variations.
- d. Sample of Linear Devices or Materials: 10 inch length or length to be supplied, if less than 10 inches. Examples of linear devices or materials are conduit and handrails.
- e. Sample Volume of Nonsolid Materials: Pint. Examples of nonsolid materials are sand and paint.
- f. Color Selection Samples: 2 by 4 inches. Where samples are specified for selection of color, finish, pattern, or texture, submit the full set of available choices for the material or product specified. Sizes and quantities of samples are to represent their respective standard unit.
- g. Sample Panel: 4 by 4 feet.
- h. Sample Installation: 100 square feet.

1.6.3.4.2 Sample Incorporation

Reusable Samples: Incorporate returned samples into work only if so specified or indicated. Incorporated samples are to be in undamaged condition at the time of use.

Recording of Sample Installation: Note and preserve the notation of any area constituting a sample installation, but remove the notation at the final clean-up of the project.

1.6.3.4.3 Comparison Sample

Samples Showing Range of Variation: Where variations in color, finish, pattern, or texture are unavoidable due to nature of the materials, submit sets of samples of not less than three units showing extremes and middle of range. Mark each unit to describe its relation to the range of the variation. When color, texture, or pattern is specified by naming a particular manufacturer and style, include one sample of that manufacturer and style, for comparison.

1.6.3.5 Format of SD-05 Design Data

Provide design data and certificates on 8 1/2 by 11 inch paper. Provide a bound volume for submittals containing numerous pages.

1.6.3.6 Format of SD-06 Test Reports

Provide reports on 8 1/2 by 11 inch paper in a complete bound volume.

By prominent notation, indicate each report in the submittal. Indicate the specification number and paragraph number to which each report pertains.

1.6.3.7 Format of SD-07 Certificates

Provide design data and certificates on 210 by 297 mm 8 1/2 by 11 inch paper. Provide a bound volume for submittals containing numerous pages.

1.6.3.8 Format of SD-08 Manufacturer's Instructions

Present manufacturer's instructions submittals for each section as a complete, bound volume. Include the manufacturer's name, trade name, place of manufacture, and catalog model or number on product data. Also include applicable federal, military, industry, and technical-society publication references. If supplemental information is needed to clarify the manufacturer's data, submit it as specified for SD-07 Certificates.

Submit the manufacturer's instructions before installation.

1.6.3.8.1 Standards

Where equipment or materials are specified to conform to industry or technical-society reference standards of such organizations as the American National Standards Institute (ANSI), ASTM International (ASTM), National Electrical Manufacturer's Association (NEMA), Underwriters Laboratories (UL), or Association of Edison Illuminating Companies (AEIC), submit proof of such compliance. The label or listing by the specified organization will be acceptable evidence of compliance. In lieu of the label or listing, submit a certificate from an independent testing organization, competent to perform testing, and approved by the Contract Manager. State on the certificate that the item has been tested in accordance with the specified organization's test methods and that the item complies with the specified organization's reference standard.

1.6.3.9 Format of SD-09 Manufacturer's Field Reports

Provide reports on 210 by 297 mm 8 1/2 by 11 inch paper in a complete bound volume.

By prominent notation, indicate each report in the submittal. Indicate the specification number and paragraph number to which each report pertains.

1.6.3.10 Format of SD-10 Operation and Maintenance Data (O&M)

Comply with the requirements specified in Section 01 78 23 OPERATION AND MAINTENANCE DATA for O&M Data format.

1.6.3.11 Format of SD-11 Closeout Submittals

When the submittal includes a document that is to be used in the project or is to become part of the project record, other than as a submittal, do not apply the Contractor's approval stamp to the document itself, but to a separate sheet accompanying the document.

Provide data in the unit of measure used in the contract documents.

Provide all dimensions in administrative submittals in metric. Where data are included in preprinted material with English units only, submit metric dimensions on separate sheet.

1.6.4 Source Drawings for Shop Drawings

1.6.4.1 Source Drawings

The entire set of source drawing files (DWG) will not be provided to the Contractor. Request the specific Drawing Number for the preparation of shop drawings. Only those drawings requested to prepare shop drawings will be provided. These drawings are provided only after award.

1.6.4.2 Terms and Conditions

Data contained on these electronic files must not be used for any purpose other than as a convenience in the preparation of construction data for the referenced project. Any other use or reuse is at the sole risk of the Contractor and without liability or legal exposure to the Government. The Contractor must make no claim, and waives to the fullest extent permitted by law any claim or cause of action of any nature against the Government, its agents, or its sub consultants that may arise out of or in connection with the use of these electronic files. The Contractor must, to the fullest extent permitted by law, indemnify and hold the Government harmless against all damages, liabilities, or costs, including reasonable attorney's fees and defense costs, arising out of or resulting from the use of these electronic files.

These electronic source drawing files are not construction documents. Differences may exist between the source drawing files and the corresponding construction documents. The Government makes no representation regarding the accuracy or completeness of the electronic source drawing files, nor does it make representation to the compatibility of these files with the Contractor hardware or software. The Contractor is responsible for determining if any conflict exists. In the event that a conflict arises between the signed and sealed construction documents prepared by the Government and the furnished source drawing files, the signed and sealed construction documents govern.

Use of these source drawing files does not relieve the Contractor of the duty to fully comply with the contract documents, including and without limitation the need to check, confirm and coordinate the work of all contractors for the project. If the Contractor uses, duplicates or modifies these electronic source drawing files for use in producing construction data related to this contract, remove all previous indication of ownership (seals, logos, signatures, initials and dates).

1.6.5 Electronic File Format

Provide submittals in electronic format, with the exception of material samples required for Samples items. In addition to the electronic submittal, provide 2 hard copies of the submittals.

Compile the submittal file as a single, complete document, to include the Transmittal Form described within. Name the electronic submittal file specifically according to its contents, and coordinate the file naming convention with the Contract Manager. Electronic files must be of sufficient quality that all information is legible. Use PDF as the electronic format, unless otherwise specified or directed by the Contract Manager. Generate PDF files from original documents with bookmarks so that the text included in the PDF file is searchable and can be copied. If documents are scanned, optical character resolution (OCR) routines are required. Index and bookmark files exceeding 30 pages to allow efficient navigation of the file. When required, the electronic file must include a valid electronic signature or a scan of a signature.

E-mail electronic submittal documents smaller than 10MB to an e-mail address as directed by the Contract Manager. Provide electronic documents over 10 MB on an optical disc or through an electronic file sharing system such as the AMRDEC SAFE Web Application located at the following website: <https://safe.amrdec.army.mil/safe/>.

1.7 QUANTITY OF SUBMITTALS

1.7.1 Number of SD-01 Shop Drawing Copies

Submit 3 copies of submittals of shop drawings requiring review and approval by a QC organization. Submit 3 copies of shop drawings requiring review and approval by the Contract Manager.

1.7.2 Number of SD-02 Product Data Copies

Submit in compliance with quantity requirements specified for shop drawings.

1.7.3 Number of SD-03 Test Report Copies

Submit in compliance with quantity and quality requirements specified for shop drawings, other than field test results that will be submitted with QC reports.

1.7.4 Number of SD-04 Certificate Copies

Submit in compliance with quantity requirements specified for shop drawings.

1.7.5 Number of SD-05 Manufacturer's Instructions Copies

Submit in compliance with quantity requirements specified for shop drawings.

1.7.6 Number of SD-06 Manufacturer's Field Report Copies

Submit in compliance with quantity and quality requirements specified for shop drawings other than field test results that will be submitted with QC reports.

1.7.7 Number of SD-10 Operation and Maintenance Data Copies

Submit 3 copies of O&M data to the Contract Manager for review and approval.

1.7.8 Number of SD-11 Closeout Submittals Copies

Unless otherwise specified, submit two sets of administrative submittals.

1.8 PROJECT SUBMITTAL REGISTER

A sample Project Submittal Register showing items of equipment and materials for when submittals are required by the specifications is provided as "Appendix A - Submittal Register."

1.8.1 Submittal Management

Prepare and maintain a submittal register, as the work progresses. Use an electronic submittal register program furnished by the Government. Do not change data that is output in columns (c), (d), (e), and (f) as delivered by Government; retain data that is output in columns (a), (g), (h), and as approved. As an attachment, provide a submittal register showing items of equipment and materials for which submittals are required by the specifications. This list may not be all-inclusive and additional submittals may be required. Maintain a submittal register for the project in accordance with Section 01 45 00.15 10.

Thereafter, the Contractor is to track all submittals by maintaining a complete list, including completion of all data columns and all dates on which submittals are received by and returned by the Government.

1.10 VARIATIONS

Variations from contract requirements require Contract Manager approval pursuant to contract Clause FAR 52.236-21 Specifications and Drawings for Construction, and will be considered where advantageous to the Government.

1.10.1 Considering Variations

Discussion of variations with the Contract Manager before submission will help ensure that functional and quality requirements are met and minimize rejections and resubmittals. When contemplating a variation that results in lower cost, consider submission of the variation as a Value Engineering Change Proposal (VECP).

Specifically point out variations from contract requirements in transmittal letters. Failure to point out variations may cause the Government to require rejection and removal of such work at no additional cost to the Government.

1.10.2 Proposing Variations

When proposing variation, deliver a written request to the Contract Manager, with documentation of the nature and features of the variation and why the variation is desirable and beneficial to Government. Include the DOR's written analysis and approval. If lower cost is a benefit, also include an estimate of the cost savings. In addition to documentation required for variation, include the submittals required for the item. Clearly mark the proposed variation in all documentation.

1.10.3 Warranting that Variations are Compatible

When delivering a variation for approval, the Contractor warrants that this contract has been reviewed to establish that the variation, if incorporated, will be compatible with other elements of work.

1.10.4 Review Schedule Extension

In addition to the normal submittal review period, a period of 14 **working** days will be allowed for the Government to consider submittals with variations.

Schedule and submit concurrently product data and shop drawings covering component items forming a system or items that are interrelated. Submit pertinent certifications at the same time. No delay damages or time extensions will be allowed for time lost in late submittals.

- a. Coordinate scheduling, sequencing, preparing, and processing of submittals with performance of work so that work will not be delayed by submittal processing. The Contractor is responsible for additional time required for Government reviews resulting from required resubmittals. The review period for each resubmittal is the same as for the initial submittal.
- b. Submittals required by the contract documents are listed on the submittal register. If a submittal is listed in the submittal register but does not pertain to the contract work, the Contractor is to include the submittal in the register and annotate it "N/A" with a brief explanation. Approval by the Contract Manager does not relieve the Contractor of supplying submittals required by the contract documents but that have been omitted from the register or marked "N/A."
- c. Resubmit the submittal register and annotate it monthly with actual submission and approval dates. When all items on the register have been fully approved, no further resubmittal is required. Contract Manager review will be completed within 14 working days after the date of submission.

1.11.1 Reviewing, Certifying, and Approving Authority

The QC Manager is responsible for reviewing all submittals and certifying that they are in compliance with contract requirements. The approving authority on submittals is the QC Manager unless otherwise specified. At each "Submittal" paragraph in individual specification sections, a notation "G" following a submittal item indicates that the Contract Manager is the approving authority for that submittal item. Provide an additional copy of the submittal to the Government Approving authority

1.12 GOVERNMENT APPROVING AUTHORITY

When the approving authority is the Contract Manager, the Government will:

- a. Note the date on which the submittal was received from the QC manager.
- b. Review submittals for approval within the scheduling period specified and only for conformance with project design concepts and compliance with contract documents.
- c. Identify returned submittals with one of the actions defined in paragraph REVIEW NOTATIONS and with comments and markings appropriate for the action indicated.

Upon completion of review of submittals requiring Government approval, stamp and date submittals. 1 copy of the submittal will be retained by the Contract Manager and 1 copy of the submittal will be returned to the Contractor.

1.12.1 Review Notations

Submittals will be returned to the Contractor with the following notations:

- a. Submittals marked "approved" or "accepted" authorize proceeding with the work covered.
- b. Submittals marked "approved as noted" or "approved, except as noted, resubmittal not required," authorize proceeding with the work covered provided that the Contractor takes no exception to the corrections.
- c. Submittals marked "not approved," "disapproved," or "revise and resubmit" indicate incomplete submittal or noncompliance with the contract requirements or design concept. Resubmit with appropriate changes. Do not proceed with work for this item until the resubmittal is approved.
- d. Submittals marked "not reviewed" indicate that the submittal has been previously reviewed and approved, is not required, does not have evidence of being reviewed and approved by Contractor, or is not complete. A submittal marked "not reviewed" will be returned with an explanation of the reason it is not reviewed. Resubmit submittals returned for lack of review by Contractor or for being incomplete, with appropriate action, coordination, or change.
- e. Submittals marked "receipt acknowledged" indicate that submittals have been received by the Government. This applies only to "information-only submittals" as previously defined.

1.13 DISAPPROVED SUBMITTALS

Make corrections required by the Contract Manager. If the Contractor considers any correction or notation on the returned submittals to constitute a change to the contract drawings or specifications, give notice to the Contract Manager as required in the contract.

The Contractor is responsible for the dimensions and design of connection details and the construction of work. Failure to point out variations may cause the Government to require rejection and removal of such work at the Contractor's expense.

If changes are necessary to submittals, make such revisions and resubmit in accordance with the procedures above. No item of work requiring a submittal change is to be accomplished until the changed submittals are approved.

1.14 APPROVED SUBMITTALS

The Contract Manager's approval of submittals is not to be construed as a complete check, and indicates only that the general method of construction, materials, detailing, and other information are satisfactory. The design, general method of construction, materials, detailing, and other information appear to meet the Solicitation and Accepted Proposal.

Approval or acceptance by the Government for a submittal does not relieve the Contractor of the responsibility for meeting the contract requirements or for any error that may exist, because under the Quality Control (QC) requirements of this contract, the Contractor is responsible for ensuring information contained within each submittal accurately conforms with the requirements of the contract documents.

After submittals have been approved or accepted by the Contract Manager, no resubmittal for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.

1.15 APPROVED SAMPLES

Approval of a sample is only for the characteristics or use named in such approval and is not be construed to change or modify any contract requirements. Before submitting samples, provide assurance that the materials or equipment will be available in quantities required in the project. No change or substitution will be permitted after a sample has been approved.

Match the approved samples for materials and equipment incorporated in the work. If requested, approved samples, including those that may be damaged in testing, will be returned to the Contractor, at its expense, upon completion of the contract. Unapproved samples will also be returned to the Contractor at its expense, if so requested.

Failure of any materials to pass the specified tests will be sufficient cause for refusal to consider, under this contract, any further samples of the same brand or make as that material.

The Government reserves the right to disapprove any material or equipment that has previously proved unsatisfactory in service.

Samples of various materials or equipment delivered on the site or in place may be taken by the Contract Manager for testing. Samples failing to meet contract requirements will automatically void previous approvals. Replace such materials or equipment to meet contract requirements.

1.16 WITHHOLDING OF PAYMENT

Payment for materials incorporated in the work will not be made if required approvals have not been obtained. No payment for materials incorporated in the work will be made unless all required DOR approvals or required Government approvals have been obtained.

No payment will be made for any materials incorporated into the work for any conformance review submittals or information-only submittals found to contain errors or deviations from the Solicitation or Accepted Proposal.

1.17 STAMPS

Certify the submittal data as follows: "I certify that the above submitted items had been reviewed in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise stated.

____NAME OF CONTRACTOR ____

SIGNATURE OF CONTRACTOR

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

End of Section

SECTION 01 35 29

SAFETY AND OCCUPATIONAL HEALTH REQUIREMENTS

PART 1 – GENERAL PRODUCTS

1.1 REFERENCES

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.
- B. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
 - 1. ANSI Z359.1 (2016) Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components
- C. ASME INTERNATIONAL (ASME)
 - 1. ASME B30.5 (2018) Mobile and Locomotive Cranes
 - 2. ASME B30.22 (2016) Articulating Boom Cranes
- D. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA)
 - 1. 29 CFR 1910 Safety and Health Regulation in General Industry
 - 2. 29 CFR 1910.94 Ventilation
 - 3. 29 CFR 1910.120 Hazardous Waste Operations and Emergency Response
 - 4. 29 CFR 1910.146 Permit-required Confined Spaces
 - 5. 29 CFR 1915 Confined and Enclosed Spaces and Other Dangerous Atmospheres in Shipyard Employment
 - 6. 29 CFR 1926 Safety and Health Regulations for Construction
 - 7. 29 CFR 1926.65 Hazardous Waste Operations and Emergency Response

8. 29 CFR 1926.500 Fall Protection

E. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

1. NFPA 10 (2018) Portable Fire Extinguishers
2. NFPA 70 (2017) National Electrical Code
3. NFPA 241 (2018) Safeguarding Construction, Alteration, and Demolition Operations

1.2 SUBMITTALS

- A. Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only or as otherwise designated. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 013300 SUBMITTAL PROCEDURES:

1. SD-01 Preconstruction Submittals
 - a. Accident Prevention Plan (APP); G
 - b. Activity Hazard Analysis (AHA); G
 - c. Crane Critical Lift Plan; G
2. SD-06 Test Reports
 - a. Reports
 - b. Submit reports as their incident occurs, in accordance with the requirements of the paragraph entitled, "Reports."
 - c. Accident Reports
 - d. Monthly Exposure Reports
 - e. Regulatory Citations and Violations
 - f. Crane Reports
 - g. Certificate of Compliance (Crane)

1.3 DEFINITIONS

- A. High Visibility Accident. Any mishap which may generate publicity and/or high visibility.
- B. Low-slope roof. A roof having a slope less than or equal to 4 in 12 (vertical to horizontal).

- C. Medical Treatment. Treatment administered by a physician or by registered professional personnel under the standing orders of a physician. Medical treatment does not include first aid treatment even though provided by physician or registered personnel.
- D. Multi-Employer Work Site (MEWS). A multi-employer work site, as defined by OSHA, is one in which many employers occupy the same site. The Government considers the Prime Contractor to be the "controlling authority" for all worksite safety and health of the subcontractors.
- E. Operating Envelope. The area surrounding any crane. Inside this "envelope" is the crane, the operator, riggers, rigging gear between the hook and the load, the load and the crane's supporting structure (ground, rail, etc.).
- F. Recordable Injuries or Illnesses. Any work-related injury or illness that results in:
 - 1. Death, regardless of the time between the injury and death, or the length of the illness.
 - 2. Days away from work.
 - 3. Restricted work.
 - 4. Transfer to another job.
 - 5. Medical treatment beyond first aid.
 - 6. Loss of consciousness; or
 - 7. A significant injury or illness diagnosed by a physician or other licensed health care professional, even if it did not result in (1) through (6) above.
- G. Site Safety and Health Officer (SSHO). The superintendent or other qualified or competent person who is responsible for the on-site safety and health required for the project. The Contractor quality control (QC) person can be the SSHO on this project.
- H. Steep roof. A roof having a slope greater than 4 in 12 (vertical to horizontal).
- I. Weight Handling Equipment (WHE) Accident. A WHE accident occurs when any one or more of the six elements in the operating envelope fails to perform correctly during operation, including operation during maintenance or testing resulting in personnel injury or death; material or equipment damage; dropped load; derailment; two-blocking; overload; and collision, including unplanned contact between the load, crane, and/or other objects. A dropped load, derailment, two-blocking, overload, and collision are considered accidents even though no material damage or injury occurs. A component failure (e.g., motor burnout, gear tooth failure, bearing failure) is not considered an accident solely due to material or equipment damage unless the component failure results in damage to other components (e.g., dropped boom, dropped load, roll over, etc.).

1.4 REGULATORY REQUIREMENTS

- A. In addition to the detailed requirements included in the provisions of this contract, work performed shall comply with OHSA 29 CFR 1910, and the following federal, state, and local, laws, ordinances, criteria, rules and regulations. Submit matters of interpretation of standards to the appropriate administrative agency for resolution before starting work. Where the requirements of this specification, applicable laws, criteria, ordinances, regulations, and referenced documents vary, the most stringent requirements shall apply.

1.5 DRUG PREVENTION PROGRAM

- A. Conduct a proactive drug and alcohol use prevention program for all workers, prime and subcontractor, on the site. Ensure that no employee uses illegal drugs or consumes alcohol during work hours. Ensure there are no employees under the influence of drugs or alcohol during work hours. After accidents, collect blood, urine, or saliva specimens and test the injured and involved employees for the influence of drugs and alcohol. A copy of the test shall be made available to the Contract Manager upon request.

1.6 SITE QUALIFICATIONS, DUTIES AND MEETINGS

A. Personnel Qualifications

- 1. Site Safety and Health Officer (SSHO): Site Safety and Health Officer (SSHO) shall be provided at the work site at all times to perform safety and occupational health management, surveillance, inspections, and safety enforcement for the Contractor. The SSHO shall meet the following requirements:
 - a. Level 2:
 - 1) A minimum of 3 years safety work on a similar project.
 - 2) 30-hour OSHA construction safety class or equivalent within last 3 years.
 - 3) Competent person training as needed.

B. Personnel Duties

- 1. Site Safety and Health Officer (SSHO)/Superintendent
 - a. Conduct daily safety and health inspections and maintain a written log which includes area/operation inspected, date of inspection, identified hazards, recommended corrective actions, estimated and actual dates of corrections. Safety inspection logs shall be attached to the Contractors' daily production report.

- b. Conduct mishap investigations and complete required reports. Maintain the OSHA Form 300 and Daily Production reports for prime and sub- contractors.
 - c. Maintain applicable safety reference material on the job site.
 - d. Attend the pre-construction conference, pre-work meetings including preparatory inspection meeting, and periodic in-progress meetings.
 - e. Implement and enforce accepted APPS and AHAs.
 - f. Maintain a safety and health deficiency tracking system that monitors outstanding deficiencies until resolution. A list of unresolved safety and health deficiencies shall be posted on the safety bulletin board.
 - g. Ensure sub-contractor compliance with safety and health requirements.
2. Failure to perform the above duties will result in dismissal of the superintendent and/or SSO, and a project work stoppage. The project work stoppage will remain in effect pending approval of a suitable replacement.

C. Meetings

1. Preconstruction Conference

- a. The Contractor will be informed, in writing, of the date of the preconstruction conference. The purpose of the preconstruction conference is for the Contractor and the Contract Manager's representatives to become acquainted and explain the functions and operating procedures of their respective organizations and to reach mutual understanding relative to the administration of the overall project's APP before the initiation of work.
- b. Contractor representatives who have a responsibility or significant role in accident prevention on the project shall attend the preconstruction conference. This includes the project superintendent, site safety and health officer, quality control supervisor, or any other assigned safety and health professionals who participated in the development of the APP (including the AHAs and special plans, program and procedures associated with it).
- c. The Contractor shall discuss the details of the submitted APP to include incorporated plans, programs, procedures and a listing of anticipated activity hazard analyses (AHAs) that will be developed and implemented during the performance of the contract. This list of proposed AHAs will be reviewed at the conference and an agreement will be reached between the Contractor and the Contract Manager's representative as to which phases will require an analysis. In addition, a schedule for the preparation, submittal, review, and acceptance of AHAs shall be established to preclude project delays.
- d. Deficiencies in the submitted APP will be brought to the attention of the Contractor at the preconstruction conference, and the Contractor shall revise the plan to correct deficiencies and re-submit it for acceptance. Work shall

not begin until there is an accepted APP.

2. Weekly Safety Meetings: Conduct weekly safety meetings at the project site for all employees. The Contract Manager will be informed of the meeting in advance and be allowed attendance. Minutes showing contract title, signatures of attendees and a list of topics discussed shall be attached to the Contractors' daily production report.
3. Work Phase Meetings: The appropriate AHA shall be reviewed and attendance documented by the Contractor at the preparatory, initial, and follow-up phases of quality control inspection. The analysis should be used during daily inspections to ensure the implementation and effectiveness of safety and health controls.

1.7 TRAINING

- A. New Employee Indoctrination: New employees (prime and sub-contractor) will be informed of specific site hazards before they begin work. Documentation of this orientation shall be kept on file at the project site.
- B. Periodic Training: Provide Safety and Health Training in accordance with USACE EM 385-1-1 and the accepted APP. Ensure all required training has been accomplished for all onsite employees.
- C. Training on Activity Hazard Analysis (AHA): Prior to beginning a new phase, training will be provided to all affected employees to include a review of the AHA to be implemented.

1.8 ACCIDENT PREVENTION PLAN (APP)

- A. The Contractor shall use a qualified person to prepare the written site-specific APP. Prepare the APP in accordance with the format and requirements of 29 CFR 1910 and as supplemented herein.

Appendix A, "Minimum Basic Outline for Preparation of Accident Prevention Plan". Where a paragraph or subparagraph element is not applicable to the work to be performed indicate "Not Applicable" next to the heading. Specific requirements for some of the APP elements are described below at paragraph 1.8.1. The APP shall be job-specific and shall address any unusual or unique aspects of the project or activity for which it is written. The APP shall interface with the Contractor's overall safety and health program. Any portions of the Contractor's overall safety and health program referenced in the APP shall be included in the applicable APP element and made site-specific. The Government considers the Prime Contractor to be the "controlling authority" for all work

site safety and health of the subcontractors. Contractors are responsible for informing their subcontractors of the safety provisions under the terms of the contract and the penalties for noncompliance, coordinating the work to prevent one craft from interfering with or creating hazardous working conditions for other crafts, and inspecting subcontractor operations to ensure that accident prevention responsibilities are being carried out.

The APP shall be signed by the person and firm (senior person) preparing the APP, the Contractor, the on-site superintendent, the designated site safety and health officer and any designated CSP and/or CIH.

- B. Submit the APP to the Contract Manager 15 calendar days prior to the date of the preconstruction conference for acceptance. Work cannot proceed without an accepted APP. The Contract Manager reviews and comments on the Contractor's submitted APP and accepts it when it meets the requirements of the contract provisions.
- C. Once accepted by the Contract Manager, the APP and attachments will be enforced as part of the contract. Disregarding the provisions of this contract or the accepted APP will be cause for stopping of work, at the discretion of the Contract Manager, until the matter has been rectified.
- D. Once work begins, changes to the accepted APP shall be made with the knowledge and concurrence of the Contract Manager, project superintendent, SSHO and quality control manager. Should any unforeseen hazard become evident during the performance of work, the project superintendent shall inform the Contract Manager, both verbally and in writing, for resolution as soon as possible. In the interim, all necessary action shall be taken by the Contractor to restore and maintain safe working conditions in order to safeguard onsite personnel, visitors, the public, and the environment.
- E. Copies of the accepted plan will be maintained at the Contract Manager's office and at the job site. The APP shall be continuously reviewed and amended, as necessary, throughout the life of the contract. Unusual or high-hazard activities not identified in the original APP shall be incorporated in the plan as they are discovered.

1.9 ACTIVITY HAZARD ANALYSIS (AHA)

- A. The Activity Hazard Analysis (AHA) format shall be in accordance with USACE EM 385-1-1. Submit the AHA for review at least 15 calendar days prior to the start of each phase. Format subsequent AHA as amendments to the APP. An AHA will be developed by the Contractor for every operation involving a type of work presenting hazards not experienced in previous project operations or where a new work crew or subcontractor is to perform work.
The analysis must identify and evaluate hazards and outline the proposed methods and techniques for the safe completion of each phase of work. At a minimum, define activity

being performed, sequence of work, specific safety and health hazards anticipated, control measures (to include personal protective equipment) to eliminate or reduce each hazard to acceptable levels, equipment to be used, inspection requirements, training requirements for all involved, and the competent person in charge of that phase of work. For work with fall hazards, including fall hazards associated with scaffold erection and removal, identify the appropriate fall arrest systems. For work with materials handling equipment, address safeguarding measures related to materials handling equipment. For work requiring excavations, include requirements for safeguarding excavations. An activity requiring an AHA shall not proceed until the AHA has been accepted by the Contract Manager's representative and a meeting has been conducted by the Contractor to discuss its contents with everyone engaged in the activity, including on-site Government representatives. The Contractor shall document meeting attendance at the preparatory, initial, and follow-up phases of quality control inspection. The AHA shall be continuously reviewed and, when appropriate, modified to address changing site conditions or operations. The analysis should be used during daily inspections to ensure the implementation and effectiveness of the activity's safety and health controls.

- B. The AHA list will be reviewed periodically (at least monthly) at the Contractor supervisory safety meeting and updated as necessary when procedures, scheduling, or hazards change.
- C. Activity hazard analyses shall be updated as necessary to provide an effective response to changing work conditions and activities. The on-site superintendent, site safety and health officer and competent persons used to develop the AHAs, including updates, shall sign and date the AHAs before they are implemented.

1.10 DISPLAY OF SAFETY INFORMATION

- A. Within 15 calendar days after commencement of work, erect a safety bulletin board at the job site. The following information shall be displayed on the safety bulletin board in clear view of the on-site construction personnel, maintained current, and protected against the elements and unauthorized removal:
 - 1. Map denoting the route to the nearest emergency care facility.
 - 2. Emergency phone numbers.
 - 3. Copy of the most up-to-date APP.
 - 4. AHA(s).
 - 5. OSHA 300A Form.
 - 6. OSHA Safety and Health Protection-On-The-Job Poster.

1.11 SITE SAFETY REFERENCE MATERIALS

- A. Maintain safety-related references applicable to the project, including those listed in the article "References." Maintain applicable equipment manufacturer's manuals.

1.12 EMERGENCY MEDICAL TREATMENT

- A. Contractors will arrange for their own emergency medical treatment. Government has no responsibility to provide emergency medical treatment.

1.13 REPORTS

- A. Accident Reports: For recordable injuries and illnesses, and property damage accidents resulting in at least \$2,000 in damages, the Prime Contractor shall conduct an accident investigation to establish the root cause(s) of the accident, complete the USACE Accident Report Form 3394 and provide the report to the Contract Manager within 1 calendar day(s) of the accident. The Contract Manager will provide copies of any required or special forms.
- B. Accident Notification: Notify the Contract Manager as soon as practical, but not later than four hours, after any accident meeting the definition of Recordable Injuries or Illnesses or High Visibility Accidents, property damage equal to or greater than \$2,000, or any weight handling equipment accident involving a overturned crane, collapsed boom, or any other major damage to the crane or adjacent property. Information shall include contractor name; contract title; type of contract; name of activity, installation or location where accident occurred; date and time of accident; names of personnel injured; extent of property damage, if any; extent of injury, if known, and brief description of accident (to include type of construction equipment used, PPE used, etc.). Preserve the conditions and evidence on the accident site until the Government investigation team arrives on site and Government investigation is conducted.
- C. Monthly Exposure Reports: Monthly exposure reporting to the Contract Manager is required to be attached to the monthly billing request. This report is a compilation of employee hours worked each month for all site workers, both prime and subcontractor. The Contract Manager will provide copies of any special forms.
- D. Regulatory Citations and Violations: Contact the Contract Manager immediately of any OSHA or other regulatory agency inspection or visit and provide the Contract Manager with a copy of each citation, report, and contractor response. Correct violations and citations promptly and provide written corrective actions to the Contract Manager.
- E. Certificate of Compliance: The Contractor shall provide a Certificate of Compliance for each crane entering into an activity under this contract (see Contract Manager for a blank certificate). Certificate shall state that the crane and rigging gear meet applicable OSHA regulations (with the Contractor citing which OSHA regulations are applicable, e.g., cranes used in construction, demolition, or maintenance shall comply with 29 CFR 1926 and Appendix H. Certify on the Certificate of Compliance that the crane operator(s) is qualified and trained in the operation of the crane to be used. The Contractor shall also certify that all of its crane operators working on the project have been trained in the proper use of all safety devices (e.g., anti-two block devices). These certifications shall be posted on the crane.

1.14 HOT WORK

- A. The Contractor will provide at least two (2) twenty (20) pound 4A:20 BC rated extinguishers for normal "Hot Work". All extinguishers shall be current inspection tagged, approved safety pin and tamper resistant seal. It is also mandatory to have a designated FIRE WATCH for any "Hot Work" done.

1. Oil painting materials (paint, brushes, empty paint cans, etc.), and all flammable liquids shall be removed from the facility at quitting time. All painting materials and flammable liquids shall be stored outside in a suitable metal locker or box and will require re- submittal with non-hazardous materials.
2. Accumulation of trays, paper, shavings, sawdust, boxes and other packing materials shall be removed from the facility at the close of each workday and such material disposed of in the proper containers located away from the facility.
3. The storage of combustible supplies shall be a safe distance from structures.
4. Area outside the facility undergoing work shall be cleaned of trash, paper, or other discarded combustibles at the close of each workday.
5. All portable electric devices (saws, sanders, compressors, extension chord, lights, etc.) shall be disconnected at the close of each workday. When possible, the main electric switch in the facility shall be deactivated.
6. When starting work in the facility, Contractors shall require their personnel to familiarize themselves with the location of the nearest fire alarm boxes and place in memory the emergency phone number.

PART 2 - PRODUCTS

2.1 FALL PROTECTION ANCHORAGE

- A. Fall protection anchorage, conforming to ANSI Z359.1, will be left in place and so identified for continued customer use.

2.2 CONFINED SPACE SIGNAGE

- A. The Contractor shall provide permanent signs integral to or securely attached to access covers for new permit-required confined spaces. Signs wording: "DANGER-- PERMIT-REQUIRED CONFINED SPACE - DO NOT ENTER -" in bold letters a minimum of 25 mm(one inch) in height and constructed to be clearly legible with all paint removed

The signal word "DANGER" shall be red and readable from 1.52 m(5 feet).

PART 3 - EXECUTION

3.1 CONSTRUCTION AND/OR OTHER WORK

- A. The Contractor shall comply with NFPA 241, the APP, the AHA, and other related submittals and activity fire and safety regulations.
- B. Hazardous Material Use: Each hazardous material must receive approval prior to being brought onto the job site or prior to any other use in connection with this contract. Allow a minimum of 10 working days for processing of the request for use of a hazardous material. Any work or storage involving hazardous chemicals or materials must be done in a manner that will not expose Government or Contractor employees to any unsafe or unhealthful conditions. Adequate protective measures must be taken to prevent Government or Contractor employees from being exposed to any hazardous condition that could result from the work or storage. The Prime Contractor shall keep a complete inventory of hazardous materials brought onto the work-site. Approval by the Contract Manager of protective measures and storage area is required prior to the start of the work.
- C. Hazardous Material Exclusions: Notwithstanding any other hazardous material used in this contract, radioactive materials or instruments capable of producing ionizing/non-ionizing radiation (with the exception of radioactive material and devices used in accordance with EM 385-1-1 such as nuclear density meters for compaction testing and laboratory equipment with radioactive sources) as well as materials which contain asbestos, mercury or polychlorinated biphenyls, di-isocyanates, lead-based paint are prohibited. The Contract Manager, upon written request by the Contractor, may consider exceptions to the use of any of the above excluded materials.
- D. Unforeseen Hazardous Material: The design should have identified materials such as PCB, lead paint, and friable and non-friable asbestos. If material, not indicated, that may be hazardous to human health upon disturbance during construction operations is encountered, stop that portion of work and notify the Contract Manager immediately. Within 14 calendar days the Government will determine if the material is hazardous. If the material is not hazardous or poses no danger, the Government will direct the Contractor to proceed without charge. If material is hazardous and handling of the material is necessary to accomplish the work, the Government will issue a modification.

3.2 PRE-OUTAGE COORDINATION MEETING

- A. Contractors are required to apply for utility outages at least 15 days in advance. As a minimum, the request should include the location of the outage, utilities being affected, duration of outage and any necessary sketches. Special requirements for electrical outage requests are contained elsewhere in this specification section. Once approved, and prior to beginning work on the utility system requiring shut down, the Contractor shall attend a pre-outage coordination meeting with the Contract Manager to review the scope of work and the lock-out/tag-out procedures for worker protection. No work will be performed on energized electrical circuits unless proof is provided that no other means exist.

3.3 FALL HAZARD PROTECTION AND PREVENTION

- A. The Contractor shall establish a fall protection and prevention program, for the protection of all employees exposed to fall hazards. The program shall include company policy, identify responsibilities, education, and training requirements, fall hazard identification, prevention and control measures, inspection, storage, care and maintenance of fall protection equipment and rescue and escape procedures.
- B. Training: The Contractor shall institute a fall protection training program. As part of the Fall Hazard Protection and Prevention Program, the Contractor shall provide training for each employee who might be exposed to fall hazards.
- C. Fall Protection Equipment: The Contractor shall enforce use of the fall protection equipment designated for each specific work activity in the Fall Protection and Prevention Plan and/or AHA at all times when an employee is on a surface 1.8 m(6 feet) or more above lower levels. Fall protection systems such as guardrails, personnel fall arrest system, safety nets, etc., are required when working within 1.8m (6 feet) of any leading edge. In addition to the required fall protection systems, safety skiff, personal floatation devices, life rings etc., are required when working above or next to water in accordance with USACE EM 385-1-1, paragraphs 05.I. and 05.J. Personal fall arrest systems are required when working from an articulating or extendible boom, swing stages, or suspended platform. In addition, personal fall arrest systems may be required when operating other equipment such as scissor lifts if the work platform is capable of being positioned outside the wheelbase. Fall protection must comply with 29 CFR 1926.500, Subpart M and USACE EM 385-1-1.
 - 1. Personal Fall Arrest Equipment: Personal fall arrest equipment, systems, subsystems, and components shall meet ANSI Z359.1. Only a full-body harness with a shock- absorbing lanyard or self-retracting lanyard is an acceptable personal fall arrest device. Body belts may only be used as a positioning device system (for uses such as steel reinforcing assembly and in addition to an approved fall arrest system). Harnesses shall have a fall arrest attachment affixed to the body support (usually a Dorsal D-ring) and specifically designated for attachment to the rest of the system. Only locking snap hooks and carabiners shall be used. Webbing, straps, and ropes shall be made of synthetic fiber.

The maximum free fall distance when using fall arrest equipment shall not exceed 1.8 m (6 feet). The total fall distance shall always be taken into consideration when attaching a person to a fall arrest system.

- D. Fall Protection for Roofing Work: Fall protection controls shall be implemented based on the type of roof being constructed and work being performed. The roof area to be accessed shall be evaluated for its structural integrity including weight-bearing capabilities for the projected loading.
 - 1. Low Sloped Roofs:
 - a. For work within 1.8 m (6 feet) of an edge, on low-slope roofs, personnel shall be protected from falling by use of personal fall arrest systems, guardrails, or safety nets.
 - b. For work greater than 1.8 m (6 feet) from an edge, warning lines shall be erected and installed in accordance with 29 CFR 1926.500 and USACE EM 385-1-1.
- E. Safety Nets: If safety nets are used as the selected fall protection system on the project, they shall be provided at unguarded workplaces, over water, machinery, dangerous operations and leading-edge work. Safety nets shall be tested immediately after installation with a drop test of 181.4 kg (400 pounds) and every six months thereafter.
- F. Existing Anchorage: Existing anchorages, to be used for attachment of personal fall arrest equipment, shall be certified (or re-certified) by a qualified person in accordance with ANSI Z359.1.
- G. Horizontal Lifelines: Horizontal lifelines shall be designed, installed, certified, and used under the supervision of a qualified person as part of a complete fall arrest system (29 CFR 1926.500).

3.4 SCAFFOLDING

- A. Employees shall be provided with a safe means of access to the work area on the scaffold. Climbing of any scaffold braces or supports not specifically designed for access is prohibited. Access to scaffold platforms greater than 6 m (20 feet) in height shall be accessed by use of a scaffold stair system. Vertical ladders commonly provided by scaffold system manufacturers shall not be used for accessing scaffold platforms greater than 6 m (20 feet) in height. The use of an adequate gate is required. Contractor shall ensure that employees are qualified to perform scaffold erection and dismantling. Do not use scaffold without the capability of supporting at least four times the maximum intended load or without appropriate fall protection as delineated in the accepted fall protection and prevention plan. Stationary scaffolds must be attached to structural building components to safeguard against tipping forward or backward.

Special care shall be given to ensure scaffold systems are not overloaded. Side brackets used to extend scaffold platforms on self-supported scaffold systems for the storage of material is prohibited. The first tie-in shall be at the height equal to 4 times the width of the smallest dimension of the scaffold base. Work platforms shall be placed on mud sills. Scaffold or work platform erectors shall have fall protection during the erection and dismantling of scaffolding or work platforms that are more than six feet. Delineate fall protection requirements when working above six feet or above dangerous operations in the Fall Protection and Prevention (FP&P) Plan and Activity Hazard Analysis (AHA) for the phase of work.

3.5 EQUIPMENT

A. Material Handling Equipment

1. Material handling equipment such as forklifts shall not be modified with work platform attachments for supporting employees unless specifically delineated in the manufacturer's printed operating instructions.
2. The use of hooks on equipment for lifting of material must be in accordance with manufacturer's printed instructions.
3. Operators of forklifts or power industrial trucks shall be licensed in accordance with OSHA.

B. Weight Handling Equipment

1. Cranes must be equipped with:
 - a. Load indicating devices (LIDs) and a boom angle or radius indicator,
 - b. or load moment indicating devices (LMIs).
 - c. Anti-two block prevention devices.
 - d. Boom hoist hydraulic relief valve, disconnect, or shutoff (stops hoist when boom reaches a predetermined high angle).
 - e. Boom length indicator (for telescoping booms).
 - f. Device to prevent uncontrolled lowering of a telescoping hydraulic boom.
 - g. Device to prevent uncontrolled retraction of a telescoping hydraulic boom.
2. The Contractor shall notify the Contract Manager 15 days in advance of any cranes entering the activity so that necessary quality assurance spot checks can be coordinated. Contractor's operator shall remain with the crane during the spot check.
3. The Contractor shall comply with the crane manufacturer's specifications and limitations for erection and operation of cranes and hoists used in support of the work. Erection shall be performed under the supervision of a designated person (as defined in ASME B30.5). All testing shall be performed in accordance with the manufacturer's recommended procedures.
4. The Contractor shall comply with ASME B30.5 for mobile and locomotive cranes, ASME B30.22 for articulating boom cranes and ASME B30.8 for floating cranes and floating derricks.

5. The presence of Government personnel does not relieve the Contractor of an obligation to comply with all applicable safety regulations. The Government will investigate all complaints of unsafe or unhealthful working conditions received in writing from contractor employees, federal civilian employees, or military personnel.
6. Each load shall be rigged/attached independently to the hook/master-link in such a fashion that the load cannot slide or otherwise become detached. Christmas- tree lifting (multiple rigged materials) is not allowed.
7. Under no circumstance shall a Contractor make a lift at or above 90% of the cranes rated capacity in any configuration.
8. When operating in the vicinity of overhead transmission lines, operators and riggers shall be alert to this special hazard and shall follow the requirements of USACE EM 385-1-1 section 11 and ASME B30.5 or ASME B30.22 as applicable.
9. Crane suspended personnel work platforms (baskets) shall not be used unless the Contractor proves that using any other access to the work location would provide a greater hazard to the workers or is impossible. Personnel shall not be lifted with a line hoist or friction crane.
10. A fire extinguisher having a minimum rating of 10BC and a minimum nominal capacity of 5lb of extinguishing agent shall be available at all operator stations or crane cabs. Portable fire extinguishers shall be inspected, maintained, and recharged as specified in NFPA 10, Standard for Portable Fire Extinguishers.
11. All employees shall be kept clear of loads about to be lifted and of suspended loads.
12. A weight handling equipment operator shall not leave his position at the controls while a load is suspended.
13. Only Contractor crane operators who have met the requirements of 29 CFR 1910.94, 29 CFR 1910.120, 29 CFR 1926.65, 29 CFR 1926.500, USACE EM 385-1-1, ASME B30.5, and ASME B30.22 and other local and state requirements shall be authorized to operate the crane.
14. The Contractor shall use cribbing when performing lifts on outriggers.
15. The crane hook/block must be positioned directly over the load. Side loading of the crane is prohibited.
16. A physical barricade must be positioned to prevent personnel from entering the counterweight swing (tail swing) area of the crane.
17. A substantial and durable rating chart containing legible letters and figures shall be provided with each crane and securely mounted onto the crane cab in a location allowing easy reading by the operator while seated in the control station.
18. Certification records which include the date of inspection, signature of the person performing the inspection, and the serial number or other identifier of the crane that was inspected shall always be available for review by Contract Manager personnel.
19. Written reports listing the load test procedures used along with any repairs or alterations performed on the crane shall be available for review by Contract Manager personnel.
20. The Contractor shall certify that all crane operators have been trained in proper use of all safety devices (e.g. anti-two block devices).

C. Equipment and Mechanized Equipment

1. Equipment shall be operated by designated qualified operators. Proof of qualifications shall be kept on the project site for review.
2. Manufacture specifications or owner's manual for the equipment shall be on site and reviewed for additional safety precautions or requirements that are sometimes not identified by OSHA or USACE EM 385-1-1. Such additional safety precautions or requirements shall be incorporated into the AHAs.
3. Equipment and mechanized equipment shall be inspected in accordance with the manufacturer's recommendations for safe operation by a competent person prior to being placed into use.
4. Daily checks or tests shall be conducted and documented on equipment and mechanized equipment by designated competent persons.

3.6 EXCAVATIONS

- A. The competent person for excavations performed as a result of contract work shall be on-site when excavation work is being performed, and shall inspect, and document the excavations daily prior to entry by workers. The competent person must evaluate all hazards, including atmospheric, that may be associated with the work, and shall have the resources necessary to correct hazards promptly.
- B. Utility Locations: All underground utilities in the work area must be positively identified by a private utility locating service. Any markings made during the utility investigation must be maintained throughout the contract.
- C. Utility Location Verification: The Contractor must physically verify underground utility locations by hand digging using wood or fiberglass handled tools when any adjacent construction work is expected to come within three feet of the underground system. Digging within .061 m (2 feet) of a known utility must not be performed by means of mechanical equipment; hand digging shall be used. If construction is parallel to an existing utility the utility shall be exposed by hand digging every 30.5 m (100 feet) if parallel within 1.5 m (5 feet) of the excavation.
- D. Shoring Systems: Trench and shoring systems must be identified in the accepted safety plan and AHA. Manufacture tabulated data and specifications or registered engineer tabulated data for shoring or benching systems shall be readily available on site for review. Job-made shoring or shielding shall have the registered professional engineer stamp, specifications, and tabulated data. Extreme care must be used when excavating near direct burial electric underground cables.
- E. Trenching Machinery: Trenching machines with digging chain drives shall be operated only when the spotters/laborers are in plain view of the operator. Operator and spotters/laborers shall be provided training on the hazards of the digging chain drives with emphasis on the distance that needs to be maintained when the digging chain is operating.

Documentation of the training shall be kept on file at the project site.

3.7 ELECTRICAL

- A. Conduct of Electrical Work: Underground electrical spaces must be certified safe for entry before entering to conduct work. Cables that will be cut must be positively identified and de- energized prior to performing each cut. Positive cable identification must be made prior to submitting any outage request for electrical systems. Arrangements are to be coordinated with the Contract Manager and Station Utilities for identification. The Contract Manager will not accept an outage request until the Contractor satisfactorily documents that the circuits have been clearly identified. Perform all high voltage cable cutting remotely using hydraulic cutting tool. When racking in or live switching of circuit breakers, no additional person other than the switch operator will be allowed in the space during the actual operation. Plan so that work near energized parts is minimized to the fullest extent possible. Use of electrical outages clear of any energized electrical sources is the preferred method. When working in energized substations, only qualified electrical workers shall be permitted to enter. When work requires Contractor to work near energized circuits as defined by the NFPA 70, high voltage personnel must use personal protective equipment that includes, as a minimum, electrical hard hat, safety shoes, insulating gloves with leather protective sleeves, fire retarding shirts, coveralls, face shields, and safety glasses. Insulating blankets, hearing protection, and switching suits may be required, depending on the specific job and as delineated in the Contractor's AHA.
- B. Portable Extension Cords: Portable extension cords shall be sized in accordance with manufacturer ratings for the tool to be powered and protected from damage. All damaged extension cords shall be immediately removed from service. Portable extension cords shall meet the requirements of NFPA 70.

3.8 WORK IN CONFINED SPACES

- A. The Contractor shall comply with the requirements in OSHA 29 CFR 1910.146. Any potential for a hazard in the confined space requires a permit system to be used.
 - 1. Entry Procedures. Prohibit entry into a confined space by personnel for any purpose, including hot work, until the qualified person has conducted appropriate tests to ensure the confined or enclosed space is safe for the work intended and that all potential hazards are controlled or eliminated and documented. All hazards pertaining to the space shall be reviewed with each employee during review of the AHA.

2. Forced air ventilation is required for all confined space entry operations and the minimum air exchange requirements must be maintained to ensure exposure to any hazardous atmosphere is kept below its' action level.
3. Ensure the use of rescue and retrieval devices in confined spaces greater than 1.5 m (5 feet) in depth.
4. Sewer wet wells require continuous atmosphere monitoring with audible alarm for toxic gas detection.
5. Include training information for employees who will be involved as entrants and attendants for the work.
6. Daily Entry Permit. Post the permit in a conspicuous place close to the confined space entrance.

3.9 CRYSTALLINE SILICA

- A. Grinding, abrasive blasting, and foundry operations of construction materials containing crystalline silica, shall comply with OSHA regulations, such as 29 CFR 1910.94. The Contractor shall develop and implement effective exposure control and elimination procedures to include dust control systems, engineering controls, and establishment of work area boundaries, as well as medical surveillance, training, air monitoring, and personal protective equipment.

3.10 HOUSEKEEPING

- A. Clean-Up: All debris in work areas shall be cleaned up daily or more frequently if necessary. Construction debris may be temporarily located in an approved location, however garbage accumulation must be removed each day.
- B. Dust control: In addition to the dust control measures required elsewhere in the contract documents, dry cutting of brick or masonry shall be prohibited. The Contract Manager, upon written request by the Contractor, may consider exceptions to this prohibition on a case-by-case basis. Wet cutting must address control of water runoff.

END OF SECTION

SECTION 01 45 00.10 20

QUALITY CONTROL FOR MINOR CONSTRUCTION

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION

29 CFR 1910	Safety and Health Regulation in General Industry
29 CFR 1910	Safety and Health Regulation for Construction

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. Ensure all submittals conform to the requirements in Section 01 33 00 Submittal procedures and Submittal Log.

1.2 INFORMATION FOR THE CONTRACT MANAGER

Prior to commencing work on construction, the Contractor can obtain a single copy set of the current report forms from the CM. The report forms will consist of the Contractor Production Report, Contractor Production Report (Continuation Sheet), Contractor Quality Control (CQC) Report, CQC Report (Continuation Sheet), Preparatory Phase Checklist, Initial Phase Checklist, Rework Items List, and Testing Plan and Log.

Deliver the following to the CM:

- a. CQC Report: Original and one copy, by 10:00 AM the next working week after each day that work is performed.
- b. Preparatory Phase Checklist: Original attached to the original CQC Report and one copy attached to each copy.
- c. Initial Phase Checklist: Original attached to the original CQC Report and one copy attached to each copy.
- d. Field Test Reports: One copy, within the week after the test is performed, attached to the CQC Report.
- e. QC Meeting Minutes: One copy, within the week after the meeting; and
- f. QC Certifications: As required by the paragraph entitled "QC Certifications."

1.3 QC PROGRAM REQUIREMENTS

Establish and maintain a QC program as described in this section. The QC program consists of a QC Manager, a QC plan, a Coordination and Mutual Understanding Meeting, QC meetings, three phases of control, submittal review and approval, testing, and QC certifications and documentation necessary to provide materials, equipment, workmanship, fabrication, construction and operations which comply with the requirements of this contract. The QC program shall cover on-site and off-site work and shall be keyed to the work sequence. No work or testing may be performed unless the QC Manager is on the work site.

1.4.1 Preliminary Work Authorized Prior to Acceptance

The only work that is authorized to proceed prior to the acceptance of the QC plan is mobilization of storage and office trailers, temporary utilities, and surveying.

1.4.2 Acceptance

Acceptance of the QC plan is required prior to the start of construction. The CONTRACT MANAGER reserves the right to require changes in the QC plan and operations as necessary, including the removal of personnel, to ensure the specified quality of work. The CONTRACT MANAGER reserves the right to interview any member of the QC organization at any time in order to verify the submitted qualifications.

1.4.3 Notification of Changes

Notify the CM, in writing, of any proposed change, including changes in the QC organization personnel, a minimum of seven calendar days prior to a proposed change. The proposed changes shall be subject to the acceptance by the CM.

1.5 QC ORGANIZATION

1.5.1 QC Manager

1.5.1.1 Duties

Provide a QC Manager at the work site to implement and manage the QC program.

The QC Manager shall be a stand-alone position and have no other duties.

Exception: Building Official (BO) may allow the QC Manager to share duties with the Superintendent or safety officer on projects with a contract value under one million dollars or on single trade, non-complex projects of any value. However, at no time will one person hold more than two duties. This option is at the discretion of the BO. Contractors may request this option during pre-bid RFI's for bidding purposes.

The QC Manager is required to attend the Coordination and Mutual Understanding Meeting, conduct the QC meetings, perform the three phases of control, perform submittal review and approval, ensure testing is performed and provide QC certifications and documentation required in this contract. The QC Manager is responsible for managing and coordinating the three phases of control and documentation performed by others.

1.5.1.2 Qualifications

An individual with a minimum of 5 years combined experience as a superintendent, inspector, QC Manager, project manager, or construction manager on similar size and type construction contracts which included the major trades that are part of this contract. The individual must be familiar with the requirements OSHA 29 CFR 1910 & 1926.

1.5.1.3 Construction Quality Management Training

In addition to the above experience and education requirements, the QC Manager shall have completed the course Construction Quality Management for Contractors and will have a current certificate.

1.5.2 Alternate QC Manager Duties and Qualifications

Designate an alternate for the QC Manager to serve in the event of the designated QC Manager's absence. The period of absence may not exceed two weeks at one time, and not more than 30 workdays during a calendar year. The qualification requirements for the Alternate QC Manager shall be the same as for the QC Manager.

1.6 QC PLAN

1.6.1 Requirements

Provide, for acceptance by the CM, a QC plan submitted in a three-ring binder that covers both on-site and off-site work and includes the following with a table of contents listing the major sections identified with tabs.

- I. QC ORGANIZATION: A chart showing the QC organizational structure and its relationship to the production side of the organization.
- II. NAMES AND QUALIFICATIONS: In resume format, for each person in the QC organization. Include the CQM for Contractors course certification required by the paragraph entitled "Construction Quality Management Training".
- III. DUTIES, RESPONSIBILITY AND AUTHORITY OF QC PERSONAL: Of each person in the QC organization.
- IV. OUTSIDE ORGANIZATIONS: A listing of outside organizations such as architectural and consulting engineering firms that will be employed by the Contractor and a description of the services these firms will provide.
- V. APPOINTMENT LETTERS: Letters signed by an officer of the firm appointing the QC Manager and Alternate QC Manager and stating that they are responsible for managing and implementing the QC program as described in this contract. Include in this letter the QC Manager's authority to direct the removal and replacement of non-conforming work.
- VI. SUBMITTAL PROCEDURES AND INITIAL SUBMITTAL REGISTER: Procedures for reviewing, approving and managing submittals. Provide the name(s) of the person(s) in the QC organization authorized to review and certify submittals prior to approval.

- VII. TESTING LABORATORY INFORMATION: Testing laboratory information required by the paragraphs "Accredited Laboratories" or "Testing Laboratory Requirements", as applicable.
- VIII. TESTING PLAN AND LOG: A Testing Plan and Log that includes the tests required, referenced by the specification paragraph number requiring the test, the frequency, and the person responsible for each test.
- IX. PROCEDURES TO COMPLETE REWORK ITEMS: Procedures to identify, reContract Managerd, track and complete rework items.
- X. DOCUMENTATION PROCEDURES: Use Government formats.
- XI. LIST OF DEFINABLE FEATURES: A Definable Feature of Work (DFOW) is a task, which is separate and distinct from other tasks, has the same control requirements and work crews. The list shall be cross-referenced to the Contractor's Construction Schedule and the specification sections. For projects requiring a Progress Chart, the list of definable features of work shall include but not be limited to all items of work on the schedule. For projects requiring a Network Analysis Schedule, the list of definable features of work shall include but not be limited to all critical path activities.
- XII. PROCEDURES FOR PERFORMING THREE PHASES OF CONTROL: For each DFOW provide Preparatory and Initial Phase Checklists. Each list shall include a breakdown of quality checks that will be used when performing the quality control functions, inspections, and tests required by the contract documents. The preparatory and initial phases shall be conducted with a view towards obtaining quality construction by planning ahead and identifying potential problems.
- XIII. PERSONNEL MATRIX: Not Applicable.
- XIV. PROCEDURES FOR COMPLETION INSPECTION: See the paragraph entitled "COMPLETION INSPECTIONS".
- XV. TRAINING PROCEDURES AND TRAINING LOG: Not Applicable.

1.7 COORDINATION AND MUTUAL UNDERSTANDING MEETING

During the Pre-Construction conference and prior to the start of construction, discuss the QC program required by this contract. The purpose of this meeting is to develop a mutual understanding of the QC details, including documentation, administration for on-site and off-site work, and the coordination of the Contractor's management, production and the QC personnel. At the meeting, the Contractor will be required to explain how three phases of control will be implemented for each DFOW. Contractor's personnel required to attend shall include the QC Manager, project manager, and superintendent. Minutes of the meeting will be prepared by the QC Manager and signed by both the Contractor and the CONTRACT MANAGER. The Contractor shall provide a copy of the signed minutes to all attendees. Repeat the coordination and mutual understanding meeting when a new QC Manager is appointed.

1.8 QC MEETINGS

After the start of construction, the QC Manager shall conduct QC meetings once every [one] [two] weeks at the work site with the superintendent and the foreman responsible for the ongoing and upcoming work. The QC Manager shall prepare the minutes of the meeting and provide a copy to the CM within two working days after the meeting. As a minimum, the following shall be accomplished at each meeting:

- a. Review the minutes of the previous meeting; Review the schedule and the status of work and rework.
- b. Review the status of submittals.
- c. Review the work to be accomplished in the next two weeks and documentation required.
- d. Resolve QC and production problems (RFIs, etc.);
- e. Address items that may require revising the QC plan; and
- f. Review Accident Prevention Plan (APP).

1.9 THREE PHASES OF CONTROL

The three phases of control shall adequately cover both on-site and off-site work and shall include the following for each DFOV.

1.9.1 Preparatory Phase

Notify the CONTRACT MANAGER at least two work days in advance of each preparatory phase. Conduct the preparatory phase with the superintendent and the foreman responsible for the definable feature of work. Document the results of the preparatory phase actions in the daily CQC Report and in the QC checklist. Perform the following prior to beginning work on each definable feature of work:

- a. Review each paragraph of the applicable specification sections.
- b. Review the contract drawings.
- c. Verify that appropriate shop drawings and submittals for materials and equipment have been submitted and approved. Verify receipt of approved factory test results, when required.
- d. Review the testing plan and ensure that provisions have been made to provide the required QC testing.
- e. Examine the work area to ensure that the required preliminary work has been completed.
- f. Examine the required materials, equipment and sample work to ensure that they are on hand and conform to the approved shop drawings and submitted data.

- g. Review the APP and appropriate Activity Hazard Analysis (AHA) to ensure that applicable safety requirements are met, and that required Safety Data Sheets (SDS) are submitted; and
- h. Discuss specific controls used and the construction methods and the approach that will be used to provide quality construction by planning ahead and identifying potential problems for each DFOW.

1.9.2 Initial Phase

Notify the CM/PM at least two work days in advance of each initial phase. Conduct the Initial Phase with the foreman responsible for that DFOW.. Observe the initial segment of the work to ensure that it complies with contract requirements. Document the results of the Initial Phase in the daily CQC Report and in the QC checklist. Perform the following for each DFOW:

- a. Establish the quality of workmanship required.
- b. Resolve conflicts.
- c. Ensure that testing is performed by the approved laboratory; and
- d. Check work procedures for compliance with the APP and the appropriate AHA to ensure that applicable safety requirements are met.

1.9.3 Follow-Up Phase

Perform the following for on-going work daily, or more frequently as necessary, until the completion of each DFOW and document in the daily CQC Report and in the QC checklist:

- a. Ensure the work is in compliance with contract requirements.
- b. Maintain the quality of workmanship required.
- c. Ensure that testing is performed by the approved laboratory.
- d. Ensure that rework items are being Contract Managerrected; and
- e. Assure manufacturer's representatives have performed necessary inspections, if required.

1.9.4 Additional Preparatory and Initial Phases

Additional preparatory and initial phases shall be conducted on the same DFOW if the quality of on-going work is unacceptable, if there are changes in the applicable QC organization, if there are changes in the on-site production supervision or work crew, if work on a DFOW is resumed after substantial period of inactivity, or if other problems develop.

1.9.5 Notification of Three Phases of Control for Off-Site Work

Notify the CM at least two weeks prior to the start of the preparatory and initial phases.

1.10 SUBMITTAL REVIEW AND APPROVAL

Procedures for submission, review, and approval of submittals are described in the submittal section of the specification.

1.11 TESTING

Except as stated otherwise in the specification sections, perform sampling and testing required under this contract.

1.11.1 Accreditation Requirements

Construction materials testing laboratories must be accredited by a laboratory accreditation authority and will be required to submit a copy of the Certificate of Accreditation and Scope of Accreditation. The laboratory's scope of accreditation must include the appropriate ASTM standards (i.e.; E 329, C 1077, D 3666, D 3740, A 880, E 543) listed in the technical sections of the specifications. Laboratories engaged in Hazardous Materials Testing shall meet the requirements of OSHA and EPA. The policy applies to the specific laboratory performing the actual testing, not just the "Contract Managerporate Office."

1.11.2 Laboratory Accreditation Authorities

Laboratory Accreditation Authorities include the National Voluntary Laboratory Accreditation Program (NVLAP) administered by the National Institute of Standards and Technology, the American Association of State Highway and Transportation Officials (AASHTO), International Accreditation Services, Inc. (IAS), U. S. Army Contract Managerps of Engineers Materials Testing Center (MTC), the American Association for Laboratory Accreditation (A2LA), the Washington Association of Building Officials (WABO) (Approval authority for WABO is limited to projects within Washington State), and the Washington Area Council of Engineering Laboratories (WACEL) (Approval authority by WACEL is limited to projects within the NAVFAC WASH and Public Works Center Washington geographical area).

1.11.3 Capability Check

The CM/PM retains the right to check laboratory equipment in the proposed laboratory and the laboratory technician's testing procedures, techniques, and other items pertinent to testing, for compliance with the standards set forth in this contract.

1.11.4 Test Results

Cite applicable Contract requirements, tests or analytical procedures used. Provide actual results and include a statement that the item tested or analyzed conforms or fails to conform to specified requirements. If the item fails to conform, notify the CM/PM immediately. Conspicuously stamp the cover sheet for each report in large red letters "CONFORMS" or "DOES NOT CONFORM" to the specification requirements, whichever is applicable. Test results shall be signed by a testing laboratory representative authorized to sign certified test reports. Furnish the signed reports, certifications, and other documentation to the CM/PM.

1.12 QC CERTIFICATIONS

1.12.1 Contractor Quality Control Report Certification

Each CQC Report shall contain the following statement: "On behalf of the Contractor, I certify that this report is complete and Contract Managerrect, and equipment and material used, and work performed during this reporting period is in compliance with the contract drawings and specifications to the best of my knowledge except as noted in this report."

1.12.2 Invoice Certification

Furnish a certificate to the CONTRACT MANAGER with each payment request, signed by the QC Manager, attesting that as-built drawings are current and attesting that the work for which payment is requested, including stored material, is in compliance with contract requirements.

1.12.3 Completion Certification

Upon completion of work under this contract, the QC Manager shall furnish a certificate to the CONTRACT MANAGER attesting that "the work has been completed, inspected, tested and is in compliance with the contract."

1.13 COMPLETION INSPECTIONS

1.13.1 Punch-Out Inspection

Near the completion of all work or any increment thereof established by a completion time stated in the Contract clause "Commencement, Prosecution, and Completion of Work," or stated elsewhere in the specifications, the QC Manager shall conduct an inspection of the work and develop a punch list of items which do not conform to the approved drawings and specifications. Include in the punch list any remaining items of the "Rework Items List", which were not Contract Managerrected prior to the Punch-Out inspection. The punch list shall include the estimated date by which the deficiencies will be Contract Managerrected. A copy of the punch list shall be provided to the CM/PM. The QC Manager or staff shall make follow-on inspections to ascertain that all deficiencies have been Contract Managerrected. Once this is accomplished, the Contractor shall notify the Government that the facility is ready for the Government "Pre-Final Inspection".

1.13.2 Pre-Final Inspection

The Government and QC manager will perform this inspection to verify that the facility is complete and ready to be occupied. A Government pre-final punch list may be developed as a result of this inspection. The QC Manager shall ensure that all items on this list are Contract Managerrected prior to notifying the Government that a "Final" inspection with the customer can be scheduled. Any items noted on the "Pre-Final" inspection shall be Contract Managerrected in a timely manner and shall be accomplished before the contract completion date for the work or any particular increment thereof if the project is divided into increments by separate completion dates.

1.13.3 Final Acceptance Inspection

The QC Manager, the superintendent, or other Contractor management personnel and the CM/PM will be in attendance at this inspection. Additional Government personnel may be in attendance.

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The final acceptance inspection will be formally scheduled by the CM/PM based upon results of the "Pre-Final Inspection". Notice shall be given to the CONTRACT MANAGER at least 14 days prior to the final inspection. The notice shall state that all specific items previously identified to the Contractor as being unacceptable will be complete by the date scheduled for the final acceptance inspection. Failure of the Contractor to have all contract work acceptably complete for this inspection will be cause for the CONTRACT MANAGER to bill the Contractor for the Government's additional inspection cost in accordance with the contract clause "Inspection of Construction".

1.14 DOCUMENTATION

Maintain current and complete records of on-site and off-site QC program operations and activities. The forms identified under the paragraph "INFORMATION FOR THE CONTRACT MANAGER (CM)" shall be used.

Reports are required for each day work is performed. Account for each calendar day throughout the life of the contract. Every space on the forms must be filled in. Use N/A if nothing can be reported in one of the spaces. The superintendent and the QC Manager must prepare and sign the Contractor Production and CQC Reports, respectively. The reporting of work shall be identified by terminology consistent with the construction schedule. In the "remarks" section in this report will contain pertinent information including directions received, problems encountered during construction, work progress and delays, conflicts or errors in the drawings or specifications, field changes, safety hazards encountered, instructions given and Contractor corrective actions taken, delays encountered and a record of visitors to the work site. For each remark given, identify the Schedule Activity No. that is associated with the remark.

1.14.1 Quality Control Validation

Establish and maintain the following in a series of three ring binders. Binders shall be divided and tabbed as shown below. These binders shall be readily available to the Government's Quality Assurance Team during all business hours.

- a. All completed Preparatory and Initial Phase Checklists, arranged by specification section.
- b. All milestone inspections, arranged by Activity/Event Number.
- c. A current up-to-date copy of the Testing and Plan Log with supporting field test reports, arranged by specification section.
- d. Copies of all contract modifications, arranged in numerical order. Also include documentation that modified work was accomplished.
- e. A current up-to-date copy of the Rework Items List.
- f. Maintain up-to-date copies of all punch lists issued by the QC Staff on the Contractor and Sub-Contractors and all punch lists issued by the Government.

1.14.2 As-Built Drawings

The QC Manager is required to review the as-built drawings, required by Section 01 78 00 Closeout Submittals, are kept current on a daily basis and marked to show deviations, which have been made from the Contract drawings.

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Ensure each deviation has been identified with the appropriate modifying documentation, e.g. PC number, modification number, RFI number, etc. The QC Manager shall initial each deviation or revision. Upon completion of work, the QC Manager shall submit a certificate attesting to the accuracy of the as-built drawings prior to submission to the CM.

1.15 NOTIFICATION ON NON-COMPLIANCE

The CM/PM will notify the Contractor of any detected non-compliance with the foregoing requirements. The Contractor shall take immediate Contract Managerrective action. If the contractor fails or refuses to Contract Managerrect the non-compliant work, the CONTRACT MANAGER will issue a noncompliance notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification.

If the Contractor fails or refuses to comply promptly, the CM may issue an order stopping all or part of the work until satisfactory Contract Managerrective action has been taken. The Contractor shall make no part of the time lost due to such stop orders the subject of claim for extension of time, for excess costs, or damages.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

End of Section

SECTION 01 50 00

TEMPORARY CONSTRUCTION FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN WATER WORKS ASSOCIATION (AWWA)

AWWA C511 (2017) Reduced-Pressure Principal Backflow
Prevention Assembly

OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA)

29 CFR 1910 Safety and Health Regulation in General Industry

1.2 SUBMITTALS

Government approval is required for all submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00 Submittal Procedures:

1.3 CONSTRUCTION SITE PLAN

Prior to the start of work, submit a site plan showing the locations and dimensions of temporary facilities (including layouts and details, equipment, and material storage area (onsite and offsite), and access and haul routes, avenues of ingress/egress to the fenced area and details of the fence installation. Identify any areas which may have to be graveled to prevent the tracking of mud. Indicate if the use of a supplemental or other staging area is desired. Show locations of safety and construction fences, site trailers, construction entrances, trash dumpsters, temporary sanitary facilities, and worker parking areas.

PART 2 PRODUCTS

2.1 TEMPORARY SIGNAGE

2.1.1 Warning Signs

Post temporary signs, tags, and labels to give workers and the public adequate warning and caution of construction hazards according to the 29 CFR 1910. Attach signs to the perimeter fencing every 150 feet warning the public of the presence of construction hazards. Signs must require unauthorized persons to keep out of the construction site. Contract Manager the data required by safety signs daily.

2.2 TEMPORARY TRAFFIC CONTROL

2.2.1 Barricades

Erect and maintain temporary barricades to limit public access to hazardous areas. Whenever safe public access to paved areas such as roads, parking areas or sidewalks is prevented by construction activities or as otherwise necessary to ensure the safety of both pedestrian and vehicular traffic barricades will be required. Securely placed barricades clearly visible with adequate illumination to provide sufficient visual warning of the hazard during both day and night.

2.2.2 Polyethylene Mesh Safety Fencing

Temporary safety fencing must be a high visibility orange colored, high density polyethylene grid, a minimum of 48 inches high and maximum mesh size of 2 inches. Fencing must extend from the grade to a minimum of 48 inches above the grade and be tightly secured to T-posts spaced as necessary to maintain a rigid and taut fence. Fencing must remain rigid and taut with a minimum of 200 pounds of force exerted on it from any direction with less than 4 inches of deflection.

2.2.3 Chain Link Panel Fencing

Temporary panel fencing must be galvanized steel chain link panels [6] [8] feet high. Multiple fencing panels may be linked together at the bases to form long spans as needed. Each panel base must be weighted down using sandbags or other suitable materials in order for the fencing to withstand anticipated winds while remaining upright. Fencing must remain rigid and taut with a minimum of 200 pounds of force exerted on it from any direction with less than 4 inches of deflection.

2.2.4 Post-Driven Chain Link Fencing

Temporary post-driven fencing must be galvanized chain link fencing 6 feet high supported by a tightly secured to galvanized steel posts driven below grade. Fence posts must be located on minimum 10-foot centers. Posts may be set in various surfaces such as sand, soil, asphalt, or concrete as necessary.

Chain link fencing must remain rigid and taut with a minimum of 200 pounds of force exerted on it from any direction with less than 4 inches of deflection.

Fencing and posts must be completely removed at the completion of construction and any surfaces disturbed or damaged must be restored to their original condition. Underground utilities must be located and identified prior to setting fence posts. The fence must be equipped with a lockable gate. Gate must remain locked when construction personnel are not present.

3.1 EMPLOYEE PARKING

Construction contract employees will park privately owned vehicles in an area designated by the Contract Manager. This area will be within reasonable walking distance of the construction site. Employee parking must not interfere with existing and established parking requirements of the government installation.

3.2 TEMPORARY BULLETIN BOARD

Locate the bulletin board at the project site in a conspicuous place easily accessible to all employees, as approved by the Contract manager.

3.3 AVAILABILITY AND USE OF UTILITY SERVICES

3.3.1 Temporary Utilities

Provide temporary utilities required for construction. Materials may be new or used, must be adequate for the required usage, not create unsafe conditions, and not violate applicable codes and standards. Coordinate with CM to see in the Facility has available power.

3.3.11 Water

Make connections to existing facilities to provide water for construction purposes. Water used maybe be furnished by the Government coordinate with CM.

3.3.12 Sanitation

- a. Provide and maintain within the construction area minimum field-type sanitary facilities approved by the Contract Manager and periodically empty wastes into a municipal, district, or station sanitary sewage system, or remove waste to a commercial facility. Obtain approval from the system owner prior to discharge into any municipal, district, or commercial sanitary sewer system. Any penalties or fines associated with improper discharge will be the responsibility of the Contractor. Coordinate with the Contract Manager and follow station regulations and procedures when discharging into the station sanitary sewer system. Maintain these conveniences at all times. Include provisions for pest control and elimination of odors. Government toilet facilities will not be available to Contractor's personnel.
- b. Provide toilet/sanitation and temporary sewer facilities in accordance with Occupational Safety and Health Administration standard 1926.51. Ventilate the units to control odors and fumes and empty and clean them at least once a week or more often if required by the Contract Manager. Provide self-closing doors. The exterior of the unit shall match the base standard color. Locate the facility behind the construction fence or out of the public view.

3.4 TRAFFIC PROVISIONS

3.4.1 Maintenance of Traffic

- a. Conduct operations in a manner that will not interfere in any way with traffic on site except with written permission of the Contract.
- b. Conduct work so as to minimize obstruction of traffic.
- c. Provide, erect, and maintain, at the contractor's expense, lights, barriers, signals, passageways, detours, and other items, that may be required by the Life Safety Signage, overhead protection authority having jurisdiction.

3.5 CONTRACTOR'S TEMPORARY FACILITIES

3.5.1 Safety Systems

Protect the integrity of any installed safety systems or personnel safety devices. Obtain prior approval from Contract Manager if entrance into systems serving safety devices is required. If it is temporarily necessary to remove or disable personnel safety devices in order to accomplish contract requirements, provide alternative means of protection prior to removing or disabling any permanently installed safety devices or equipment and obtain approval from the Contract Manager.

3.5.2 Administrative Field Offices

Provide and maintain administrative field office facilities within the construction area at the designated site. Government office and warehouse facilities will [not] be available to the Contractor's personnel.

3.5.3 Storage Area

Construct a temporary **6-foot-high** chain link fence around trailers and materials. Fence posts may be driven, in lieu of concrete bases, where soil conditions permit. Do not place or store trailers, materials, or equipment outside the fenced area unless such trailers, materials, or equipment are assigned a separate and distinct storage area by the Contract Manager away from the vicinity of the construction site but within the installation boundaries. Trailers, equipment, or materials must not be open to public view with the exception of those items which are in support of ongoing work on any given day.

Do not stockpile materials outside the fence in preparation for the next day's work. Park mobile equipment, such as tractors, wheeled lifting equipment, cranes, trucks, and like equipment within the fenced area at the end of each work day.

3.5.4 Supplemental Storage Area

Upon request, and pending availability, the Contract Manager will designate another or supplemental area for the use and storage of trailers, equipment, and materials. This area may not be in close proximity of the construction site but will be within the installation boundaries.

The area will be maintained in an clean and orderly fashion and secured if needed to protect supplies and equipment. Utilities will not be provided to this area by the Government.

3.5.5 Appearance of Trailers

Trailers which are rusted, have peeling paint or are otherwise in need of repair will not be allowed on Installation property. Trailers must present a clean and neat exterior appearance and be in a state of good repair.

3.5.6 Trailers or Storage Buildings

Trailers or storage buildings will be permitted, where space is available, subject to the approval of the Contract Manager. The trailers or buildings shall be in good condition, free from visible damage rust and deterioration, and meet all applicable safety requirements.

Trailers shall be roadworthy and comply with all appropriate state and local vehicle requirements. Failure to maintain storage trailers or buildings to these standards may result in the removal of non-complying units at the Contractor's expense. A sign not smaller than 600 by 600 mm 24 by 24 inches shall be conspicuously placed on the trailer depicting the company name, business phone number, and emergency phone number. Trailers must be anchored to resist high winds and must meet applicable state or local standards for anchoring mobile trailers.

3.5.7 Maintenance of Storage Area

- a. Keep fencing in a state of good repair and proper alignment. Grassed or unpaved areas, which are not established roadways, and will be traversed with construction equipment or other vehicles, will be covered with a layer of gravel as necessary to prevent rutting and the tracking of mud onto paved or established roadways, should the Contractor elect to traverse them with construction equipment or other vehicles. Mow and maintain grass located within the boundaries of the construction site for the duration of the project. Grass and vegetation along fences, buildings, under trailers, and in areas not accessible to mowers will be edged or trimmed neatly.

3.5.8 Security Provisions

Provide adequate outside security lighting at the temporary facilities. The Contractor will be responsible for the security of its own equipment.

3.5.11 Storage Size and Location

The open site available for storage must be confined to the indicated operations area within 1,000 feet of the operations area or as indicated.

3.5.13 Weather Protection of Temporary Facilities and Stored Materials

Take necessary precautions to ensure that roof openings and other critical openings in the building are monitored carefully. Take immediate actions required to seal off such openings when rain or other detrimental weather is imminent, and at the end of each workday.

Ensure that the openings are completely sealed off to protect materials and equipment in the building from damage.

3.5.13.1 Building and Site Storm Protection

When a warning of gale force winds is issued, take precautions to minimize danger to persons, and protect the work and nearby Government property. Precautions must include, but are not limited to, closing openings; removing loose materials, tools and equipment from exposed locations; and removing or securing scaffolding and other temporary work. Close openings in the work when storms of lesser intensity pose a threat to the work or any nearby Government property.

3.6 PLANT COMMUNICATIONS

Whenever the individual elements of the plant are located so that operation by normal voice between these elements is not satisfactory, install a satisfactory means of communication, such as telephone or other suitable devices and make available for use by Government personnel.

3.7 TEMPORARY PROJECT SAFETY FENCING

As soon as practicable, but not later than 15 days after the date established for commencement of work, furnish and erect temporary project safety fencing at the work site. Maintain the safety fencing during the life of the contract and, upon completion and acceptance of the work, remove from the work site.

3.8 DUMPSTERS

Equip dumpsters with a secure cover and paint the standard installation color. Keep dumpster closed, except when being loaded with trash and debris. Locate dumpsters behind the construction fence or out of the public view. Empty site dumpsters at least once a week, or as needed to keep the site free of debris and trash. If necessary, provide 55-gallon trash containers painted a darker installation color to collect debris in the construction site area. For large demolitions, large dumpsters without lids are acceptable, but must not have debris higher than the sides before emptying.

3.9 CLEANUP

Remove construction debris, waste materials, packaging material and the like from the work site daily. Any dirt or mud which is tracked onto paved or surfaced roadways must be cleaned away. Store any salvageable materials resulting from demolition activities within the fenced area described above or at the supplemental storage area. Neatly stack stored materials not in trailers, whether new or salvaged.

3.10 RESTORATION OF STORAGE AREA

Upon completion of the project remove the bulletin board, signs, barricades, haul roads, and any other temporary products from the site. After removal of trailers, materials, and equipment from within the fenced area, remove the fence. Restore areas used during the performance of the contract to the original or better condition. Remove gravel used to traverse grassed areas and restore the area to its original condition, including top soil and seeding as necessary.

End of Section

SECTION 01 55 00

FINAL FACILITY CLEANING

1. PART 1 GENERAL

1.1. SUMMARY

- 1.1.1. Section Includes: Contract closeout requirements including:
 - 1.1.1.1. Final cleaning.

1.2. FINAL CLEANING

- 1.2.1. Perform final cleaning prior to inspections for final acceptance.
- 1.2.2. Use cleaning materials which are recommended by manufacturers of surfaces to be cleaned.
- 1.2.3. Prevent scratching or otherwise damaging surfaces being cleaned.
- 1.2.4. Broom clean exterior paved surfaces and rake clean other surfaces of site work.
 - 1.2.4.1. Armory yards and grounds to clean be kept clean and weeds abated.
- 1.2.5. Clean grease, mastic, adhesives, dust, dirt, stains, fingerprints, paint, blemishes, sealants, plaster, concrete, and other foreign materials from sight-exposed surfaces, and fixtures and equipment.
- 1.2.6. Remove non-permanent protection and labels.

1.3. WASTE DISPOSAL

- 1.3.1. Arrange for and dispose of surplus materials, waste products, and debris off-site.
 - 1.3.1.1. Prior to making disposal on private property, obtain written permission from Facility Representative of such property.
- 1.3.2. Do not create unsightly or unsanitary nuisances during disposal operations.
- 1.3.3. Maintain disposal site in safe condition and good appearance.
- 1.3.4. Complete leveling and cleanup prior to final acceptance of the Work.

1.4. TOUCH-UP AND REPAIR

- 1.4.1.1.1. Touch-up or repair finished surfaces on equipment, fixtures, and installations that have been damaged prior to inspection for final acceptance.

2. PART 2 PRODUCTS

Not Used.

3. PART 3 EXECUTION

Not Used.

4. END OF SECTION

SECTION 01 60 00

PRODUCT REQUIREMENTS

PART 1 GENERAL

.1 SECTION INCLUDES

- A. Products.
- B. Transportation and handling.
- C. Storage and protection.
- D. Product options.
- E. Substitutions.

.2 RELATED SECTIONS

- A. Document - Instructions to Bidders: Product options and substitution procedures.
- B. Section 01 10 00 - Summary.
- C. Section 01 33 00 - Submittals.
- D. Section 01 65 00 – Product Delivery Requirements for Substitution Provisions.

.3 PRODUCTS

- A. Products: Means new material, machinery, components, equipment, fixtures, and systems forming the Work. Products do not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components required for reuse.
- B. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.
- C. Provide interchangeable components of the same manufacturer for similar components or details.
- D. All products shall comply with the Buy America Act. Federal Acquisition Regulation Title 48 Section 52-225-11.
- E. All products and materials shall be delivered to job-site in new, dry, unopened containers, clearly showing catalog number, product description, where and by whom they are manufactured, in quantities sufficient to ensure continuous work.

.4 TRANSPORTATION AND HANDLING

- A. Transport and handle products in accordance with manufacturer's instructions.
- B. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

.5 STORAGE AND PROTECTION

- A. Store and protect products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive products in weather-tight, climate-controlled enclosures.
- B. Assure that materials are kept clean, and away from excessive heat and cold; do not remove labels or tear off protective covering until ready for application; store in an enclosed area where temperature is above 50 degrees and below 90 degrees Fahrenheit, securely tied with rope. Material shall not be stored directly on the ground.
- C. For exterior storage of fabricated products, place on sloped supports, above ground.
- D. Provide off-site storage and protection when site does not permit on-site storage or protection.
- E. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation.
- F. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- G. Arrange storage of products to permit access for inspection. Periodically inspect to ensure products are undamaged and are maintained under specified conditions.
- H. Maintain aisle space between stacks to facilitate fire suppression if necessary.

I.6 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: Products of manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

I.7 SUBSTITUTIONS

- A. Instructions to Bidders specify time restrictions for submitting requests for Substitutions during the bidding period.
- B. Contract Manager will consider requests for Substitutions only within 15 days after date of Contract Agreement.
- C. Substitutions may be considered when a product becomes unavailable through no fault of the Contractor.
- D. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.
- E. A request constitutes a representation that the Contractor:
 - 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 which may be required for the Work to be complete with no additional cost to the Government.
 - 4. Waives claims for additional costs or time extension which may subsequently become apparent.
- F. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.
- G. Substitution Submittal Procedure:
 - 1. Submit three copies of the request for Substitution for consideration. Refer to 01 65 00 for substitution procedures.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

01 60 00 -3

SECTION 01 65 00

PRODUCT DELIVERY REQUIREMENTS

1. GENERAL

1.1. SUMMARY

1.1.1. A.Section Includes

- 1.1.1.1. Products.
- 1.1.1.2. Transportation and Handling.
- 1.1.1.3. Product Options.
- 1.1.1.4. Substitutions.

1.1.2. Related Sections

- 1.1.2.1. Section 01 10 00 - Summary of Work.
- 1.1.2.2. Section 01 33 00 - Submittals

1.2. PRODUCTS

- 1.2.1. Products: For the purpose of this Section, products mean new material, machinery, components, equipment, fixtures, and systems forming the Work. It does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components required for reuse.

1.3. TRANSPORTATION AND HANDLING

- 1.3.1. Transport and handle products in accordance with manufacturer's instructions; provide equipment and personnel to handle products by methods to preserve quality, appearance, and suitability for the project.

1.4. PRODUCT OPTIONS

- 1.4.1. Products Specified by Reference Standards or by Description Only: Any product meeting those standards or description.
- 1.4.2. Products Specified by Naming One or More Manufacturers: Products of manufacturers named and meeting specifications, or accepted substitutes. Provide minimum of three selections.

1.5. SUBSTITUTIONS

- 1.5.1. Submit in writing, within time limit set forth in General Conditions, on form provided as 01 65 00 - Attachment A, Notice of Request for Substitution. Notice of Request for Substitution shall include complete data substantiating compliance of proposed substitution with Contract.

1.5.2. A request constitutes a representation that the Contractor:

- 1.5.2.1. Has investigated proposed substitution and determined that it meets or exceeds the quality level required to achieve operating efficiency and effectiveness of the specified material, product, thing, or service.
- 1.5.2.2. Will provide the same warranty for the substitution as for the specified material, product, thing, or service.
- 1.5.2.3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to State.
- 1.5.2.4. Waives claims for additional costs or time extension which may subsequently become apparent.
- 1.5.2.5. Will reimburse State for review or redesign services associated with proposed substitutions.

1.5.3. Substitution Submittal Procedure:

- 1.5.3.1. Limit each request to one proposed substitution.
- 1.5.3.2. Submit shop drawings, product data, and certified test results attesting to the proposed equivalence.
- 1.5.3.3. Facility Representative will notify Contractor, in writing, of decision to approve or reject request.

1.5.4. After approval of Notice of Request for Substitution, submit required submittals under provisions of Sections 01 33 00.

2. PRODUCTS - NOT USED

3. EXECUTION - NOT USED

END OF SECTION

SECTION 01 65 00 - ATTACHMENT A

NOTICE OF REQUEST FOR SUBSTITUTION

Substitution Request: _____

In accordance with the Conditions of the Contract and the provisions of Section 01 65 00, we hereby submit for consideration, this Notice of Request for Substitution for the following material, product, thing, or service:

Section	Paragraph	Specified Item
---------	-----------	----------------

Proposed Substitution: _____

The following supporting information is attached:

- ☐ Product Data including model numbers and descriptions.
- ☐ Certified test results attesting to equivalence.
- ☐ Product/material samples.
- ☐ Other:

Reason for proposed substitution:

- ☐ Specified or indicated item is unavailable.
- ☐ Significant cost reduction. Amount to be credited to the Department: \$ _____
- ☐ Significant quality difference without cost change.
- ☐ Other: _____

Submitted and Certified By:

CONTRACTOR:

Signature	Date
Name (Print)	Title
Firm Name	
Address	Phone
City, State, Zip	FAX

Received: _____
Date _____ CMD Representative _____

☐ Approved: _____
☐ Rejected: Date _____ CMD Representative _____

END OF SECTION 01 65 00 - ATTACHMENT A

01 65 00 Attachment A

SECTION 01 70 00
CONTRACT CLOSEOUT

PART 1 GENERAL

1 SECTION INCLUDES

- A. Closeout procedures.
- B. Final cleaning.
- C. Adjusting.
- D. Project record documents.

2 CLOSEOUT PROCEDURES

- A. Submit written certification that Contract Documents have been reviewed, Work has been inspected and accepted, and that Work is complete in accordance with Contract Documents and ready for inspection.
- B. Comply with requirements of specification sections 01 10 00 and 01 33 00.
- C. Provide warranty certificates to Contract Manager.
- D. Submit final Application for Payment to Contract Manager identifying total adjusted Contract Sum, previous payments, and sum remaining due.
- E. The Contract Manager and/or their representatives shall conduct a final inspection within 14 days of receipt of a written request from the Contractor for final inspection.
- F. A corrective notice (i.e. punch list) will be developed during the final inspection. All items noted on the corrective must be complete prior to the job being accepted by the Contract Manager.

3 ADJUSTING

Adjust operating Products and equipment to ensure smooth, proper operation.

4 PROJECT RECORD DOCUMENTS

- A. Maintain on site, one set of the following record documents; record actual revisions to the Work:
 - 1. Project Drawings.
 - 2. Specifications.
 - 3. Change Orders and other Modifications to the Contract.

4. Reviewed shop drawings, product data, and samples.
 5. Manufacturer's Warranty Certificate(s).
- B. Store Record Documents separate from documents used for construction.
- C. Record information concurrent with construction progress.
- D. Specifications: Legibly mark and record at each Product section description of actual Products installed, including the following:
1. Manufacturer's name and product model and number.
 2. Product substitutions or alternates utilized.
 3. Changes made by Addenda and Modifications.
- E. Record Documents 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. Submit prior to final inspection, one (1) set bound in 8-1/2 x 11 inch text pages, 3-D side ring binder and one (1) set of identical documentation in electronic (.pdf) format.
 4. Internally subdivide the binder contents with page dividers, logically organized, and tabbed to identify contents of binder.
 5. Part 1: Directory, listing names, addresses, and telephone numbers of Contractor, and Subcontractors.
 6. Part 2: Project documents and certificates, including the following:
 7. Part 3: Requests for Information (RFI) log and copies of all signed RFIs
 8. Part 4: Submittal log and copies all approved submittals.
 9. Warranty certificates.
- F. Submit one hard copy and one electronic copy of completed volume in final form seven (7) days prior to final inspection. Revise as required prior to final contract close out per COR directions.
- G. Submit final revised hardcopy and electronic volumes within ten (10) days after final inspection and prior to release of final payment.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 74 19

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes.
 - 1. Administrative and procedural requirements for the following:
 - a. Salvaging nonhazardous demolition and construction waste.
 - b. Recycling nonhazardous demolition and construction waste.
 - c. Disposing of nonhazardous demolition and construction waste.
- B. Related Sections
 - 1. Section 01 30 00 – Administrative Requirements.

1.2 REFERENCES

- A. ASTM E1609- 2010 - Standard Guide for Development and Implementation of a Pollution Prevention Program.

1.3 DEFINITIONS

- A. Class III Landfill: A landfill that accepts non-hazardous waste such as household, commercial, and industrial waste, including construction, remodeling, repair, and demolition operations.
- B. Chemical Waste: Includes petroleum products, bituminous materials, salts, acids, alkalis, herbicides, pesticides, organic chemicals and inorganic wastes, and other similar materials.
- C. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or similar.
- D. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- E. Debris: Includes both combustible and noncombustible wastes, such as leaves and tree trimmings that result from construction or maintenance and repair work, and other similar materials.
- F. Deconstruction: The process of removing existing building materials from renovation and demolition projects for the purposes of reuse and recycling in as efficient and safe manner as possible.
- G. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
- H. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- I. Divert: Using material for any purpose other than disposal in a landfill.
- J. Inert Fill: A permitted facility that accepts inert waste such as asphalt and concrete exclusively.
- K. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
- L. Rubbish: Includes both combustible and noncombustible wastes, such as paper, boxes, glass, crockery, metal and lumber scrap, tin cans, bones, and other similar materials.

- M. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
- N. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.
- O. Sanitary Wastes
 - 1. Garbage: Refuse and scraps resulting from preparation, cooking, distribution, or consumption of food, or other similar materials.
 - 2. Sewage: Domestic sanitary sewage.

1.4 PERFORMANCE REQUIREMENTS

- A. General: Achieve end-of-Project rates for salvage/recycling of a minimum of 75 percent by weight of total non-hazardous solid waste generated by the Work. Practice efficient waste management in the use of materials in the course of the Work. Use all reasonable means to divert construction and demolition waste from landfills and incinerators. Facilitate recycling and salvage of materials. Materials, including the following:
 - 1. Demolition Waste
 - a. Wood studs.
 - b. Wood joists.
 - c. Plywood and oriented strand board.
 - d. Wood trim.
 - e. Structural and miscellaneous steel.
 - f. Rough hardware.
 - g. Roofing.
 - h. Insulation (including fiberglass, rigid polystyrene but excluding polyisocyanurate).
 - i. Metal studs.
 - j. Gypsum board.
 - k. Acoustical tile and panels.
 - 2. Construction Waste
 - a. Untreated lumber.
 - b. Wood sheet materials (plywood, oriented strand board, and medium density fiberboard).
 - c. Wood trim.
 - d. Metals.
 - e. Roofing.
 - f. Insulation (including fiberglass, rigid polystyrene but excluding polyisocyanurate).
 - g. Packaging: Regardless of salvage/recycle goal indicated above, salvage or recycle 100 percent of the following uncontaminated packaging materials:
 - 1) Paper.
 - 2) Cardboard.
 - 3) Boxes.
 - 4) Plastic sheet and film.
 - 5) Polystyrene packaging.
 - 6) Wood crates and pallets.
 - 7) Plastic pails.
 - 8) Beverage containers.

1.5 ACTION SUBMITTALS

- A. Construction Waste Management Plan (CWMP): Submit 1 copy of the plan within 30 calendar days of date of the Notice to Proceed and prior to any waste removal.

1.6 INFORMATIONAL SUBMITTALS

- A. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether the organization is tax exempt.
- B. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether the organization is tax exempt.
- C. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- D. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- E. Qualification Data: For waste management coordinator.

1.7 QUALITY ASSURANCE

- A. Facility representative will act as waste coordinator.
- B. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Waste Management Review: Conduct review at Project Site in accordance with Section 01 31 19"". Review methods and procedures related to waste management including, but not limited to, the following:
 - 1. Review and discuss CWMP including responsibilities of waste management coordinator.
 - 2. Review requirements for documenting quantities of each type of waste and its disposition.
 - 3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
 - 4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
 - 5. Review waste management requirements for each trade.

1.8 CONSTRUCTION WASTE MANAGEMENT PLAN (CWMP)

- A. General: Develop a CWMP according to ASTM E1609 and requirements of this Section. The plan shall consist of waste identification, waste reduction work plan. Distinguish between demolition and construction waste.
- B. Waste Identification: Indicate anticipated types and quantities of demolition construction waste generated by the Work. Use Include estimated quantities and assumptions for estimates.

- C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.
1. Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work.
 2. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include a list of their names, addresses, and telephone numbers.
 3. Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include a list of their names, addresses, and telephone numbers.
 4. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
 5. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, telephone number, and a copy of the permit or license of each landfill and incinerator facility. The permit or license shall indicate the type or class of waste accepted.
 6. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location on Project Site where materials separation will be located.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 PLAN IMPLEMENTATION

- A. General: Implement the approved CWMP. Provide handling, containers, storage, signage, transportation, and other items as required to implement the CWMP during the entire duration of the Contract.
1. Comply with Section 01 50 00 for operation, termination, and removal requirements.
- B. Waste Management Coordinator: Engage a waste management coordinator to be responsible for implementing, monitoring, and reporting status of the CWMP.
- C. Training: Train workers, subcontractors, and suppliers on proper waste management procedures as appropriate for the Work occurring at Project site.
1. Distribute the CWMP to Project Manager within 10 working days of submittal return.
 2. Distribute the CWMP to entities when they first begin work on site. Review the CWMP procedures and locations established for salvage, recycling, and disposal.
 3. Provide information and training updates throughout the construction process as needed to facilitate understanding and participation.
- D. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
1. Designate and label specific areas on Project Site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
 2. Comply with Section 01 50 00 for controlling dust and dirt, environmental protection, and noise control.

3.2 SALVAGING DEMOLITION WASTE

- A. Salvaged Items for Reuse in the Work: Salvage items for reuse and handle as follows:
 - 1. Clean salvaged items.
 - 2. Pack or crate items after cleaning. Identify contents of containers.
 - 3. Store items in a secure area until installation.
 - 4. Protect items from damage during transport and storage.
 - 5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.
- B. Salvaged Items for Sale and Donation: Not permitted on Project Site.
- C. Salvaged Items for Facility's Use:
 - 1. Clean salvaged items.
 - 2. Pack or crate items after cleaning. Identify contents of containers.
 - 3. Store items in a secure area until delivery to Facility.
 - 4. Transport items to Facility's storage area on-site designated by Facility Representative.
 - 5. Protect items from damage during transport and storage.

3.3 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL

- A. General: Recycle paper and beverage containers used by on-site workers.
- B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall accrue to the Contractor.
- C. Preparation of Waste: Prepare and maintain recyclable waste materials according to recycling or reuse facility requirements. Maintain materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.
- D. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Locate containers and/or bins in areas designated in the CWMP. Separate recyclable waste by type at Project site to the maximum extent practical according to the approved CWMP.
 - 1. Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from the Project Site. Include a list of acceptable and unacceptable materials at each container and bin.
 - a. Inspect containers and bins for contamination and remove contaminated materials if found.
 - 2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - 3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
 - 4. Store components off the ground and protect from the weather.
 - 5. Remove recyclable waste off Facility property and transport to recycling receiver or processor.

3.4 RECYCLING DEMOLITION WASTE

- A. Wood Materials: Sort and stack members according to type. Separate lumber, engineered wood products, panel products, and treated wood materials.
- B. Metals: Separate metals by type.
 - 1. Structural Steel: Stack members according to size, type of member, and length.

2. Remove and dispose of bolts, nuts, washers, and other rough hardware.
- C. Roofing: Separate organic and glass-fiber asphalt shingles and felts. Remove and dispose of nails, staples, and accessories.
- D. Acoustical Ceiling Panels and Tile: Stack large clean pieces on wood pallets and store in a dry location if quantity warrants it.

3.5 RECYCLING CONSTRUCTION WASTE

- A. Packaging
 1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
 2. Polystyrene Packaging: Separate and bag materials.
 3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
 4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.
- B. Wood Materials
 1. Clean Cut-Offs of Lumber: Stack by size.
 2. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.

3.6 DISPOSAL OF WASTE

- A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project Site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
 1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. Burning: Do not burn waste materials.
- C. Disposal: Transport waste materials off Facility property and legally dispose of them.

END OF SECTION

SECTION 01 78 00
CLOSE-OUT SUBMITTALS

PART 1 GENERAL

- 1.1 SUMMARY
 - A. Section includes
 - 1. Close-out submittals, including as-builts; record drawings, specifications, and product data; and warranties.
 - B. Related Sections
 - 1. 01 33 00 - Submittals
 - 2. Divisions 2 through 44 Sections for specific requirements of the Work in those Sections.
- 1.2 ITEMS SUBMITTED TO ARCHITECT FOR REVIEW PRIOR TO DISTRIBUTION TO FACILITY REPRESENTATIVE:
 - A. Marked-up copies of Contract Drawings.
 - B. Newly prepared Drawings.
 - C. Marked-up copies of Specifications, addenda, and Change Orders.
 - D. Record information on Work that is recorded only schematically, when part of record documents.
 - E. Complete set of RFI's.
- 1.3 ITEMS DELIVERED DIRECTLY TO CM/PM:
 - A. Orders (Construction Change Directives).
 - B. Marked-up copies of Shop Drawings.
 - C. Marked-up Product Data submittals.
 - D. Record Samples.
 - E. Field records for variable and concealed conditions.
 - F. Copies of change orders, submittal, substitutions, warranties, and other forms that are part of this Project.
- 1.4 SUBMITTALS
 - A. Record Drawings: Comply with the following:
 - 1. Review required content with CA Military Dept. prior to submittal.
 - 2. Completed Submittal: Submit one set of marked-up Record Prints

- B. Record Specifications: Submit one copy of Project's Specifications, including addenda and contract modifications.
- C. Record Product Data: Submit one copy of each Product Data submittal. Where Record Product Data is required as part of operation and maintenance manuals, submit marked-up Product Data as an insert in manual instead of submittal as Record Product Data.

1.5 WARRANTIES

- A. Submittal Time: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.
- B. Partial Occupancy: Submit properly executed warranties within [15] days of completion of designated portions of the Work that are completed and occupied or used by CA Military Dept. during construction period by separate agreement with Contractor.
- C. Organize warranty documents into an orderly sequence based on the table of contents of the project manual.
 - 1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2 x 11-inch documents.
 - 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of the Installer.
 - 3. Identify each binder on the front and spine with the type or printed title "WARRANTIES", Project name, and name of Contractor.

PART 2 PRODUCTS

2.1 RECORD DRAWINGS

- A. Record Prints: Maintain one set of blue- or black-line white prints of the Contract Drawings and Shop Drawings.
 - 1. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Accurately record information in an understandable drawing technique.
 - c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
 - 2. Content: Types of items requiring marking include, but are not limited to, the following:
 - a. Dimensional changes to Drawings.
 - b. Revisions to details shown on Drawings.
 - c. Changes made by Change Order or Construction Change Directive.
 - d. Changes made following Architect's written orders.

- e. Details not on the original Contract Drawings.
 - f. Field records for variable and concealed conditions.
 - g. Record information on the Work that is shown only schematically.
 - 3. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.
 - 4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
 - 5. Mark important additional information that was either shown schematically or omitted from original Drawings.
 - 6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
 - 7. Accompany submittal with certification that each document as submitted is complete and accurate.
- B. Record Prints: Provide one set of Drawings.
- C. Newly Prepared Record Drawings: Prepare new Drawings instead of preparing Record Drawings where A/E determines that neither the original Contract Drawings nor Shop Drawings are suitable to show actual installation.
- 1. New Drawings may be required when a Change Order is issued as a result of accepting an alternate, substitution, or other modification.
 - 2. Consult A/E for proper scale and scope of detailing and notations required to record the actual physical installation and its relation to other construction. Integrate newly prepared Record Drawings into Record Drawing sets; comply with procedures for formatting, organizing, copying, binding, and submitting.
- D. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
- 1. Record Prints: Organize Record Prints and newly prepared Record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
 - 2. Identification: As follows:
 - a. Project name.
 - b. Date.
 - c. Designation "PROJECT RECORD DRAWINGS."
 - d. Name of Architect and Construction Manager.
 - e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

- A. Preparation: Mark specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications. Information shall be sufficient for Owner's personnel to maintain facility.
- 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 - 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 - 3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
 - 4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.

5. Note related Change Orders, Record Product Data, and Record Drawings where applicable.

2.3 RECORD PRODUCT DATA

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Include significant changes in the product delivered to the Project site and changes in manufacturer's written instructions for installation.
 3. Note related Change Orders, Record Specifications, and Record Drawings where applicable.

2.4 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

PART 3 EXECUTION

3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.
- B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's and Construction Project Manager's reference during normal working hours.

END OF SECTION

SECTION 02 41 00

DEMOLITION

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AIR-CONDITIONING, HEATING AND REFRIGERATION INSTITUTE (AHRI)

AHRI Guideline K (2009) Guideline for Containers for Recovered Non-Flammable Fluorocarbon Refrigerants

AMERICAN SOCIETY OF SAFETY PROFESSIONALS (ASSP)

ASSP A10.6 (2006) Safety & Health Program Requirements for Demolition Operations - American National Standard for Construction and Demolition Operations

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1 (2014) Safety and Health Requirements Manual

U.S. DEPARTMENT OF DEFENSE (DOD)

MIL-STD-129 (2014; Rev R) Military Marking for Shipment and Storage

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

40 CFR 61 National Emission Standards for Hazardous Air Pollutants

40 CFR 82 Protection of Stratospheric Ozone

49 CFR 173.301 Shipment of Compressed Gases in Cylinders and Spherical Pressure Vessels

1.2 PROJECT DESCRIPTION

1.2.1 Definitions

1.2.1.1 Demolition

Demolition is the process of wrecking or taking out any load-supporting structural member of a facility together with any related handling and disposal operations.

1.2.1.2 Deconstruction

Deconstruction is the process of taking apart a facility with the primary goal of preserving the value of all useful building materials.

1.2.1.3 Demolition Plan

Demolition Plan is the planned steps and processes for managing demolition activities and identifying the required sequencing activities and disposal mechanisms.

1.2.1.4 Deconstruction Plan

Deconstruction Plan is the planned steps and processes for dismantling all or portions of a structure or assembly, to include managing sequencing activities, storage, re-installation activities, salvage, and disposal mechanisms.

1.2.2 Demolition/Deconstruction Plan

Prepare a salvage and removal procedures plan for approval before work is started. Include in the plan procedures for careful removal and disposition of materials specified to be salvaged. A disconnection schedule of building power. Identify components and materials to be salvaged for reuse or recycling with reference to paragraph Existing Facilities to be removed. Append tracking forms for all removed materials indicating type, quantities, condition, destination, and end use. Coordinate with Waste Management Plan in accordance with Section 01 74 19 construction waste management and disposal. Include statements affirming Contractor inspection of the existing roof deck and its suitability to perform as a safe working platform or if inspection reveals a safety hazard to workers, state provisions for securing the safety of the workers throughout the performance of the work. Plan shall be approved by Contract Manager prior to work beginning.

1.2.3 General Requirements

Do not begin demolition or deconstruction until authorization is received from the Contract Manager. The work of this section is to be performed in a manner that maximizes the value derived from the salvage and recycling of materials. Remove rubbish and debris from the project site; do not allow accumulation inside the building or on airfield pavements. The work includes demolition and salvage of identified items and materials, and removal of resulting rubbish and debris. Remove rubbish and debris from Government property daily, unless otherwise directed. Store materials that cannot be removed daily in areas specified by the Contract Manager. In the interest of occupational safety and health, perform the work in accordance with OSHA requirements.

1.3 ITEMS TO REMAIN IN PLACE

Take necessary precautions to avoid damaging items to existing items to remain in place, to be reused, or to remain the property of the Government. Repair or replace damaged items as approved by the Contract Manager. Coordinate the work of this section with all other work indicated. Construct and maintain shoring, bracing, and supports as required.

Ensure that structural elements are not overloaded. Increase structural supports or add new supports as may be required as a result of any cutting, removal, deconstruction, or demolition work performed under this contract. Do not overload [structural elements] [pavements to remain]. Provide new supports and reinforcement for existing construction weakened by demolition, deconstruction, or removal work. Repairs, reinforcement, or structural replacement require approval by the Contract Manager prior to performing such work.

1.3.1 Existing Construction Limits and Protection

Do not disturb existing construction beyond the extent indicated or necessary for installation of new construction. Provide temporary shoring and bracing for support of building components to prevent settlement or other movement. Provide protective measures to control accumulation and migration of dust and dirt in all work areas. Remove dust, dirt, and debris from work areas daily.

1.3.2 Weather Protection

For portions of the building to remain, always protect the building interior and materials and equipment from the weather. Where removal of existing roofing is necessary to accomplish work, have materials and workmen ready to provide adequate and temporary covering of exposed areas.

1.3.3 Trees

Protect trees within the project site which might be damaged during demolition or deconstruction, and which are indicated to be left in place, by a 6-foot-high fence. Erect and secure fence a minimum of 5 feet from the trunk of individual trees or follow the outer perimeter of branches or clumps of trees. Replace any tree designated to remain that is damaged during the work under this contract with like-kind or as approved by the Contract Manager.

1.3.4 Utility Service

Maintain existing utilities indicated to stay in service and protect against damage during demolition and deconstruction operations. Prior to start of work, utilities serving each area of alteration or removal will be shut off by the Government and disconnected and sealed by the Contractor.

1.3.5 Facilities

Protect electrical and mechanical services and utilities. Where removal of existing utilities and pavement is specified or indicated, provide approved barricades, temporary covering of exposed areas, and temporary services or connections for electrical and mechanical utilities. Floors, roofs, walls, columns, pilasters, and other structural components that are designed and constructed to stand without lateral support or shoring, and are determined to be in stable condition, must remain standing without additional bracing, shoring, or lateral support until demolished or deconstructed, unless directed otherwise by the Contract Manager.

Ensure that no elements determined to be unstable are left unsupported and place and secure bracing, shoring, or lateral supports as may be required as a result of any cutting, removal, deconstruction, or demolition work performed under this contract.

1.4 SUBMITTALS

Government approval is required for all submittals with a "G" designation. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. Submit the following in accordance with Section 01 33 00 submittal procedures:

SD-01 Preconstruction Submittals

Salvage and removal procedures; G

Closeout Submittals

Receipts

1.5 QUALITY ASSURANCE

Submit timely notification of demolition projects to Federal, State, regional, and local authorities in accordance with 40 CFR 61, Subpart M. Notify the State's environmental protection agency and the Contract Manager in writing 10 working days prior to the commencement of work in accordance with 40 CFR 61, Subpart M. Comply with federal, state, and local hauling and disposal regulations. In addition to the requirements of the "Contract Clauses," conform to the safety requirements contained in ASSP A10.6.

1.5.1 Dust and Debris Control

Prevent the spread of dust and debris to occupied portions of the building and on airfield pavements and avoid the creation of a nuisance or hazard in the surrounding area. Do not use water if it results in hazardous or objectionable conditions such as, but not limited to, ice, flooding, or pollution. Vacuum and dust the work area daily. Sweep pavements as often as necessary to control the spread of debris that may result in foreign object damage potential to aircraft.

1.8 PROTECTION

1.8.1 Traffic Control Signs

- a. Where pedestrian and driver safety is endangered in the area of removal work, use traffic barricades with flashing lights. Anchor barricades in a manner to prevent displacement by wind, jet or prop blast. Notify the Contract Manager prior to beginning such work.

1.8.2 Protection of Personnel

Before, during and after the demolition work continuously evaluate the condition of the objects being demolished and take immediate action to protect all personnel working in and around the project site.

No area, section, or component of floors, roofs, walls, columns, pilasters, or other structural element will be allowed to be left standing without sufficient bracing, shoring, or lateral support to prevent collapse or failure while workmen remove debris or perform other work in the immediate area.

1.9 RELOCATIONS

Perform the removal and reinstallation of relocated items as indicated with workmen skilled in the trades involved. Repair or replace items to be relocated which are damaged by the Contractor with new undamaged items as approved by the Contract Manager.

1.10 EXISTING CONDITIONS

Before beginning any demolition or deconstruction work, survey the site and examine the drawings and specifications to determine the extent of the work. Record existing conditions in the presence of the Contract Manager showing the condition of structures and other facilities adjacent to areas of alteration or removal. Photographs sized 4 inches will be acceptable as a record of existing conditions. Include in the record the elevation of the top of foundation walls, finish floor elevations, possible conflicting electrical conduits, plumbing lines, alarms systems, the location and extent of existing cracks and other damage and description of surface conditions that exist prior to before starting work. It is the Contractor's responsibility to verify and document all required outages which will be required during the course of work, and to note these outages on the record document.

PART 2 PRODUCTS - Not used

PART 3 EXECUTION

3.1 EXISTING FACILITIES TO BE REMOVED

Inspect and evaluate existing structures onsite for reuse. Existing construction scheduled to be removed for reuse shall be disassembled. Dismantled and removed materials are to be separated, set aside, and prepared as specified, and stored or delivered to a collection point for reuse, remanufacture, recycling, or other disposal, as specified. Materials shall be designated for reuse onsite whenever possible.

3.1.1 Utilities and Related Equipment

3.1.2.1 General Requirements

Do not interrupt existing utilities serving occupied or used facilities, except when authorized in writing by the CONTRACT MANAGER. Do not interrupt existing utilities serving facilities occupied and used by the Government except when approved in writing and then only after temporary utility services have been approved and provided. Do not begin demolition or deconstruction work until all utility disconnections have been made. Shut off and cap utilities for future use, as indicated.

3.1.2.2 Disconnecting Existing Utilities

Remove existing utilities, as indicated, and terminate in a manner conforming to the nationally recognized code covering the specific utility and approved by the CONTRACT MANAGER. When utility lines are encountered but are not indicated on the drawings, notify the CONTRACT MANAGER prior to further work in that area. Remove meters and related equipment and deliver to a location [on the station] in accordance with instructions of the Contract Manager.

3.1.6 Masonry

Sawcut and remove masonry so as to prevent damage to surfaces to remain, to remove materials being salvaged and to facilitate the installation of new work. Where new masonry adjoins existing, the new work shall abut or tie into the existing construction as specified for the new work. Provide square, straight edges and corners where existing masonry adjoins new work and other locations. Masonry removed in whole blocks shall be salvaged and stored for reuse.

3.1.7 Miscellaneous Metal

Salvage shop-fabricated items such as access doors and frames, steel gratings, metal ladders, wire mesh partitions, metal railings, metal windows and similar items as whole units. Salvage light-gage and cold-formed metal framing, such as steel studs, steel trusses, metal gutters, roofing and siding, metal toilet partitions, toilet accessories and similar items. [Scrap metal shall become the Contractor's property.] Recycle scrap metal as part of demolition and deconstruction operations. Provide separate containers to collect scrap metal and transport to a scrap metal collection or recycling facility, in accordance with the Waste Management Plan.

3.1.8 Carpentry

Salvage for recycling lumber, millwork items, and finished boards, and sort by type and size. Salvage [Remove] windows, doors, frames, and cabinets, and similar items as whole units, complete with trim and accessories. Do not remove hardware attached to units, except for door closers. Salvage hardware attached to units for reuse. Brace the open end of door frames to prevent damage.

3.1.9 Patching

Where removals leave holes and damaged surfaces exposed in the finished work, patch and repair these holes and damaged surfaces to match adjacent finished surfaces, using on-site materials when available. Where new work is to be applied to existing surfaces, perform removals and patching in a manner to produce surfaces suitable for receiving new work. Finished surfaces of patched area shall be flush with the adjacent existing surface and shall match the existing adjacent surface as closely as possible as to texture and finish. Patching shall be as specified and indicated, and shall include:

- a. Concrete and Masonry: Completely fill holes and depressions, [caused by previous physical damage or] left as a result of removals in existing masonry walls to remain, with an approved masonry patching material, applied in accordance with the manufacturer's printed instructions.
- b. Where existing partitions have been removed leaving damaged or missing resilient tile flooring, patch to match the existing floor tile.

- c. Patch acoustic lay-in ceiling where partitions have been removed. The transition between the different ceiling heights shall be affected by continuing the higher ceiling level over to the first runner on the lower ceiling and closing the vertical opening with a painted sheet metal strip.

3.1.10 Air Conditioning Equipment

Remove air conditioning, refrigeration, and other equipment containing refrigerants without releasing chlorofluorocarbon refrigerants to the atmosphere in accordance with the Clean Air Act Amendment of 1990. Recover all refrigerants prior to removing air conditioning, refrigeration, and other equipment containing refrigerants and dispose of in accordance with the paragraph entitled "Disposal of Ozone Depleting Substance (ODS)." Turn in salvaged Class I ODS refrigerants as specified in paragraph, "Salvaged Materials and Equipment."

3.1.11 Mechanical Equipment and Fixtures

Disconnect mechanical hardware at the nearest connection to existing services to remain, unless otherwise noted. Disconnect mechanical equipment and fixtures at fittings. Remove service valves attached to the unit. Salvage each item of equipment and fixtures as a whole unit; listed, indexed, tagged, and stored. Salvage each unit with its normal operating auxiliary equipment. Transport salvaged equipment and fixtures, including motors and machines, to a designated [on station] storage area as directed by the Contract Manager. Do not remove equipment until approved.

Remove water, dirt, dust, and foreign matter from units; tanks, piping and fixtures shall be drained; interiors, if previously used to store flammable, explosive, or other dangerous liquids, shall be steam cleaned. Seal openings with caps, plates, or plugs. Secure motors attached by flexible connections to the unit. Change lubricating systems with the proper oil or grease.

3.1.18.1 Piping

Disconnect piping at unions, flanges and valves, and fittings as required to reduce the pipe into straight lengths for practical storage. Store salvaged piping according to size and type. If the piping that remains can become pressurized due to upstream valve failure, end caps, blind flanges, or other types of plugs or fittings with a pressure gage and bleed valve shall be attached to the open end of the pipe to ensure positive leak control. Carefully dismantle piping that previously contained gas, gasoline, oil, or other dangerous fluids, with precautions taken to prevent injury to persons and property. Store piping outdoors until all fumes and residues are removed. Box prefabricated supports, hangers, plates, valves, and specialty items according to size and type. Wrap sprinkler heads individually in plastic bags before boxing. Classify piping not designated for salvage, or not reusable, as scrap metal.

3.1.18.2 Ducts

Classify removed duct work as scrap metal.

3.1.18.3 Fixtures, Motors and Machines

Remove and salvage fixtures, motors and machines associated with plumbing, heating, air conditioning, refrigeration, and other mechanical system installations. Salvage, box and store auxiliary units and accessories with the main motor and machines. Tag salvaged items for identification, storage, and protection from damage.

Classify non-porcelain broken, damaged, or otherwise unserviceable units and not caused to be broken, damaged, or otherwise unserviceable as debris to be disposed of by the Contractor.

3.1.19 Electrical Equipment and Fixtures

Salvage motors, motor controllers, and operating and control equipment that are attached to the driven equipment. Salvage wiring systems and components. Box loose items and tag for identification. Disconnect primary, secondary, control, communication, and signal circuits at the point of attachment to their distribution system.

3.1.19.1 Fixtures

Remove and salvage electrical fixtures as indicated on the drawings. Salvage unprotected glassware from the fixture and salvage separately. Salvage incandescent, mercury-vapor, and fluorescent lamps and fluorescent ballasts manufactured prior to 1978, boxed and tagged for identification, and protected from breakage.

3.1.19.2 Electrical Devices

Remove and salvage switches, switchgear, transformers, conductors including wire and nonmetallic sheathed and flexible armored cable, regulators, meters, instruments, plates, circuit breakers, panelboards, outlet boxes, and similar items. Box and tag these items for identification according to type and size. Remove as indicated on the drawings.

3.1.19.3 Wiring Ducts or Troughs

Remove and salvage wiring ducts or troughs. Dismantle plug-in ducts and wiring troughs into unit lengths. Remove plug-in or disconnecting devices from the busway and store separately. Remove as indicated on the drawings.

3.1.19.4 Conduit and Miscellaneous Items

Salvage conduit except where embedded in concrete or masonry. Consider corroded, bent, or damaged conduit as scrap metal. Sort straight and undamaged lengths of conduit according to size and type. Classify supports, knobs, tubes, cleats, and straps as debris to be removed and disposed.

3.2 DISPOSITION OF MATERIAL

3.2.1 Title to Materials

Except for salvaged items specified in related Sections, and for materials or equipment scheduled for salvage, all materials and equipment removed and not reused or salvaged, shall become the property of the Contractor and shall be removed from Government property. Title to materials resulting from demolition and deconstruction, and materials and equipment to be removed, is vested in the Contractor upon approval by the Contract Manager of the Contractor's demolition, deconstruction, and removal procedures, and authorization by the Contract Manager to begin demolition and deconstruction. The government will not be responsible for the condition or loss of, or damage to, such property after contract award. Showing for sale or selling materials and equipment on site is prohibited.

3.2.2 Reuse of Materials and Equipment

Remove and store materials and equipment as indicated to be reused or relocated to prevent

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damage and reinstall as the work progresses. Coordinate the re-use of materials and equipment with the re-use requirements in accordance with Section 01 74 19 construction waste management and disposal. Capture re-use of materials in the diversion calculations for the project.

3.2.3 Salvaged Materials and Equipment

Remove materials and equipment that are indicated and specified to be removed by the Contractor and that are to remain the property of the Government, and deliver to a storage site, as directed on the work site.

- a. Salvage items and material to the maximum extent possible.
- b. Store all materials salvaged for the Contractor as approved by the CONTRACT MANAGER and remove them from Government property before completion of the contract.
- c. Remove salvaged items to remain the property of the Government in a manner to prevent damage, and packed or crated to protect the items from damage while in storage or during shipment. Items damaged during removal or storage must be repaired or replaced to match existing items. Properly identify the contents of containers.
- d. Remove and capture all Class I ODS refrigerants in accordance with the Clean Air Act Amendment of 1990 and turn them in as directed by the CONTRACT MANAGER.

3.2.4 Disposal of Ozone Depleting Substance (ODS)

Class I and Class II ODS are defined in Section, 602(a) and (b), of The Clean Air Act. Prevent discharge of Class I and Class II ODS to the atmosphere. Place recovered ODS in cylinders meeting AHRI Guideline K suitable for the type ODS (filled to no more than 80 percent capacity) and provide appropriate labeling.

Recovered ODS shall be put back into the existing equipment. Products, equipment, and appliances containing ODS in a sealed, self-contained system (e.g., residential refrigerators and window air conditioners) shall be disposed of in accordance with 40 CFR 82. Submit Receipts or bills of lading, as specified.

3.3.5.1 Special Instructions

No more than one type of ODS is permitted in each container. A warning/hazardous label shall be applied to the containers in accordance with Department of Transportation regulations. All cylinders including but not limited to fire extinguishers, spheres, or canisters containing an ODS shall have a tag with the following information:

- a. Activity name and unit identification code.
- b. Activity point of contact and phone number.
- c. Type of ODS and pounds of ODS contained.
- d. Date of shipment
- e. National stock number (for information, call (804) 279-4525).

3.3.6 Unsalvageable and Non-Recyclable Material

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Dispose of unsalvageable and non-recyclable noncombustible material in the disposal area. Dispose of unsalvageable and non-recyclable combustible material in the sanitary fill area located near project location.

3.4 CLEANUP

Remove and transport the debris in a manner that prevents spillage on streets or adjacent areas. Apply local regulations regarding hauling and disposal.

3.5 DISPOSAL OF REMOVED MATERIALS

3.5.1 Regulation of Removed Materials

Dispose of debris, rubbish, scrap, and other non-salvageable materials resulting from removal operations with all applicable federal, state and local regulations as contractually specified.

3.5.2 Removal to Spoil Areas on Government Property

Transport noncombustible materials removed from demolition and deconstruction structures to designated spoil areas on Government property.

3.5.3 Removal from Government Property

Transport waste materials removed from demolished and deconstructed structures, except waste soil, from Government property for legal disposal. Dispose of waste soil as directed.

3.6 REUSE OF SALVAGED ITEMS

Recondition salvaged materials and equipment designated for reuse before installation. Replace items damaged during removal and salvage operations or restore them as necessary to usable condition.

End of Section

SECTION 05 52 00

HANDRAILS AND RAILINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Roof edge protection. (Safety Rail 2000)
- B. Non-penetrating railing system for roof edge fall protection. (Safety Rail 2000 Architectural Series)
- C. Collapsible guard rails. (Stealth Rail)
- D. Permanent warning line system. (Perma-Line)
- E. Leading edge fall protection. (ParaRail)
- F. Roof hatch/skylight systems. (SR2K)
- G. Grab bars. (Grab Bar)
- H. Self-closing safety gate. (Self-Closing Safety Gate)
- I. Modular railing system. (Kwik-Rail)
- J. Portable warning/barrier system. (Kwik-Stand)
- K. Portable guard rail system. (Versa-Clamp)
- L. Pipe fittings. (Kwik-Fit)
- M. Accessories. (Safety Strip, Roof Pads, RTC-2000 Cart, EZ Mover)

1.2 RELATED SECTIONS

- A. Section 07 52 00 – SBS Modified Bitumen Membrane

1.3 REFERENCES

- A. British Standards:
 - 1. BS 970 - Specification for wrought steels for mechanical and allied engineering purposes. General inspection and testing procedures and specific requirements for carbon, carbon manganese, alloy and stainless steels.
 - 2. BS EN 1562 - Founding. Malleable Cast Irons.
 - 3. BS 3100 - Specification for Steel Castings for General Engineering Purposes.
- B. California Occupational Safety & Health Administration (CAL OSHA):
 - 1. 1620 - Design of Temporary Railing.
 - 2. 1621 - Railings and Toe Boards.
 - 3. 1633 - Elevator Shafts to be Guarded.
 - 4. 3209 - Standard Guardrails.
 - 5. 3210 - Guardrails at Elevated Locations.
 - 6. 3211 - Wall Openings.
 - 7. 3212 - Floor Openings, Floor Holes and Roofs.
 - 8. 3213 - Service Pits and Yard Surface Openings.

9. 3214 - Stair Rails and Handrails.
- C. Occupational Safety & Health Administration (OSHA):
 1. 29 CFR 1910.23 - Guarding Floor and Wall Openings and Holes.
 2. 29 CFR 1910.27 - Fixed Ladders.
 3. 29 CFR 1926.500 - Scope, Application, And Definitions Applicable to this Subpart.
 4. 29 CFR 1926.501 - Duty to Have Fall Protection.
 5. 29 CFR 1926.502 - Fall Protection Systems Criteria and Practices.
 6. 29 CFR 1926.503 - Training Requirements.
 7. Warning Line Interpretations dated May 12, 2000, November 15, 2002, and January 3, 2005.
- 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.
 3. Installation methods.
 - C. Shop Drawings: Drawings showing plans, elevations, sections and details of components.
 - D. Selection Samples: For each finish product specified, two complete sets of colorchips representing manufacturer's full range of available colors and patterns.
 - E. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.
- 1.5 DELIVERY, STORAGE, AND HANDLING
- A. Deliver materials to the job site in good condition and adequately protected against damage as handrails are a finished product.
 - B. Inspect rail sections for damage before signing the receipt from the trucking company. Truck driver must note damaged goods on the bill of lading if damaged product is found.
 - C. Store products in manufacturer's unopened packaging until ready for installation.
- 1.6 PROJECT CONDITIONS
- A. Field Measurements: Where handrails and railings are indicated to fit to other construction, check actual dimensions of other construction by accurate field measurements before fabrication.
- 1.7 WARRANTY
- A. Warranty: Provide manufacture's two (2) year warranty.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: BlueWater Mfg., Inc., which is located at: 4064 Peavey Rd.; Chaska, MN 55318; Toll Free Tel: 866-933-2935; Tel: 952-448-2935; Fax: 952-448-3685; Email: [request info \(info@bluewater-mfg.com\)](mailto:info@bluewater-mfg.com); Web: www.bluewater-mfg.com
- B. Substitutions: Not permitted.

- C. Requests for substitutions will be considered in accordance with provisions of Section 016000 - Product Requirements.

2.2 SYSTEMS

- A. SafetyRail 2000 Roof Edge Protection: Provide non-penetrating guardrail system.
1. Approved Product: SafetyRail 2000.
 2. Standards: System shall have top and mid rail in accordance with OSHA Standards - 29 CFR 1910.23 (a)(2).
 3. Structural Load: 200 lb (90.7 kg), minimum, in any direction to all components in accordance with OSHA Regulation 29 CFR 1926.502.
 4. Height: 42 inches (1067 mm), minimum.
 5. Railings: 1-5/8 inch (41 mm) O.D. hot rolled pickled electric weld tubing, free of sharp edges and snag points.
 6. Mounting Bases: Class 30 gray iron material cast with four receiver posts. Provide rubber pads on bottom of bases.
 7. Receiver Posts: Shall have a positive locking system into slots that allow rails to be mounted in any direction. Friction locking systems are not allowed. Receiver posts shall have drain holes.
 8. Accessories:
 - a. Toe Board Brackets: Provide brackets and friction knobs as manufactured by BlueWater Mfg. Inc.
 - b. Step-Rail: Variable height railing enables a continuous run of SafetyRail 2000 when the roof steps up or down.
 - c. Raised Mid-Rail: Railing to fit over duct work for continuous run of SafetyRail 2000.
 - d. LP Outrigger: Supports placed under ducting or conduit to continue run of SafetyRail 2000 when rail section cannot be used.
 - e. SG2000: Sliding gate.
 - f. Finishing Rail: D-shaped railing extension for ladder landings, length of rail section and D-loop as indicated on the Drawings.
 9. Hardware: Securing pins shall be 1010 carbon steel, zinc plated and yellow chromate dipped. Pins shall consist of collared pin and lanyard that connects to lynch pin.
- B. Architectural Series Roof Edge Protection Non-Penetrating Railing System for Roof Edge Fall Protection: Provide metal handrail system consisting of a top rail, mid rail and base. Stanchions shall be capable of mounting in any direction.
1. Approved Product: Safety Rail 2000 Architectural Series Guardrail System.
 2. Standards: System shall meet and exceed OSHA Standards - 29 CFR 1926.502 (b) and 1910.23 (e).
 3. Height: 42 inches (1067 mm), minimum.
 4. Railings and Stanchions: 1-1/4 inch pipe (1.66 inch (42 mm) OD).
 - a. Curved upright.
 - b. Inclined upright.
 - c. Straight upright.
 5. Free Standing Base: Class 30 gray cast iron.
 6. Hardware: 1010 carbon steel securing pins, zinc plated and yellow chromate dipped.
 7. Finish for Rails: Hot dipped galvanized.
 8. Finish for Rails: Powder coat paint over hot dipped galvanized steel.
 9. Finish for Bases: Hot dipped galvanized.
 10. Finish for Bases: Powder coat paint.
- C. Collapsible Guard Rails: Provide collapsible portable guard rail section with one-way pivot assembly that allows guardrail to fold down to horizontal surface for clean sightlines; requires no penetrations in substrates for installation. Rails shall be compatible with SafetyRail 2000 Guardrail System.
1. Approved Product: Stealth Rail.

2. Standards: Guard rail system shall meet or exceed OSHA (Standards - 29 CFR) 1926.501 and 1926.502.
 3. Hardware: Detent pin on each pivot assembly shall lock rail in upright position.
- D. Permanent Warning Line System: Provide non-penetrating, permanent, highly visible warning line system for roof edge fall protection. System shall not be used as a motion stopping device.
1. Approved Product: Perma-Line.
 2. Standards: Warning line system shall meet or exceed the requirements in OSHA Standards - 29 CFR 1926.502(f)(2).
- E. ParaRail Leading Edge Fall Protection: Provide non-penetrating, self-supporting leading edge roof top safety and fall protection system that allows full access to leading edge of flat roof or parapet.
1. Approved Product: ParaRail.
 2. Standards: System shall meet or exceed the requirements in OSHA Standards - 29 CFR 1910.23 and 1926.502.
 3. Size: Custom, as indicated on Drawings.
- F. SafetyRail Roof Hatch/Skylight Systems: Provide non-penetrating railing system with top rail, mid rail, and OSHA approved swinging gate, with the hatch curb acting as toe plate. System shall be capable of being dismantled for roof repair.
1. Approved Product: SR2K.
 2. Standards: System shall meet or exceed the requirements in OSHA Standards - 29 CFR 1910.23, including 1910.23 (a)(3)(i); 1910.27.
 3. Structural Load: 200 lb (90.7 kg), minimum, in any direction to all components in accordance with OSHA Regulation 29 CFR 1910.23 (e) (3) (iv).
 4. Height: 42 inches (1067 mm), minimum.
 5. Width: As indicated on Drawings.
 6. Side Rail Length: As indicated on Drawings.
 7. Railings: 1-5/8 inch (41 mm) O.D. hot rolled pickled electric weld tubing, free of sharp edges and snag points.
 8. Mounting Bases: Class 30 gray iron material cast with four receiver posts. Provide rubber pads on bottom of bases.
 9. Receiver Posts: Shall have a positive locking system into slots that allow rails to be mounted in any direction. Friction locking systems are not allowed. Receiver posts shall have drain holes.
 10. Railing Hardware: Securing pins shall be 1010 carbon steel, zinc plated and yellow chromate dipped. Pins shall consist of collared pin and lanyard that connects to a lynch pin.
 11. Gate Hardware: Bolts and washers shall be 3/8 inch by 3-1/2 inch (9.5 mm by 89 mm) and 3/8 inch by 3 inch (9.5 mm by 76 mm) grade 5, zinc plated.
 12. Installation: Locate within 6 inches of open roof hatch or roof opening.
- G. Grab Bar Aids in Easy Egress/Ingress of a Roof Hatch: Width of bars shall adjust to ladder width inside hatch.
1. Approved Product: Grab Bar.
 2. Mount Pad: Adjustable; shall enable bars to be used with curbs or on uneven surfaces.
 3. Hardware: Bars lock into place with securing pin and friction collar.
- H. Self-Closing Safety Gate: Fully assembled gate shall be capable of swinging in either direction by inverting installation position. Gate size shall be laterally adjusted from minus 1-1/4 inch (32 mm) to plus 2-1/2 inch (64 mm).
1. Approved Product: Self-Closing Safety Gate.
 2. Standards: System shall have top and mid rail in accordance with OSHA Standards - 29 CFR 1910.23 (a)(2).

3. Width: As indicated on Drawings.
 4. Height:
 - a. Top Rail: 42 inches (1067 mm), minimum.
 - b. Bottom Rail: 21 inches (533 mm).
 5. Hardware: Provide the following:
 - a. Gate Hardware: U-Bolts.
 - b. Universal Hinge Assembly: Fits railing types up to 2 inches (51 mm) O.D. or flat surface mounting.
 - c. Railing adapter kit.
 - d. Self-Closing Springs: Two stainless steel torsion springs.
 6. Material: Mild steel, powder coated.
 7. Material: Mild steel, hot-dip galvanized.
 8. Material: Mild steel, hot-dip galvanized with powder-coated finish.
 9. Material: Stainless steel.
- I. Modular Railing System: Provide metal handrail system utilizing handrail brackets, handrail fittings and hex key for assembly.
1. Approved Product: Kwik-Rail; provide the following kit:
 - a. Kit: 6 Foot Rail Only; Part No. 500136.XX.
 - b. Kit: 12 Foot Straight Run; Part No. 500137.XX.
 - c. Kit: 6 ft. by 6 ft. Corner Section; Part No. 500138.XX.
 - d. Kit: 6 Foot Extension; Part No. 500139.XX.
 - e. Kit: 6 Foot 90 Degree Extension; Part No. 500140.XX.
 2. Standards: System shall have top and mid rail in accordance with OSHA Standards - 29 CFR 1910.23 (a)(2).
 3. Height: 42 inches (1067 mm), minimum.
 4. Railings: 1-1/2 inch pipe (1.90 inch (48 mm) OD).
 5. Railings: 1-1/4 inch pipe (1.66 inch (42 mm) OD).
 6. Gate: Custom, as indicated on Drawings.
 7. Hardware: Anchor bolts.
 8. Material: Mild steel, powder coated.
 9. Material: Mild steel, hot-dip galvanized.
 10. Material: Mild steel, hot-dip galvanized with powder-coated finish.
 11. Material: Aluminum.
- J. Portable Warning/Barrier System: Provide self-contained, hand carried visual warning system with spindle mount and handle for transporting and hoisting.
1. Approved Product: Kwik-Stand.
 2. Standards: System shall meet or exceed the requirements in OSHA Standards - 29 CFR 1926.502 (f).
 3. Height: 39 inches (991 mm) tall.
 4. Area, Foot Print: 39 inches by 32 inches (991 mm by 813 mm) in use.
 5. Weight: 34 lbs. (15.4 kg), each stand.
 6. Support Bars: Hole at each end for accessories.
 7. Accessories:
 - a. Extender Feet: For metal roofs.
 - b. Stakes: For gravel or asphalt roofs.
 - c. Rubber Pads: For feet of stands.
 8. Flags: Bright yellow; OSHA rated.
 9. Hardware: Securing pin attached to stanchion with lanyard.
- K. Portable Guard Rail System: Provide C-clamp locking guard rail system with off-set compression plates and compression rods.
1. Approved Product: Versa-Clamp.
 2. Height: Adjustable, to comply with OSHA guardrail heights.
 3. Clamps: Expand from 1 inch (25 mm) to 12 inches (305 mm).
 4. Accessories:

- a. Toe Board Brackets: Provide brackets and friction knobs as manufactured by BlueWater Mfg. Inc. for deck applications.
- b. Adaptors: As manufactured by BlueWater Mfg. Inc., for permanent placement of Versa-Clamp.

2.3 FITTINGS

A. Pipe Fittings:

1. Approved Product: Kwik-Fit.
2. Type: Provide fittings required for a complete operational system that meets OSHA requirements.
3. Type: Provide the following:
 - a. Series 1047 - 90 Degree Elbow.
 - b. Series 1048 - Short Tee.
 - c. Series 1049 - Long Tee.
 - d. Series 1050 - Railing Base Flange.
 - e. Series 1051 - 3-Way Blind Corner.
 - f. Series 1052 - 3 Way Open Corner
 - g. Series 1053 - Short Cross.
 - h. Series 1054 - Straight Sleeve.
 - i. Series 1055 - Expanding Connector.
 - j. Series 1056 - Internal Swivel Tee.
 - k. Series 1057 - Swivel Base.
 - l. Series 1058 - Base Flange.
 - m. Series 1060 - Wall Flange.
 - n. Series 1061 - Rail Bracket.
 - o. Series 1062 - Side Outlet Tee.
 - p. Series 1063 - 4 Way with Center Pipe.
 - q. Series 1064 - Short Tee Swivel.
 - r. Series 1065 - Adjustable 2 Socket Cross.
 - s. Series 1067 - Variable Angle Tee.
 - t. Series 1068 - Collar.
 - u. Series 1069 - Gate Eye.
 - v. Series 1070 - Gate Hinge.
 - w. Series 1071 - Hook.
 - x. Series 1072 - Fixing Pad.
 - y. Series 1073 - Single Male Swivel.
 - z. Series 1074 - Single Female Swivel.
 - aa. Series 1075 - Alternate Male Swivel.
 - bb. Series 1076 - Double Male Swivel.
 - cc. Series 1077 - 90 Degree Corner Male Swivel.
 - dd. Series 1078 - Cross Over.
 - ee. Series 1079 - Clamp On Tee.
 - ff. Series 1080 - Single Swivel Kit.
 - gg. Series 1081 - Base Swivel Kit.
 - hh. Series 1082 - Double Swivel Kit.
 - ii. Series 1083 - 90 Degree Corner.
 - jj. Series 1084 - Spare Screws.
 - kk. Series 1085 - End Cap.
 - ll. Series 1086 - Extended Straight Sleeve.
4. Material, Structural Pipe Fittings: Malleable iron, in accordance with BS EN 1562.
5. Material, Fitting Types 26, 27 and 90: Weldable cast steel, in accordance with BS 3100.
6. Finish: Pipe fittings shall be galvanized in accordance with BS EN ISO 1461.
7. Fitting, Inside Diameter:
 - a. 1.73 inch (44 mm).
 - b. 1.97 inch (50mm).

8. Hardware: Stainless steel set screws, in accordance with BS 970 Grade 420. Each set screw shall support axial load of 900 kg when tightened to torque of 40Nm.

2.4 ACCESSORIES

- A. Safety/Caution Signage: Cushioned foam strip with self adhesive backing; UL- rated for indoor/outdoor use.
 1. Approved Product: Safety Strip.
 2. Thickness: 3/8 inch (9.5 mm).
 3. Length: 36 inches (914 mm).
 4. Width: 2 inches (51 mm).
 5. Width: 4 inches (102 mm).
 6. Color: Safety yellow.
 7. Color: Safety yellow with black stripes.
- B. Roof Pads: Provide the following pad under each base to protect roof membrane.
 1. Approved Product: BUR Pad.
 2. Approved Product: SBS Roof Pad.
- C. Rolling Storage Cart: Provide four-wheeled cart for storage and movement of SafetyRail 2000 components.
 1. Approved Product: RTC-2000.
 2. Capacity: 120 lineal feet (36.6 m) of various size railings (70 feet (21 m) usable); 12 individual rail sections.
 3. Lockable Storage Box: For storage of toe board brackets and securing pins.
 4. Lifting Rings: For hoisting to elevated areas.
- D. Base Mover: Provide two-wheeled steel cart to transport one base unit.
 1. Approved Product: EZ Mover.

2.5 FINISHES

- A. Finish: Factory finished powder coat paint.
- B. Finish: Hot dipped galvanized.
- C. Color: Safety yellow.
- D. Color: Match Architect's sample.

2.6 FABRICATION

- A. Assemble components with joints tightly fitted and secured. Accurately form components to suit installation.

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. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

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 06 10 00
ROUGH CARPENTRY

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Structural and nonstructural wall, floor, and roof framing.
 - 2. Roof curbs and cants.
 - 3. Blocking, nailers, and shims.
 - 4. Wood furring.
 - 5. Preservative treatment of wood.
- B. Related Sections
 - 1. Section 01 33 00 – Submittal Procedures

1.2 REFERENCES

- A. AITC - American Institute of Timber Construction.
- B. ALSC - Softwood Lumber Standards PS 20-2021.
- C. ANSI/AF&PA NDS 2021 - National Design Specification for Wood Construction.
- D. ASTM F1667-2021 - Driven Fasteners: Nails, Spikes, and Staples.
- E. AWPA C1-2021 - Preservative Treatment by Pressure Process.
- F. AWPA C20-2021 - Structural Lumber Fire-Retardant Treatment by Pressure Process.
- G. AWPA UI-2021 - User Specification for Treated Wood.
- H. FSC STD-01-001-2021 - Principles and Criteria for Forest Stewardship.
- I. 40 CFR, Part 59, Subpart D-[Date] - National Volatile Organic Compound Emission Standards for Architectural Coatings.

1.3 SUBMITTALS

- A. Submit in accordance with Section 01 33 00 and 01 33 23.
- B. Product Data
 - 1. Product data for products and materials indicated.
 - 2. Manufacturer's technical bulletins and installation/application instructions.
 - 3. Material Safety Data Sheets (MSDS).
 - 4. Products
 - a. Wood preservatives.
 - b. Proprietary connection devices.
 - 5. For composite-wood products, include documentation indicating that product contains no urea formaldehyde.

6. Chain-of-custody (COC) certificates certifying that products specified to be made from certified wood comply with forest certification requirements. Include evidence that vendor that invoices FSC-certified wood products to project contractors and sub-contractors is certified for chain of custody by an FSC-accredited certification body. Include copy of vendor invoice identifying all wood products and all FSC products on a line-item basis, the value of each line item, and the vendor's COC number.
7. For paints and coatings, include printed statement of VOC content (in g/L).

1.4 COORDINATION

- A. Coordinate the design, construction, and installation of rough carpentry with the requirements of the Work of other Sections

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Handle, stack, and store lumber off the ground in such a manner that it will be protected from damage and prevented from absorbing moisture. Protect with waterproof covering that provides adequate air circulation. Secure covering to prevent blow-off and prevent damage.
- B. Do not store seasoned materials in wet or damp locations.
- C. Protect fire-retardant materials against high humidity and moisture during storage and erection.
- D. Deliver fasteners in bags or boxes, properly tagged for identification.
- E. Store fasteners and attachment devices off the ground in a dry location, protected from dirt, damage, and the elements.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Forest Certification: Provide members produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001.
- B. Lumber: Douglas Fir; S4S; WCLIB grade marked or by an agency certified by WCLIB; each mill shipment shall be accompanied by a WCLIB certificate of inspection.; size shall be in accordance with PS 20; free of boxed heart; maximum 19 percent moisture content at time of installation; of the following minimum grades.
 1. Studs: No. 1 Grade.
 2. Structural Joists and Planks (2 to 4 inches thick x 5 inches and wider): No. 1 Grade.
 3. Beams and Stringer, Posts and Timbers (5 x 5 inches and larger): Select Structural Grade.
 4. Miscellaneous Light Framing (2 to 4 inches thick x 2 to 4 inches wide): Construction Grade.
 5. Blocking: No. 2 Grade.
 6. Grounds: Straight and free from loose knots and knot holes.
 7. Load Carrying Members: Minimum of No. 2 Grade.

- C. Each piece of fire-retardant lumber shall be labeled to show compliance with the UL requirement specified and shall be grade stamped with the applicable AWP quality mark indicating the preservative and retention.

2.2 FASTENERS

- A. Provide all nails, screws, bolts, washers, lag screws, joist hangers, tie straps, clips, and similar items as required to the complete Work.
- B. Nails: Use types and sizes as indicated, and in accordance with CBC Chapter 23 - Nailing Schedule, except sizes shall not be smaller than indicated.
- C. Powder Actuated Fasteners
 - 1. Types and Sizes: As indicated or appropriate for the Work required and materials involved.
 - 2. Uses: Limited to those indicated, specified, or approved by Facility Representative.
- D. Anchors
 - 1. Toggle bolt type for anchorage to hollow masonry.
 - 2. Expansion shield and lag bolt type for anchorage to solid masonry or concrete.
 - 3. For fastenings secured to hardened concrete or masonry, inserts and sleeves shall be metal only.
 - 4. Bolt or ballistic fastener for anchorages to steel.
- E. Fastener Finishes
 - 1. Fasteners in contact with pressure treated products shall be hot-dipped galvanized.
 - 2. Fasteners exposed to moisture, high humidity, or to the exterior shall be hot-dipped galvanized or cadmium-plated, unless otherwise indicated or specified.
 - 3. Nails and screws shall be corrosion resistant for exterior or damp areas.
 - 4. Finish nails and screws shall be bright finished for other interior Work.
 - 5. Machine bolts and washers shall be corrosion resistant.
- F. Adhesives: Epoxy for structural bonding rough carpentry.
 - 1. [For Credit EQ 4.1] VOC Content for Multipurpose Construction Adhesives: **70 g/L** or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - 2. Manufacturers
 - a. BASF Construction Chemicals; "Sonneborn 400".
 - b. OSI Pro-Series; SF-565 VOC Compliant Sub-Floor Adhesive.
 - c. Or Approved Equal.

2.3 WOOD TREATMENTS

- A. Wood shall be treated with appropriate fire retardant or preservative as necessary in accordance with exposure, wood species, and applicable codes.
- B. VOC Content of Interior Paints and Coatings: Provide products that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 - 1. Fire-Retardant Coatings: VOC content for coating category for which coating is formulated.

2. Wood Preservatives: 350 g/L.
 3. Flat Paints, Coatings, and Primers: VOC content of not more than 50 g/L.
 4. Non-Flat Paints, Coatings, and Primers: VOC content of not more than 150 g/L.
 5. Floor Coatings: VOC not more than 100 g/L.
 6. Shellacs, Clear: VOC not more than 730 g/L.
 7. Shellacs, Pigmented: VOC not more than 550 g/L.
 8. Primers, Sealers, and Undercoaters: VOC content of not more than 200 g/L.
 9. Clear Wood Finishes, Varnishes: VOC content of not more than 350 g/L.
 10. Clear Wood Finishes, Lacquers: VOC not more than 550 g/L.
 11. Stains: VOC not more than 250 g/L.
- C. Chemical Components of Field-Applied Interior Paints and Coatings: Provide products that comply with the following chemical restrictions:
1. Aromatic Compounds: Paints and coatings shall not contain more than 1.0 percent by weight of total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
 2. Restricted Components: Paints and coatings shall not contain any of the following:
 - a. Acrolein.
 - b. Acrylonitrile.
 - c. Antimony.
 - d. Benzene.
 - e. Butyl benzyl phthalate.
 - f. Cadmium.
 - g. Di (2-ethylhexyl) phthalate.
 - h. Di-n-butyl phthalate.
 - i. Di-n-octyl phthalate.
 - j. 1,2-dichlorobenzene.
 - k. Diethyl phthalate.
 - l. Dimethyl phthalate.
 - m. Ethylbenzene.
 - n. Formaldehyde.
 - o. Hexavalent chromium.
 - p. Isophorone.
 - q. Lead.
 - r. Mercury.
 - s. Methyl ethyl ketone.
 - t. Methyl isobutyl ketone.
 - u. Methylene chloride.
 - v. Naphthalene.
 - w. Toluene (methylbenzene).
 - x. 1,1,1-trichloroethane.
 - y. Vinyl chloride.
- D. Where used for exposed locations, treatment materials shall be types guaranteed to not adversely affect durability and appearance of applied finishes.
- E. Treatment materials having a highly persistent, noticeable residual odor will not be permitted.
- F. After treatment, kiln or air dry lumber and plywood to a moisture content of 19 percent or less.

G. Pressure Treatment

1. Items requiring pressure treatment
 - a. Wood used in conjunction with roofing, flashing, vapor barriers, and waterproofing.
 - b. Wood in contact with masonry or concrete.
 - c. Wood subject to insect attack.
 - d. Wood in contact with ground or water.
 - e. Additional locations required by codes, the Facility, or accepted standard construction practice.
2. Pressure treat items after fabrication where possible. Use surface applied treatment for items cut after pressure treatment.
3. Do not mill or trim pressure treated items beyond limits recommended by treatment manufacturer.
4. Surface-Applied Wood Preservative (Type A)
 - a. Nonaqueous solution containing not less than 5 percent pentachlorophenol, commercially prepared and formulated to repel water and inhibit decay.
 - b. Suitable for application by either brush or dip methods.
 - c. Integral coloring to allow visual inspection of treated members.
5. Pressure-Treated Wood Preservative (Type B)
 - a. Required for lumber and plywood where indicated or specified and not otherwise required to be fire-retardant pressure treated (Type C).
 - b. Provide for lumber and plywood in contact with concrete, masonry, or grout.
 - c. Concealed Locations: Any process acceptable in accordance with AWWA Standard C1 and meeting specified requirements.
 - d. Exposed Locations: Treated members shall be milled smooth within limits permitted by process manufacturer.

H. Fire-retardant Treatment

1. Items requiring Fire-retardant treatment
 - a. Wood used in Type I and II buildings.
 - b. Exposed wood.
 - c. Wood used in fire-rated assemblies.
 - d. Wood requiring reduced flame/fuel/smoke ratings.
 - e. Communications Backboards.
 - f. Electrical mounting boards.
 - g. Additional locations required by codes, the Facility, or accepted standard construction practice.
2. Fire-Retardant Pressure Treatment (Type C)
 - a. Processes shall meet requirements of CBC Part 2, Section 202, definition entitled "Fire-Retardant-Treated Wood," and requirements specified herein.
 - b. UL listed and labeled in accordance with UL BMD Section "Lumber, Treated (BPVV)."
 - c. Treated lumber shall be UL classified FR-S.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that field conditions are acceptable and are ready for installation of rough carpentry. Notify the Facility Representative, in writing, of any conditions requiring corrective action.

- B. If unsatisfactory conditions exist, do not commence the installation until such conditions have been corrected. Beginning of installation means acceptance of existing conditions.

3.2 NAILING

- A. Predrill undersize holes as necessary to prevent splitting.
- B. Drive nails straight and free from bends.
- C. At multiple or grouped nailing, set alternate nails at slightly different angles to improve strength.
- D. For trim or similar members, side-stagger alternate nails to prevent warp and twist.
- E. Where concealed, set nail heads flush to avoid interference with installation of materials to be applied next.
- F. Where exposed, set nail heads recessed for proper putty stopping.

3.3 FRAMING

- A. Construct and secure rough carpentry as indicated.
- B. Construction details, connections, and fastenings not otherwise indicated shall be in accordance with the requirements of CBC.
- C. Provide solid backing and blocking as indicated and required.
- D. Set members level and plumb, in correct position.
- E. Place horizontal members with crown side up.
- F. Cut and prepare ends and surfaces to effect full bearing, and as otherwise necessary for proper fit.
- G. Cut notches without overcutting inside corners.
- H. Plates and sills on concrete or masonry: Bed plates and sills of exterior walls in Portland cement mortar to obtain continuous level bearing; bolt down after mortar sets. Bed plates for interior partitions when indicated or necessary for level bearing.
- I. Studs: Space as indicated; frame corners with not less than three studs. Set on single sole plate, cap with double top plate lapped at corners, lapped no less than 4 feet at splices.
- J. Posts, Girders, and Beams: Frame to true end bearings; provide supports and anchors of such design to hold securely in position and prevent base deterioration. Splice girders and beams only over bearings.
- K. Curb Members
 - 1. Curb roof openings, except where prefabricated curbs are provided.
 - 2. Construct curb members of single pieces.
 - 3. Form corners by alternating lapping side members.
 - 4. Coordinate curb installation with other Sections whose Work affects or is affected by the Work of this Section.

3.4 BACKBOARDS

- A. Install telephone and electrical panel backboards.
- B. Size backboards as indicated; where not indicated, over-size the backboards by 12 inches on all sides.
- C. Sand to leave paintable surface.

3.5 FIELD-APPLIED WOOD TREATMENT

- A. Surface Applied Preservative (Type A)
 - 1. Treat members after cutting, shaping, and bolting.
 - 2. Application
 - a. Apply in accordance with manufacturer's instructions.
 - b. Dip members for 15-minutes, or saturate by brushing on two complete coats at 10-minute intervals.
 - c. Air-dry two hours before setting treated members into place.
- B. Fire-Retardant Pressure Treatment (Type C)
 - 1. After cutting, shaping, and boring, retreat surfaces using materials and methods in accordance with manufacturer's instructions.

3.6 TESTING AND INSPECTION

- A. Testing and inspection shall be in accordance with CBC Section 1704A.6.
- B. Facility Representative will provide the following inspections:
 - 1. Inspect wood structural elements and assemblies to ensure conformance with the Contract Documents.
 - 2. Inspect timber connectors to ensure conformance with the Contract Documents.

3.7 DEFECTIVE WORK

- A. When complete, rough carpentry shall be free from unnecessary cuts, holes, and other damage and defects.
- B. Rough carpentry not conforming to required lines, details, dimensions, tolerances, finishes, strength, or other specified requirements shall be considered defective. Notify the Facility Representative upon discovery of these conditions.
- C. Required repair or replacement of defective rough carpentry will be determined by the Facility Representative.
- D. Do not patch, fill, touch-up, repair, or replace rough carpentry except upon express direction of Facility Representative for each individual area.
- E. Defective rough carpentry shall be repaired or replaced as recommended by the Facility Representative at no additional expense to the Facility.

3.8 PROTECTION

- A. Protect rough carpentry from damage from subsequent construction operations.

END OF SECTION

06 10 00 - 7

SECTION 06 16 00

SHEATHING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Wall and roof sheathing.
- B. Related Sections
 - 1. Section 06 10 00 - Rough Carpentry.

1.2 REFERENCES

- A. ANSI/AF&PA NDS - National Design Specification for Wood Construction.
- B. ASTM C557 - Adhesives for Fastening Gypsum Wallboard to Wood Framing.
- C. ASTM D3498 - Adhesives for Field-Gluing Plywood to Lumber Framing for Floor Systems.
- D. ASTM F1667 - Driven Fasteners: Nails, Spikes, and Staples.
- E. AWPA C9 - Plywood Preservative Treatment by Pressure Process.
- F. DOC PS-1 - US Product Standard for Construction and Industrial Plywood.
- G. FSC STD-01-001 - Principles and Criteria for Forest Stewardship.
- H. 40 CFR, Part 59, Subpart D-2010 - National Volatile Organic Compound Emission Standards for Architectural Coatings.

1.3 SUBMITTALS

- A. Submit in accordance with Section 01 33 00 and 01 33 23.
- B. Product Data
 - 1. Product data for products and materials indicated.
 - 2. Manufacturer's technical bulletins and installation/application instructions.
 - 3. Material Safety Data Sheets (MSDS).
 - 4. Products
 - a. Wood preservatives.
 - b. Proprietary connection devices.

1.4 COORDINATION

- A. Coordinate the design, construction, and installation of sheathing with the requirements of the Work of other Sections

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Handle, stack, and store sheathing off the ground in such a manner that it will be protected from damage and prevented from absorbing moisture. Protect with waterproof covering that provides adequate air circulation. Secure covering to prevent blow-off and prevent damage.
- B. Do not store seasoned materials in wet or damp locations.
- C. Protect fire-retardant materials against high humidity and moisture during storage and erection.
- D. Protect sheathing against damage to edge, corner, and surfaces while unloading handling.
- E. Store sheathing in an enclosed area or protect as specified for lumber.
- F. Deliver fasteners in bags or boxes, properly tagged for identification.
- G. Store attachment devices off the ground in a dry location, protected from dirt, damage, and the elements.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Forest Certification: Provide sheathing produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001.
- B. Plywood: Softwood plywood; DOC PS-1; grade stamped in accordance with APA Guide to Plywood Grades or other approved testing agency, and with the requirements of PS 1; 4 x 8-foot panel size unless otherwise indicated.
 - 1. Concealed Sheathing: C/D - INT with exterior glue.
 - 2. Concealed Structural Components: Structural I C/D - INT with exterior glue.
 - 3. Telephone and Electric Terminal Boards: B/D - INT; 3/4-inch thick, square edges; fire-retardant pressure treated.

- C. Each piece of fire-retardant sheathing shall be labeled to show compliance with the UL requirement specified and shall be grade stamped with the applicable AWWA quality mark indicating the preservative and retention.

2.2 FASTENERS

- A. Furnish all nails, screws, bolts, washers, lag screws, tie straps, clips, and similar items as required to complete Work.
- B. Nails: Use types and sizes as indicated, and in accordance with CBC Chapter 23 - Nailing Schedule, except sizes shall not be smaller than indicated.
- C. Powder-Actuated Fasteners
 - 1. Types and Sizes: As indicated or appropriate for the Work required and materials involved.
 - 2. Uses: Limited to those indicated, specified, or approved by the Facility Representative.
- D. Anchors
 - 1. [Toggle bolt type for anchorage to hollow masonry.]
 - 2. [Expansion shield and lag bolt type for anchorage to solid masonry or concrete.]
 - 3. [For fastenings secured to hardened concrete or masonry, inserts and sleeves shall be metal only.]
 - 4. [Bolt or ballistic fastener for anchorages to steel.]
- E. Fastener Finishes
 - 1. Fasteners in contact with pressure treated products shall be hot-dipped galvanized.
 - 2. Fasteners exposed to moisture, high humidity or to the exterior shall be hot-dipped galvanized or cadmium-plated, unless otherwise indicated or specified.
 - 3. Nails and screws shall be corrosion resistant for exterior or damp areas.
 - 4. Finish nails and screws shall be bright finished for other interior Work.
 - 5. Machine bolts and washers shall be corrosion resistant.
- F. Adhesives: ASTM C557.
 - 1. Epoxy for structural bonding rough carpentry.
 - 2. [For Credit EQ 4.1] VOC Content for Field Gluing Panels to Framing: Formulation complying with [APA AFG-01] [ASTM D3498] that is approved for use with type of construction panel indicated by manufacturers of both adhesives and panels.
 - a. Use adhesives that have a VOC content of **70** g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - 3. Manufacturers
 - a. BASF Construction Chemicals; "Sonneborn 400".
 - b. OSI Pro-Series; SF-565 VOC Compliant Sub-Floor Adhesive.

2.3 WOOD TREATMENTS

- A. Wood shall be treated with appropriate fire retardant or preservative as necessary in accordance with exposure, wood species, and applicable codes.

- B. VOC Content of Interior Paints and Coatings: Provide products that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
1. Fire-Retardant Coatings: VOC content for coating category for which coating is formulated.
 2. Wood Preservatives: 350 g/L.
 3. Flat Paints, Coatings, and Primers: VOC content of not more than 50 g/L.
 4. Non-Flat Paints, Coatings, and Primers: VOC content of not more than 150 g/L.
 5. Floor Coatings: VOC not more than 100 g/L.
 6. Shellacs, Clear: VOC not more than 730 g/L.
 7. Shellacs, Pigmented: VOC not more than 550 g/L.
 8. Primers, Sealers, and Undercoaters: VOC content of not more than 200 g/L.
 9. Clear Wood Finishes, Varnishes: VOC content of not more than 350 g/L.
 10. Clear Wood Finishes, Lacquers: VOC not more than 550 g/L.
 11. Stains: VOC not more than 250 g/L.
- C. Chemical Components of Field-Applied Interior Paints and Coatings: Provide products that comply with the following chemical restrictions:
1. Aromatic Compounds: Paints and coatings shall not contain more than 1.0 percent by weight of total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
 2. Restricted Components: Paints and coatings shall not contain any of the following:
 - a. Acrolein.
 - b. Acrylonitrile.
 - c. Antimony.
 - d. Benzene.
 - e. Butyl benzyl phthalate.
 - f. Cadmium.
 - g. Di (2-ethylhexyl) phthalate.
 - h. Di-n-butyl phthalate.
 - i. Di-n-octyl phthalate.
 - j. 1,2-dichlorobenzene.
 - k. Diethyl phthalate.
 - l. Dimethyl phthalate.
 - m. Ethylbenzene.
 - n. Formaldehyde.
 - o. Hexavalent chromium.
 - p. Isophorone.
 - q. Lead.
 - r. Mercury.
 - s. Methyl ethyl ketone.
 - t. Methyl isobutyl ketone.
 - u. Methylene chloride.
 - v. Naphthalene.
 - w. Toluene (methylbenzene).
 - x. 1,1,1-trichloroethane.
 - y. Vinyl chloride.
- D. Where used for exposed locations, treatment materials shall be types guaranteed to not adversely affect durability and appearance of applied finishes.

- E. Treatment materials having a highly persistent, noticeable residual odor will not be permitted.
- F. After treatment, kiln or air-dry lumber and plywood to a moisture content of 19 percent or less.
- G. Pressure Treatment: AWWA C9.
 - 1. Items requiring pressure treatment
 - a. Wood used in conjunction with roofing, flashing, vapor barriers, and waterproofing.
 - b. Wood in contact with masonry or concrete.
 - c. Wood subject to insect attack.
 - d. Wood in contact with ground or water.
 - e. Additional locations required by codes, the Facility, or accepted standard construction practice.
 - 2. Pressure treat items after fabrication where possible. Use surface applied treatment for items cut after pressure treatment.
 - 3. Do not mill or trim pressure treated items beyond limits recommended by treatment manufacturer.
 - 4. Surface-Applied Wood Preservative (Type A)
 - a. Nonaqueous solution containing not less than 5 percent pentachlorophenol, commercially prepared and formulated to repel water and inhibit decay.
 - b. Suitable for application by either brush or dip methods.
 - c. Integral coloring to allow visual inspection of treated members.
 - 5. Pressure-Treated Wood Preservative (Type B)
 - a. Required for sheathing where indicated or specified and not otherwise required to be fire-retardant pressure treated (Type C).
 - b. Provide for sheathing in contact with concrete, masonry, or grout.
 - c. Concealed Locations: Any process acceptable in accordance with AWWA Standard C1 and meeting specified requirements.
 - d. Exposed Locations: Treated sheathing shall be milled smooth within limits permitted by process manufacturer.
 - 6. Treated sheathing shall be UL Classified FR-S or shall have equivalent flame-spread and smoke-developed values.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that field conditions are acceptable and are ready for the installation of sheathing. Notify the Facility Representative, in writing, of any conditions requiring corrective action.
- B. If unsatisfactory conditions exist, do not commence the installation until such conditions have been corrected. Beginning of installation means acceptance of existing conditions.
- C. Drive nails straight and free from bends.

3.2 INSTALLATION

- A. Construct and secure sheathing as indicated.
- B. Make provision for erection loads, and for sufficient temporary bracing to maintain structure safe, plumb, and in true alignment until completion of erection and installation of permanent bracing.
- C. Construction details, connections, and fastenings not otherwise indicated shall be in accordance with the requirements of CBC 2022.
- D. Drive nails straight and free from bends. Do not overdrive.
- E. Provide solid backing and blocking as indicated and required.
- F. Cut notches without overcutting inside corners.
- G. Install sheathing perpendicular to framing members, with ends staggered, over firm bearing.
- H. Allow expansion space at edges and ends.
- I. Attach sheathing with 16d nails.
- J. Use sheathing clips at unsupported edges of sheathing between supporting framing members.

3.3 FIELD-APPLIED WOOD TREATMENT

- A. Surface Applied Preservative (Type A)
 - 1. Treat members after cutting, shaping, and bolting.
 - 2. Application
 - a. Apply in accordance with the manufacturer's instructions.
 - b. Dip members for 15 minutes or saturate by brushing on two complete coats at 10 minute intervals.
 - c. Air-dry two hours before setting treated members into place.

3.4 TOLERANCES

- A. Surface Flatness of Sheathing Without Load: 1/4 inch in 10 feet maximum, and 1/2 inch maximum in 30 feet.

3.5 TESTING AND INSPECTION

- A. Testing and inspection shall be in accordance with CBC Section 1704A.6.
- B. Facility Representative will provide the following inspections:
 - 1. Inspect sheathing and assemblies to ensure conformance with the Drawings and Specifications.
 - 2. Inspect sheathing connectors to ensure conformance with the Drawings and Specifications.

3.6 DEFECTIVE WORK

- A. When complete, sheathing shall be free from unnecessary cuts, holes, and other damage and defects.
- B. Sheathing not conforming to required lines, details, dimensions, tolerances, finishes, strength, or other specified requirements shall be considered defective. Notify the Facility Representative upon discovery of these conditions.
- C. Required repair or replacement of defective sheathing will be determined by the Facility Representative.
- D. Do not patch, fill, touch-up, repair, or replace sheathing except upon express direction of the Facility Representative for each individual area.
- E. Defective sheathing shall be repaired or replaced as recommended by the Facility Representative at no additional expense to the Facility.

3.7 PROTECTION

- A. Protect sheathing from damage from subsequent construction operations.

END OF SECTION

SECTION 07 01 50.19

PREPARATION FOR RE-ROOFING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Complete roof removal for new roof system installation.
 - 2. Partial roof removal for new roof system installation.
 - 3. Roofing membrane and selective roofing system component removal for new roof membrane installation.
 - 4. Existing roofing membrane preparation for new roofing // membrane // system // installation.
- B. Existing Roofing System: SBS. System components include:
 - 1. Walking pads.
 - 2. Roof insulation.
 - 3. Roofing membrane.
 - 4. Cover board.
 - 5. Roof insulation.
 - 6. Vapor retarder.
 - 7. Substrate board.

1.2 RELATED WORK

- A. SECTION 02 82 13.21, Asbestos Roofing Abatement: Asbestos Removal.
- B. Section 06 10 00, ROUGH CARPENTRY: Replacement Roof Deck and Parapet Sheathing.
- C. Section 07 52 16.11, Cold-Adhesive Styrene-Butadiene-Styrene Modified Bituminous Membrane, Roofing:
- D. Section 07 60 00, Flashing And Sheet Metal: Sheet Metal Counterflashing.

1.3 APPLICABLE PUBLICATIONS

- A. Comply with references to extent specified in this section.
- B. American National Standards Institute/Single-Ply Roofing Institute (ANSI/SPRI):
FX-1 (R2016)..... Standard Field Test Procedure for Determining the
Withdrawal Resistance of Roofing Fasteners.
- C. American Society for Nondestructive Testing (ASNT):

SNT-TC-1A (2019) Personnel Qualification and Certification for Nondestructive Testing.

D. ASTM International (ASTM):

C208-12(2017) e2 Cellulosic Fiber Insulating Board.

C578-19 Rigid, Cellular Polystyrene Thermal Insulation.

C728-17a Perlite Thermal Insulation Board.

C1177/C1177M-17 Glass Mat Gypsum Substrate for Use as Sheathing.

C1153-10(2015) Location of Wet Insulation in Roofing Systems Using Infrared Imaging.

C1278/C1278M-17 Standard Specification Fiber-Reinforced Gypsum Panel.

D4263-83(2018) Indicating Moisture in Concrete by the Plastic Sheet Method.

E. U.S. Department of Commerce National Institute of Standards and Technology (NIST):

DOC PS 1-19 Structural Plywood.

DOC PS 2-18 Performance Standard for Wood-Based Structural-Use Panels.

1.4 PREINSTALLATION MEETINGS

A. Conduct preinstallation meeting minimum 30 days before beginning Work of this section.

1. Required Participants:

- a. Contract Manager.
- b. Architect
- c. Inspection
- d. Contractor.
- e. Installer.

2. Meeting Agenda: Distribute agenda to participants minimum 3 days before meeting.

- a. Removal and installation schedule.
- b. Removal and installation sequence.
- c. Preparatory work.
- d. Protection before, during, and after installation.
- e. Removal and installation.
- f. Temporary roofing including daily terminations.
- g. Transitions and connections to other work.
- h. Inspecting and testing.
- i. Other items affecting successful completion.

3. Document and distribute meeting minutes to participants to record decisions affecting installation.

1.5 SUBMITTALS

- A. Submittal Procedures: Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Submittal Drawings:
 1. Show size, configuration, and installation details.
- C. Manufacturer's Literature and Data:
 1. Description of each product.
 2. Description of temporary roof system and components.
 3. List of patching materials.
 4. Recover board fastening requirements.
 5. Temporary roofing installation instructions and // removal instructions. // preparation instructions to receive new roofing. //
 6. Photographs: Document existing conditions potentially affected by roofing operations before work begins.
- D. Field Inspection Reports:
 1. Roof Assessment Report.
- E. Infrared Roof Moisture Survey Report.
- F.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications:
 1. Same installer as Section 07 52 16.11, Cold-Applied Styrene-Butadiene-Styrene Modified Bituminous Membrane Roofing
 2. Licensed to perform asbestos abatement in Project jurisdiction when removal of asbestos-containing material is required.

1.7 FIELD CONDITIONS

- A. Building Occupancy: Perform work to minimize disruption to normal building operations.
 1. Verify occupants are evacuated from affected building areas when working on structurally impaired roof decking above occupied areas.
 2. Provide notice minimum 72 hours before beginning activities affecting normal building operations.

B. Existing Roofing Available Information:

1. The following are available for Contractor reference:
 - a. Roof moisture survey.
 - b. Test cores analysis.
 - c. Construction drawings and project manual.
2. Examine available information before beginning work of this section.

C. Weather Limitations: Proceed with reroofing preparation only during dry weather conditions as specified for new roofing installation in Section 07 52 16.11, Cold Adhesive Styrene-Butadiene-Styrene Modified Bituminous Membrane Roofing

1. Remove only as much roofing in one day as can be made watertight in same day.

D. Hazardous materials are not expected in existing roofing system.

1. Known hazardous materials were removed before start of work.
2. Do not disturb suspected hazardous materials. When discovered, notify Contracting Officer's Representative.
3. Hazardous materials discovered during execution of the work will be removed by Government as work of a separate contract.

E. Hazardous Materials are known to exist in existing roofing system.

1. See Section 02 82 13.21, Asbestos Roofing Abatement for hazardous material removal and disposal.
2. Coordinate reroofing preparation with asbestos roofing abatement to prevent water from entering existing roofing system and building.
3. Hazardous material report is not available for review and use.

1.8 WARRANTY

- A. Construction Warranty: California State Contracting clause, "Warranty of Construction."
- B. Existing Warranties: Perform work to maintain existing roofing warranty in effect.
 1. Notify warrantor before beginning, and upon completion of reroofing.
 2. Obtain warrantor's instructions for maintaining existing warranty.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Plywood Sheathing: See Section 06 10 00, rough carpentry.
- B. Metal Flashing: See Section 07 60 00, flashing and sheet metal.

- C. Temporary Protection Materials:
 - 1. Expanded Polystyrene (EPS) Insulation: ASTM C578-19.
 - 2. Plywood: NIST DOC PS 1-19, Grade CD Exposure 1-18.
 - 3. Oriented Strand Board (OSB): NIST DOC PS 2-18, Exposure 1.
- D. Temporary Roofing System Materials: Contractor's option.
- E. Recover Board: One of the following:
 - 1. Insulation: See Section 07 22 00, ROOF AND DECK INSULATION.
 - 2. Fiber Board: ASTM C208-12(2017) e2, Type II, fiber board; 13 mm (1/2 inch) thick.
- F. Fasteners: Type and size required by roof membrane manufacturer to resist wind uplift.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Infrared Roof Moisture Survey: Ground-based, walk-over type performed according to ASTM C1153-10(2015).
 - 1. Record the entire survey on DVD and provide one copy to Contract Manager with report.
 - 2. Include in report thermograms of suspect areas and corresponding daytime photos of same locations.
 - 3. Conduct inspection by NDT test technician certified to at least Level 2 in Thermal/Infrared test method according to ASNT SNT-TC-1A.

3.2 PREPARATION

- A. Examine and verify substrate suitability for product installation.
- B. Protect existing roofing system indicated to remain.
 - 1. Cover roof membrane with temporary protection materials without impeding drainage.
 - 2. Limit traffic and material storage to protected areas.
 - 3. Maintain temporary protection until replacement roofing is completed.
- C. Protect existing construction and completed work from damage.
- D. Protect landscaping from damage.
- E. Maintain access to existing walkways and adjacent occupied facilities.
- F. Coordinate use of rooftop fresh air intakes with Contract Manager to minimize effect on indoor air quality.
- G. Ensure temporary protection materials are available for immediate use in case of unexpected rain.

- H. Ensure roof drainage remains functional.
 - 1. Keep drainage systems clear of debris.
 - 2. Prevent water from entering building and existing roofing system.
- I. Coordinate rooftop utilities remaining active during roofing work with Contact Manager.

3.3 RE-ROOFING PREPARATION - GENERAL

- A. Notify Contact Manager of planned operations, daily.
 - 1. Identify location and extent of roofing removal.
 - 2. Request authorization to proceed.

3.4 OVERBURDEN REMOVAL

- A. Remove loose aggregate from bituminous membrane surface.
- B. Remove pavers and paver support.
 - 1. Store undamaged pavers and paver supports for reuse.
 - 2. Dispose of damaged pavers.
- C. Remove insulation and drainage board from roof.

3.5 COMPLETE ROOFING SYSTEM REMOVAL

- A. Remove existing roofing system completely, exposing structural roof deck.
 - 1. Remove cover board, roof insulation, vapor retarder.
 - 2. Remove or cut-off roofing system fasteners.

3.6 ROOFING MEMBRANE AND SELECTIVE ROOFING SYSTEM COMPONENT REMOVAL

- A. Remove existing roofing membrane, only, in locations and to extent indicated on drawings.
- B. Visually inspect // cover board, // roof insulation, // vapor retarder, // and // substrate board // for moisture immediately after roof membrane removal.
 - 1. Coordinate with Contracting Officer's Representative to observe inspections.
 - 2. Identify wet roofing system components required to be removed.
 - 3. Mark roofing system removal locations and extents.
- C. Remove wet roofing system components.
 - 1. Remove or cut-off roofing system fasteners when removals expose structural roof deck.
- D. Patch selective roofing system removals immediately after inspection and repair.
- E. Install patching materials to match existing roofing system.

- F. Patch roofing membrane to maintain building watertight, unless new roofing membrane is installed same day as removal and repair.

3.7 DECK PREPARATION

- A. Inspect structural roof deck after roofing system removal.
- B. Concrete Roof Decks:
 - 1. Visually confirm concrete roof deck is dry.
 - 2. Perform moisture test according to ASTM D4263-83 (2025) each day for each separate roof area.
 - a. Proceed with roofing work only when moisture is not observed.
- C. Steel Roof Decks:
 - 1. Visually inspect structural roof deck installation and fasteners.
 - a. Notify Contract Manager of unsuitable conditions and inadequate fastenings potentially affecting roof system performance.
 - 2. Secure roof deck with additional fastenings as // indicated on drawings. // determined by Contract manager.

3.8 TEMPORARY ROOFING

- A. Install temporary roofing to maintain building watertight.
- B. Remove temporary roofing before installing new roofing.
- C. Prepare temporary roofing to receive new roofing.

3.9 EXISTING MEMBRANE PREPARATION FOR NEW ROOFING

- A. Remove existing roofing surface projections and irregularities. Produce smooth surface to receive recover boards.
 - 1. Broom clean existing surface.

3.10 BASE FLASHING REMOVAL

- A. Expose base flashings to permit removal.
 - 1. Two-Piece Counterflashings: Remove cap flashing and store for reuse.
 - 2. Single Piece Counterflashings: Carefully bend counterflashing.
 - 3. Metal Copings: Remove decorative cap and store for reuse.
- B. Remove existing base flashings.
 - 1. Clean substrates to receive new flashings.
- C. Replace counterflashings damaged during removal.
 - 1. Counterflashings: See Section 07 60 00 flashing and sheet metal.

- D. Remove existing parapet sheathing and inspect parapet framing.
 - 1. Notify Contracting Officer's Representative of damaged framing.
- E. Install // pressure-preservative treated // exterior fire-retardant-treated // plywood sheathing, // 15 mm (19/32 inch) // thick.

3.11 RECOVER BOARD INSTALLATION

- A. Install recover boards over existing // roof insulation // roofing membrane // with butted joints. Stagger end joints in adjacent rows.
- B. Fasten recover boards to resist wind-uplift.
 - 1. Fastening Requirements: Section 07 52 16.11, cold-applied styrene-butadiene-styrene modified bituminous membrane roofing
 - 2. Uplift Resistance: Base on pull out resistance determined by specified field testing.

3.12 FIELD QUALITY CONTROL

- A. Field Tests: Performed by testing laboratory
 - 1. Fastener Pull Out Tests: ANSI/SPRI FX-1(2016).

3.13 DISPOSAL

- A. Collect waste materials in containers.
- B. Remove waste materials from project site, regularly, to prevent accumulation.
- C. Legally dispose of waste materials.

- - E N D - -

SECTION 07 22 00

POLYISOCYANURATE ROOF INSULATION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Flat Polyisocyanurate Roof Insulation.
- B. Tapered Polyisocyanurate Roof Insulation.

1.2 RELATED SECTIONS

- A. Section 07 52 00 - Low Slope Cover Board.
- B. Section 07 52 00 - Vapor Retarders.
- C. Section 07 52 00 - Thermoplastic Membrane Roofing.

1.3 REFERENCES

- A. ASTM C 209 - Methods of Testing Insulating Board, Structural and Decorative.
- B. ASTM C 518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
- C. ASTM C 1289 - Standard Specification for Faced Rigid Cellular Thermal Insulation Board.
- D. ASTM D 312 - Standard Specification for Asphalt Used in Roofing.
- E. ASTM D 1621 - Test Methods for Compressive Properties of Rigid Cellular Plastics.
- F. ASTM D 2126 - Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging.
- G. ASTM E 84 - Surface Burning Characteristics of Building Materials.
- H. ASTM E 96 - Test Method for Water Vapor Transmission of Materials.
- I. ASTM E 108 - Standard Tests Method for Fire Tests of Roof Coverings.
- J. ASTM E 119 - Standard Test Methods For Fire Tests Of Building Construction and Materials.
- K. FM Approval Guide - FM 4450 Approval Standard - Class I Insulated Steel Roof Decks.
- L. FM Approval Guide - FM 4470 Approval Standard - Class I Roof Covering.
- M. UL 263 - Fire Tests of Building Construction and Materials.
- N. UL 790 - Tests for Fire Resistance of Roof Covering Materials.
- O. UL 1256 - Fire Test of Roof Deck Constructions.

1.4 SYSTEM DESCRIPTION

- A. Performance Requirements:
 - 1. UL Assemblies:
 - a. Component of Class A Roof System - UL 790.
 - b. Hourly Rated P series roof assemblies (UL 263 foam core only) P 225, 230, 232, 259, 508, 510, 514, 519, 701, 713, 717, 718, 719, 720, 722, 723, 724, 727, 728, 729, 730, 732, 734, 735, 739, 801, 814, 815, 818, 819, 823, 824, 826, 827, 828, 832.
 - c. Insulated metal deck assemblies - UL 1256 (nos. 120, 123).
 - 2. Factory Mutual:
 - a. FM 4450 Class I Insulated Steel Roof Decks (Foam Core Only).
 - b. FM 4470 Approval Standard - Class I Roof Covering (Foam Core Only).
 - c. FM Class 1 approval for steel roof deck constructions, Class 1 Fire and 1-60 and 1-90 windstorm classification (FM 4450).
- B. Physical properties (Foam Core Only):
 - 1. Compressive Strength: ASTM D 1621 and ASTM C 1289, Type II, 20 psi (138 kPa) minimum for Grade 2 and 25 psi (172 kPa) for Grade 3.
 - 2. Dimensional Stability: ASTM D 2126, 2 percent linear change (7 days).
 - 3. Moisture Vapor Transmission: ASTM E 96, < 1 perm ((57.5ng/(Pa*s*m2))).
 - 4. Water Absorption: ASTM C 209, < 1 percent by volume.
 - 5. Service Temperature: Minus 100 degrees to 250 degrees F (Minus 73 degrees C to 122 degrees C).
 - 6. Foam Core R Values: Based on LTTR (Long Term Thermal Resistance) in accordance with ASTM C 1289.

1.5 SUBMITTALS

- A. Submit under provisions of Section 01300.
- 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. Installation methods.
- C. Shop Drawings: Roof plan showing slopes, layout of boards and fastening patterns.
- D. LEED Submittals: Provide documentation of how the requirements of Credit will be met:
 - 1. List of proposed materials with recycled content. Indicate post-consumer recycled content and pre-consumer recycled content for each product having recycled content.
 - 2. Product data and certification letter indicating percentages by weight of post-consumer and pre-consumer recycled content for products having recycled content.
 - 3. List of proposed materials demonstrating that each material was extracted, harvested or recovered, as well as manufactured within 500 miles of the project site.

- E. Verification Samples: For each finished product specified, two samples representing actual product.
 - 1. Submit 6 by 6-inch samples of each board type required.
 - 2. Submit samples of each fastener type required.
- F. Manufacturer's Certificates: Manufacturer's certification that materials meet or exceed specification requirements.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Manufacturer shall be a company that regularly manufactures polyisocyanurate and fully assembled nailbase insulation panels in-house with no outside fabrication operations.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store products in accordance with the manufacturer's recommendations.
- B. Store product on a solid flat foundation and elevate a minimum of 4 inches above the finished surface.
- C. For on-site storage longer than two weeks, slit packaging on 4 sides to allow the product to breathe, and then completely covered with a breathable tarpaulin.
- D. Protect insulation from open flame and keep dry at all times.

1.8 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
- B. Do not install insulation on the roof deck when water of any type is present. Do not install insulation or roofing materials when the substrate is damp or wet or when proper adhesive temperature cannot be maintained.

1.9 COORDINATION

- A. Coordinate work with installation of roof covering and associated roof penetrations and counterflashings installed by other sections as work of this section proceeds.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Hunter Panels, which is located at: 15 Franklin Street; Portland, ME 04101; Toll Free Tel: 888-746-1114; Tel: 207-761-5678; Fax: 877-775-1769; Email: info@hpanels.com; Web: www.hunterpanels.com
- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00.

2.2 MATERIALS

- A. Roof Board Insulation: Provide products that comply with the following:
 - 1. ASTM standards specified.
 - 2. Factory Mutual (FM) approvals specified.
 - 3. Underwriters Laboratories Inc. (UL) classifications specified.
- B. Tapered Foam Roof Insulation with Fiber-Reinforced Facers: Tapered H-Shield; closed-cell polyisocyanurate foam core and bonded to fiber-reinforced facers on both sides; conforming to ASTM C 1289, Type II, Class 1 with square edges.
 - 1. Blowing Agent: Zero ODP, 3rd generation.
 - 2. Fire Ratings:
 - a. UL 1256, No. 120 and 123.
 - b. UL 790 (ASTM E 108), Class A.
 - c. UL 263 (ASTM E 119).
 - d. FM 4450/4470, Class 1. Fire Rating.
 - 3. FM Approval, Wind Uplift Classification: 1-60.
 - 4. FM Approval, Wind Uplift Classification: 1-90.
 - 5. Compressive Strength: 20 pounds per square inch (138 kPa) Grade 2.
 - 6. Compressive Strength: 25 pounds per square inch (172 kPa) Grade 3.
 - 7. R Value: Provide Insulation with LTTR (Long Term Thermal Resistance) in accordance with ASTM C 1289.
 - a. Minimum insulation thickness:.
 - 8. The slope of tapered board shall be:
 - a. 1/16 inch (2 mm) per foot.
 - b. 1/8 inch (3 mm) per foot.
 - c. 3/16 inch (5 mm) per foot.
 - d. 1/4 inch (6 mm) per foot.
 - e. 3/8 inch (10 mm) per foot.
 - f. 1/2 inch (13 mm) per foot.
 - g. Slope as indicated on the Drawings

2.3 ACCESSORIES

- A. Approved Fasteners: Appropriate for purpose intended and approved by FM Approvals and system manufacturer; length required for thickness of insulation material and penetration of deck substrate, with distribution plates if required.
- B. Base Ply: As recommended by membrane manufacturer.
- C. Asphalt Bitumen: ASTM D 312, Type III, or Type IV.
 - 1. Use only on approved board insulation types.
 - 2. Provide with labels indicating flash point, softening point, finished blowing temperature and equiviscous temperature.
- D. The Cant Strip and Tapered Edge Strip: Standard machine cut perlite or wood fiberboard strips in sizes indicated or required.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. Examine roof deck for suitability to receive insulation. Verify that substrate is dry, clean, and free of foreign material that will damage insulation installation.
- C. Verify that roof drains, scuppers, roof curbs, nailers, equipment supports, vents, and other roof accessories are secured properly and installed in conformance with drawings and submittals.
- D. Verify that deck is structurally sound to support installers, materials, and equipment without damaging or deforming work.
- E. If substrate preparation is the responsibility of another installer, notify the Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Apply vapor barrier and or retarder, as specified by the Architect or required by the local building code, to decking prior to installation of insulation.

3.3 INSTALLATION

- A. Install specified insulation in accordance with manufacturer's latest printed instructions and as required by governing codes.
- B. Do not leave installed insulation exposed to weather. Cover and waterproof immediately after installation.
- C. Seal exposed insulation joints at the end of each day. Remove seal when work resumes.
- D. Remove installed insulation that has become wet or damaged and replace with new solid and dry insulation material.
- E. Mechanically Attached Single-Ply Systems:
 - 1. Each H-Shield panel must be secured to the roof deck with Factory Mutual approved fasteners and plates (appropriate to the deck type).
 - 2. Butt edges and stagger joints of adjacent panels.
 - 3. In multi-layer installations, stagger joints in top and bottom layers. Do not align joints in insulation.
 - 4. Install the roof covering according to the roof manufacturer's specifications.

- F. Fully Adhered Single-Ply Systems:
1. Secure each H-Shield panel to the roof deck with Factory Mutual approved fasteners and plates (appropriate to the deck type).
 2. Adhere maximum 4 foot by 4-foot panels of H-Shield to a prepared concrete deck with a full mopping of hot steep asphalt.
 3. Adhere maximum 4 foot by 4-foot panels of H-Shield to a prepared concrete deck with cold adhesive.
 4. Butt edges and stagger joints of adjacent panels.
 5. Multi-layer systems: Adhere subsequent layers with a full mopping of hot steep asphalt.
 6. Multi-layer systems: Adhere subsequent layers with FM approved cold adhesive.
 7. In multi-layer installations, stagger joints in top and bottom layers. Do not align joints in insulation.
 8. Install the roof covering according to the roof manufacturer's specifications.

3.4 CLEANING

- A. Remove trash and construction debris from insulation before application of roofing membrane.

3.5 PROTECTION

- A. Protect installed products until completion of the project.
- B. Protect installed insulation traffic by use of protective covering materials during and after installation.
- C. Cover the top and edges of unfinished roof panel work to protect it from the weather and to prevent accumulation of water in the cores of the panels. Only apply enough insulation per day that can be covered by the finished roofing system.
- D. Do not leave panels exposed to moisture. Wet panels shall be removed or allowed to completely dry prior to application of vapor barrier and/or roof covering.
- E. Repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 07 22 00
ROOF AND DECK INSULATION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Insulation materials.
- B. Related Sections:
 - 1. Section 07 21 00 - Thermal Insulation.
 - 2. Section 07 52 00 – Modified Bitumen Roofing

1.2 REFERENCES

- A. ASTM C1280 - Application of Gypsum Sheathing Board.
- B. ASTM C578 - Rigid, Cellular Polystyrene Thermal Insulation.
- C. FM - Factory Mutual Engineering Corporation: Roof Assembly Classifications.
- D. UL - Underwriters Laboratories: Fire Hazard Classifications; Fire Resistance Directory; Assemblies.

1.3 SYSTEM DESCRIPTION

- A. Roof Insulation System: Rigid board system consisting of gypsum sheathing, vapor barrier, and insulation; approved by roofing manufacturer, meeting requirements of CCR Title 24, specified requirements, and Reference Standards.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Product Data: Provide data on product characteristics, performance criteria, limitations.
- C. Manufacturer's Installation Instructions:
 - 1. Indicate special environmental conditions required for installation.
 - 2. Indicate adhesive recommendations.
 - 3. Indicate fastener recommendations and attachment rate.
 - 4. Indicate installation techniques.
- D. Manufacturer's Certificate:
 - 1. Certify that products meet or exceed specified requirements.
 - 2. Certify that insulation is approved by manufacturer for use with specified roofing membrane materials.

1.5 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the products specified in this section with 5 years documented experience.
- B. Applicator: Company specializing in performing the work of this section with 5 years documented experience and approved by manufacturer.

1.6 REGULATORY REQUIREMENTS

- A. Conform to CCR Title 24 for roof assembly fire hazard requirements.
- B. Underwriters Laboratories, Inc. (UL): Conform to requirements of indicated UL Assembly.
- C. Factory Mutual Engineering Corporation (FM): Roof Assembly Classification, of Class 1 Construction, wind uplift requirement of I90, in accordance with FM Construction Bulletin 1-28.

1.7 MOCK-UP

- A. Provide mock-up of materials of this Section and roofing materials of Section 07 54 00 in accordance with Section 01 45 00
- B. Location and Size of Mock-Up: As directed by the CMD Representative.
- C. Mock-up may remain as part of the Work.

1.8 PRE-INSTALLATION CONFERENCE

- A. Convene one week prior to commencing work of this Section 01 30 00 - Project Coordination.
- B. Review installation procedures and coordination required with related Work.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Section 01 65 00.
- B. Deliver products in manufacturer's original containers, dry, undamaged, seals and labels intact.
- C. Store products in weather protected environment, clear of ground and moisture.

1.10 PROJECT CONDITIONS

- A. Do not install adhesives when temperature or weather conditions are detrimental to successful installation or are not in compliance with manufacturers' recommendations.

PART 2 PRODUCTS

2.1 INSULATION MATERIALS

- A. General: Flame-spread rating shall not exceed 25 and smoke density shall not exceed 450, in conformance with CBC requirements.
- B. Tapered Insulation: ASTM C578, Type IV; factory tapered extruded polystyrene; conforming to the following: [Indicate on the drawings the location of tapered insulation]
 - 1. Thermal Resistance: K of 0.20 at 75 degrees F, aged value.
 - 2. Thickness: Maximum 7 inches per layer.
 - 3. Board Size: Manufacturer's standard board size, tapered at specified slope.
 - 4. Density: Maximum 2.5 pounds per cubic foot.
 - 5. Compressive Strength: Minimum 25 psi.
 - 6. Water Absorption: 0.3 percent by volume maximum.

2.2 MANUFACTURERS

- A. Dow Chemical
- B. Owens-Corning

2.3 FASTENERS, ASPHALT GLAZE COAT, AND/OR ADHESIVES

- A. Appropriate for each component, purpose intended, and approved by UL, FM, and in accordance with manufacturer's installation instructions.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Installation of materials specified in this Section is specified in Section 07 52 00, "Modified Bitumen Roofing."

END OF SECTION

SECTION 07 41 13

STONE COATED METAL ROOF PANEL

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Stone coated metal modular roof panels and accessories.
- B. Associated metal flashings.

1.2 RELATED SECTIONS

- A. Section 06 16 00 - Framing and Sheathing: Roof sheathing.
- B. Section 07 60 00 - Sheet Metal Flashing and Trim.
- C. Section 07631 - Gutters and Downspouts.
- D. Division 15 - Mechanical: Mechanical work projecting through roof.
- F. Division 16 - Electrical: Electrical work projecting through roof.

1.3 REFERENCES

- A. ASTM A 653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- B. ASTM A 792/A 792M - Sheet Steel, Aluminum - Zinc alloy coated by the Hot-Dip Process, structural (physical) quality.
- C. ASTM B 117 - Standard Practice for Operating Salt Spray (Fog) Apparatus.
- D. ASTM C 920 - Specification for Electrometric Joint Sealant.
- E. ASTM D 226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
- F. ICC-ES Evaluation Report - ICC-ESR-1491-2017
- G. ICC-ES Evaluation Report - ICC-ESR-1188-2018
- H. ICC-ES Evaluation Report - ICC-ESR-3012-2016
- I. ICC-ES Evaluation Report - ICC-ESR-#3098-2017.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.
- 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. Installation instructions.
- C. Shop Drawings: Include roof plans and elevations; sections at hips, ridges, gables, valleys, and eaves; and details of components, accessories, and attachments to other

work. Indicate metal panel and flashing profiles, joint locations, fastening locations, and installation details. Indicate panel layout with location of cut and special shapes identified.

- D. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
- E. Verification Samples: For each finish product specified, two samples, representing actual product, color, and patterns.
- F. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

1.5 QUALITY ASSURANCE

A. Regulatory Requirements:

- 1. Conform to California Building Code for roof assembly fire hazard requirements
- 2. Conform to building code for minimum wind uplift resistance

B. Manufacturer Qualifications: Minimum five years' documented experience producing roofing panels of the specified type.

C. Installer Qualifications: Manufacturer certified installer specializing in performing the work of this section.

D. Pre-Installation Meeting:

- 1. Convene at job site seven calendar days prior to scheduled beginning of construction activities of this section to review requirements of this section.
- 2. Require attendance by representatives of the following:
 - a. Installer of this Section.
 - b. Other trades directly affecting, or affected by, construction activities of this Section.
- 3. Notify Architect four calendar days in advance of scheduled meeting date.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging with labels intact until ready for installation.

B. Store products in accordance with the manufacturer's instructions.

- 1. Store products on pallets off the ground and sufficiently high to allow air circulation beneath each bottom stack and prevent rising water from entering pallet or stacks. Elevate one end of the pallets to ensure drainage.
- 2. Prevent rain from entering pallet stacks by covering with a tarpaulin, making provision for air circulation between draped edges of tarpaulin and ground.
- 3. Prolonged storage of panels in a stack or pallet outside is not recommended and could result in white rust or watermarks on the materials.

C. Secure stored materials and unfinished work against damage by wind.

1.7 SEQUENCING

A. Ensure that locating 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.

1.8 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.9 WARRANTY

A. Provide the manufacturer's 50 year fully transferable, limited warranty for defects and the following.

1. 120-mph Wind Warranty
2. Hail Impact Warranty
3. Fire: Boral Steel panels will not burn.

B. Provide underlayment manufacturer's 20-year warranty

1.10 EXTRA MATERIALS

A. See Section 01 60 00 - Product Requirements, for additional provisions.

B. Provide an additional 1 percent of installed roof tiles, but not less than one full square, for Owner's use in roof maintenance.

C. Furnish extra materials packaged with protective covering for storage and identified with labels clearly describing contents.

PART 2 PRODUCTS

2.1 SOURCE

A. Tile Basis of Design: Best Buy Metals LLC, 1652 S Lee Hwy. Cleveland, TN 37311 Tel: 800-728-4010. Fax: 423-728-3606. Web: bestbuymetals.com, Email: info@bestbuymetals.com

B. Underlayment Basis of Design: Garland Company, Inc. (The); 3800 E. 91st St., Cleveland, OH 44105. ASD. Toll Free: 800-321-9336. Phone: 216-641-7500. Fax: 216-641-0633. Web Site: www.garlandco.com.

C. Or Equal

D. Requests for substitutions will be considered in accordance with the provisions of Section 01 60 00.

2.2 MATERIALS - GENERAL

A. Coated Steel: ASTM A 792 Grade 33 with an AZ 50 class, hot-dipped aluminum-zinc alloy coating and a thickness of 0.017 inch (0.43 mm). Exposed surface is covered by pressed colored stone granules embedded in an acrylic resin base coating, followed with a clear acrylic glaze. Weight of coated steel is 1.3 psf (6.3kg m²).

2.3 STONE COATED PANELS AND ACCESSORIES

A. BARREL VAULT Tile Panels: Resembling Spanish clay S-tile, 16 inches wide by 45 inches long (406 mm by 1143 mm) with an installed exposure of 14 inches by 42 inches (356 mm by 1067 mm). Leading edge of each panel is turned down 1 inch (25 mm), and the back edge is bent up and horizontally back 1-1/2 inches (38 mm) to create an overlapping weather edge. Side laps are 2 inches (51 mm). Color as selected from Manufacturer's line of available colors.

1. Panel Evaluations:

a. International Code Council (ICC), Brea California, Report Nos:

1) ESR-1491

B. Timber Battens:

1. Counter Batten, Nominal 1 by 4 inches (25 by 100 mm) #2 or better SPF, as needed, for re-roof applications.

2. Panel Batten, Nominal 2 by 2 inches #2 or better SPF, as needed.

3. Elevated Batten, Boral EBS (Elevated Batten System) Nominal 2 by 2 inches.

4. Timber Batten Fasteners:

a. Screws: minimum #9 coarse thread of sufficient length to penetrate roofing structural member a minimum of 1 inch (25.4 mm).

b. Nails: Box: Minimum .131 inch, 16d ring shanked, 3-1/4 inch (83 mm) long of sufficient length to penetrate roofing structural member a minimum of 1 inch (25.4 mm).

C. Steel Battens: Minimum 20 Gauge, ASTM A 653 galvanized steel, formed into "hat channel", "C", "U", "J", or "Z" sections with minimum height of 1-1/2 inch (38 mm) with bends at 90 degrees.

1. Steel Batten Fasteners: Screws: No. 8, minimum 2-inch (51 mm) long, corrosion resistant wood screw or 3/4 inch minimum, Tek type screws or equivalent, to fasten to steel rafter/truss member.

D. Hips, Ridges and Rakes: Boral Steel, Aluminum-Zinc Alloy Coated Steel sheet, nominal .0170 inches. Pressure formed to match roofing material, color, and finish to match panels.

1. Cap Mission (BARREL-VAULT Tile, PACIFIC Tile)

E. Sheet Metal Materials: Aluminum-Zinc Alloy Coated Steel sheet, ASTM A 792/A 792M, color and surface finish matching roof panels.

- F. End Cap: Boral Steel End Disk Aluminum-Zinc Alloy Coated Steel sheet, nominal .0170 inch. Circular cap to match roofing material, color, and finish to match panels. To be applied at open end of hip and ridge at eave.
- G. Flashing: Trim to be of same material, profile and color as roof panels.
- H. Nails: Corrosion resistant full, flat head, .131-inch ring shanked, nails of sufficient length to penetrate substrate 1 inch minimum, finish color black.
- I. Screws: Manufacturer's minimum #9 by 2-1/2-inch-long corrosion resistant steel, 1/4 inch hex head screws. Screws colored coat to match panel color. Capable of resisting a minimum 1,000 hours salt spray in accordance with ASTM B 117.
- J. Panel Fasteners:
 - 1. Battenless Screws: Minimum #10 by 2-1/2-inch long corrosion resistant steel, 1/4 inch hex head screws.
 - a. Screws colored coat to match panel color.
 - b. Use color matched stainless-steel screws for Coastal Regions/Salt Spray installations.
 - 2. Batten Screws: Minimum #10 by 2 inches long minimum, 1/4 inch hex head screws.
 - a. Screws colored coat to match panel color.
 - b. Use color matched stainless-steel screws for Coastal Regions/Salt Spray installations.
 - 3. Granite-Ridge Screws: Minimum #10 by 1-1/2 long minimum, 1/4 inch hex head screws.
 - a. Screws colored coat to match panel color.
 - b. Use color matched stainless-steel screws for Coastal Regions/Salt Spray installations.
 - 4. Nails: Full, flat head, .131-inch ring shanked, 8d box nails, of sufficient length to penetrate substrate 1 inch minimum, finish color black.
- K. Valley and other Flashings: Aluminum zinc alloy coated sheet ASTM-A792/A792M or G-90 Galvanized. Do not use copper and lead flashings due to metal incompatibility.
- L. Underlayment:
 - 1. Terra-Seal Underlayment
- M. Sealant: One-part elastomeric polyurethane, sealant conforming to ASTM C 920. Where sealant will be exposed, provide in color to match panels
- N. Elastomeric Pipe Sleeve Covers: EPDM elastomeric pipe and penetration flashing, Master flash or equal.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. Verify roof structure for correct framing prior to placing battens and Metro roof panels.
- C. Verify roof penetrations and plumbing vent stacks are in place and flash to roof surface.
- D. Verify that work requiring roof access by other trades is completed prior to starting roofing panel installation. Limit roof access by other trades after completion of roofing.
- E. 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. Coordinate with installation of gutters, vents, skylights and other adjoining work to ensure proper sequencing. Do not install roofing materials until all vent stacks and other penetrations through roof sheathing have been installed and securely fastened.
- C. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions and the applicable local code requirements.

B. Underlayment

- 1. Re-roof: Install 30# asphalt saturated felt or better over existing surface.
- 2. New Construction: Install:
 - a. Install Self-adhering roofing underlayment membrane installed per manufacture's specifications at perimeter, valleys and non-heated areas or as required by local building codes.
 - b. Install asphalt saturated felt or better. Installed as per manufacture's specification over roof field.

C. Counter Batten:

- 1. Nominal 1 by 4 inches #2 or better SPF.
- 2. Fastener Number: Refer to fastener requirement of the local building code.
- 3. Fastener Size: Refer to fastener requirement of the local building code.
- 4. Install counter battens at all rakes, hips, valleys, ridges, headwalls, and sidewalls and around all roof penetrations and at all roof truss/rafter members at a maximum of 24 inches O.C.
- 5. Fasteners to be sufficient length to penetrate truss/rafter members by minimum 1 inch.

D. Batten:

1. Nominal 2 inch by 2 inch SPF Batten.
2. Steel Battens.
3. Fastener Number: Refer to fastener requirement of the local building code.
4. Fastener Size: Refer to fastener requirement of the local building code.
5. Install battens as required in Boral Steel' installation manual with appropriate spacing as determined by panel profile spacers specified.
 - a. Fasten battens at all intersections of counter battens, ensuring that batten joints are located at counter batten support
 - b. Install battens at rakes, hips, and ridges
 - c. Install battens at valleys with full run frame for complete support of valley flange.
 - d. Fasteners for wood battens to be sufficient length to penetrate truss/rafter members by minimum 1 inch.
 - e. Fasteners for steel battens to be 3/4 inch minimum, Tek type screws.

E. Install valley flashing prior to panel installation:

1. Overhang valley beyond fascia by 1/2-inch minimum.
2. Lap valley flashing 6-inches and seal (two beads) at all laps.
3. Cut, notch, bend and seal watertight at all valley heads.
4. Fasten both sides of valley flashing at valley flange at 24 inches O.C. with corrosion resistant fasteners.

F. Eave Metal

1. BARREL-VAULT Stone Coated Fascia:
 - a. 3.5-inch Bird-stop Eave Fascia
2. PINE-CREST Shake; PACIFIC Tile or COTTAGE Shingle:
 - a. 3.5-inch Eave Boral Universal Fascia
 - b. 5-inch Eave Boral Universal Fascia
 - c. Painted drip edge

G. Panels:

1. Work from numerous bundles of panels to help ensure overall color batch/production run blending throughout installation
2. Cut and bend panels at gables, hips, valleys, walls and ridge to complete panel installation as per Boral Steel installation instructions.
3. Install ridge trim, hip caps and counter flashing as per Boral Steel's installation instructions.
4. Fasten with fasteners in accordance with local code requirements and use the same fasteners for Hips, Ridges and Rakes
5. Stitch screws to be 3/4-inch hex head self-tapping thread. As provided by Boral Steel
6. Tools: Use standard Boral Steel cutter, bender and batten spacers as applicable.

H. Rake Trim: Install as required.

1. Rake Channel
2. Rake Trim and trim Cap

I. Roof Penetrations: Install as required.

1. Double panel method
 - a. Cut hole in primary panel
 - b. Install pipe flashing and apply sealant on top and sides of flashing
 - c. Cut and install top panel
 - d. Seal and chip cut
2. EPDM elastomeric pipe and penetration flashing.

3.4 CLEANING

- A. Clean up building and grounds of all debris left from installation procedures and dispose of all debris in legal manner
- B. Foot Traffic: Only permitted directly over horizontal joints or 2 by 2 inches battens to prevent denting of panels. Avoid stepping on side laps.

3.5 PROTECTION

- A. Protect installed products until completion of the project.
- B. Stage work progress to avoid foot traffic over completed sections of roofing.
- C. Where practical provide protection of installed materials from potential damage through work from other trades.
- D. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 07 52 00

MODIFIED BITUMINOUS MEMBRANE ROOFING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Cold Applied 2-Ply Thermoplastic Hybrid Roof System (KEE-Stone)

1.2 RELATED SECTIONS

- A. Deck Preparation

1.3 REFERENCES

- A. ASTM C 920 - Standard Specification for Elastomeric Joint Sealants.
- B. ASTM D 41 - Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
- C. ASTM D 312 - Standard Specification for Asphalt used in Roofing.
- D. ASTM D 412 - Tensile Test on Rubber and Elastomers.
- E. ASTM D 2178 Standard Specification for Asphalt Glass Felt Used in Roofing and Waterproofing.
- F. ASTM D 2824 Standard Specification for Aluminum-Pigmented Asphalt Roof Coating.
- G. ASTM D 3019 - Standard Specification for Lap Cement Used with Asphalt Roll Roofing, Non-Fibred, and Fibred.
- H. ASTM D 4586 Standard Specification for Asphalt Roof Cement, Asbestos-Free.
- I. ASTM D 4601 Standard Specification for Asphalt Coated Glass Fiber Base Sheet Used in Roofing.
- J. ASTM D 5147 Standard Test Method for Sampling and Testing Modified Bituminous Sheet Materials.
- K. ASTM D 6162 Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcements.
- L. ASTM D 6163 Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements.
- M. ASTM D 6164 - Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements.
- N. ASTM D 6754 - Standard Specification for Ketone Ethylene Ester (KEE) Sheet Roofing.

- O. ASTM D 6757 - Standard Specification for Underlayment Felt Containing Inorganic Fibers Used in Steep-Slope Roofing.
- P. ASTM E 108 - Standard Test Methods for Fire Test of Roof Coverings
- Q. Factory Mutual Research (FM): Roof Assembly Classifications.
- R. National Roofing Contractors Association (NRCA): Roofing and Waterproofing Manual.
- S. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA) - Architectural Sheet Metal Manual.
- T. Underwriters Laboratories, Inc. (UL): Fire Hazard Classifications.
- U. Intertek/Warnock Hersey (WH): Fire Hazard Classifications.
- V. ANSI-SPRI ES-1 Wind Design Standard for Edge Systems used with Low Slope Roofing Systems.
- W. ASCE 7, Minimum Design Loads for Buildings and Other Structures
- X. UL - Fire Resistance Directory.
- Y. FM Approvals - Roof Coverings and/or RoofNav assembly database.
- Z. Miami-Dade Building Code Compliance - N.O.A. (Notice of Acceptance).
- AA. California Title 24 Energy Efficient Standards.

1.4 DESIGN / PERFORMANCE REQUIREMENTS

- A. Perform work in accordance with all federal, state and local codes.
- B. Design Requirements:
 - 1. Uniform Wind Uplift Load Capacity
 - a. Installed roof system shall withstand negative (uplift) design wind loading pressures complying with the following criteria.
 - 1) Design Code: ASCE 7, Method 2 for Components and Cladding.
 - 2) Importance Category:
 - a) IV
 - 3) Importance Factor of:
 - a) 1.0
 - 4) Wind Speed: 103 mph
 - 5) Exposure Category:
 - a) C.
 - 6) Design Roof Height: 20 feet.
 - 7) Minimum Building Width: 200 feet.
 - 8) Roof Pitch: .5:12.
 - 9) Roof Area Design Uplift Pressure:
 - a) Zone 1' Interior Field of Roof 18.1 psf -
 - b) Zone 1 - Field of roof 28.1psf
 - c) Zone 2 - Eaves, ridges, hips and rakes 35.6 psf
 - d) Zone 3 - Corners 46.8 psf

- C. The roof system shall have been tested in compliance with the following codes and test requirements:
 - 1. FM Approvals:
 - a. Roof Nav Website

1.5 SUBMITTALS

- A. Submit under the provisions of Section 01 30 00.
- 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. Installation instructions.
- C. Submit shop drawings including installation details of roofing, flashing, fastening, insulation and vapor retarder, including notation of roof slopes and fastening patterns of insulation and base modified bitumen membrane, prior to job start.
- D. Design Pressure Calculations: Submit design pressure calculations for the roof area in accordance with ASCE 7 and local Building Code requirements. Include a roof system attachment analysis report, certifying the system's compliance with applicable wind load requirements before the start of work. Calculations must be signed and sealed by a professional engineer licensed in the State of California.
- E. Verification Samples: For each modified bituminous membrane ply product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.
- F. Manufacturer's Fire Compliance Certificate: Certify that the roof system furnished is approved by Factory Mutual (FM), Underwriters Laboratories (UL), Warnock Hersey (WH) or approved third party testing facility in accordance with ASTM E108, Class A for external fire and meets local or nationally recognized building codes.
- G. Provide a notarized letter stating that a full-time representative of the roofing manufacturer will perform the site inspections of at least 5 days per working week listed in section 3.7
- H. Closeout Submittals: Provide manufacturer's maintenance instructions that include recommendations for periodic inspection and maintenance of all completed roofing work. Provide product warranty executed by the manufacturer. Assist Owner in preparation and submittal of roof installation acceptance certification as may be necessary in connection with fire and extended coverage insurance on roofing and associated work.

1.6 QUALITY ASSURANCE

- A. Perform Work in accordance with NRCA Roofing and Waterproofing Manual.
- B. Manufacturer Qualifications: Company specializing in manufacturing products specified with documented ISO 9001 certification and minimum of twelve years of documented experience and must not have been in Chapter 11 bankruptcy during the last five years.
- C. Installer Qualifications: Company specializing in performing Work of this section with minimum five years documented experience and a certified Pre-Approved Garland Contractor.

- D. Installer's Field Supervision: Maintain a full-time Supervisor/Foreman on job site during all phases of roofing work while roofing work is in progress.
- E. Manufacturer's Field Supervision: A representative of the roof system manufacturer must be present 5 days per week during the roof system installation.
- F. Product Certification: Provide manufacturer's certification that materials are manufactured in the United States and conform to requirements specified herein, are chemically and physically compatible with each other, and are suitable for inclusion within the total roof system specified herein.
- G. Source Limitations: Obtain all components of roof system from a single manufacturer. Secondary products that are required shall be recommended and approved in writing by the roofing system Manufacturer. Upon request of the Architect or Owner, submit Manufacturer's written approval of secondary components in list form, signed by an authorized agent of the Manufacturer.

1.7 PRE-INSTALLATION MEETINGS

- A. Convene minimum two weeks prior to commencing Work of this section.
- B. Review installation procedures and coordination required with related Work.
- C. Inspect and make notes of job conditions prior to installation:
 - 1. Record minutes of the conference and provide copies to all parties present.
 - 2. Identify all outstanding issues in writing designating the responsible party for follow-up action and the timetable for completion.
 - 3. Installation of roofing system shall not begin until all outstanding issues are resolved to the satisfaction of the Architect.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store products in manufacturer's unopened packaging with labels intact until ready for installation.
- B. Store all roofing materials in a dry place, on pallets or raised platforms, out of direct exposure to the elements until time of application. Store materials at least 4 inches above ground level and covered with "breathable" tarpaulins.
- C. Stored in accordance with the instructions of the manufacturer prior to their application or installation. Store roll goods on end on a clean flat surface except store KEE-Stone FB 60 rolls flat on a clean flat surface. No wet or damaged materials will be used in the application.
- D. Store at room temperature wherever possible, until immediately prior to installing the roll. During winter, store materials in a heated location with a 50-degree F (10 degree C) minimum temperature, removed only as needed for immediate use. Keep materials away from open flame or welding sparks.
- E. Avoid stockpiling of materials on roofs without first obtaining acceptance from the Architect/Engineer.
- F. Adhesive storage shall be between the range of above 50-degree F (10 degree C) and below 80-degree F (27 degree C). Area of storage shall be constructed for flammable storage.

1.9 COORDINATION

- A. Coordinate Work with installing associated metal flashings as work of this section proceeds.

1.10 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.11 WARRANTY

- A. Upon completion of the work, provide the Manufacturer's written and signed Edge-To-Edge NDL System Warranty, warranting that, if a leak develops in the roof during the term of this warranty, due either to defective material or defective workmanship by the installer, the manufacturer shall provide the Owner, at the Manufacturer's expense, with the labor and material necessary to return the defective area to a watertight condition including Garland Metal Components.
 - 1. Warranty Period:
 - a. 30 years from the date of acceptance.
- B. The installer is to guarantee all work against defects in materials and workmanship for a period indicated following final acceptance of the Work.
 - 1. Warranty Period:
 - 5 years from the date of acceptance.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design: Garland Company, Inc. (The); 3800 E. 91st St., Cleveland, OH 44105. ASD. Toll Free: 800-321-9336. Phone: 216-641-7500. Fax: 216-641-0633. Web Site: www.garlandco.com.
- B. Or Equal
- C. Requests for substitutions will be considered in accordance with the provisions of Section 01 60 00.
- D. The Products specified are intended and the Standard of Quality for the products required for this project. If other products are proposed the bidder must disclose in the bid the manufacturer and the products that they intend to use on the Project. If no manufacturer and products are listed, the bid may be accepted only with the use of specified products.
 - 1. Bidder will not be allowed to change materials after the bid opening date.
 - 2. If alternate products are included in the bid, the products must be equal to or exceed the products specified. Supporting technical data shall be submitted to the Architect/ Owner for approval prior to acceptance.
 - 3. In making a request for substitution, the Bidder/Roofing Contractor represents that it has:
 - a. Personally, investigated the proposed product or method, and determined that it is equal or superior in all respects to that specified.

- b. Will provide the same guarantee for substitution as for the product and method specified.
 - c. Will coordinate installation of accepted substitution in work, making such changes as may be required for work to be completed in all respects.
 - d. Will waive all claims for additional cost related to substitution, which consequently become apparent.
 - e. Cost data is complete and includes all related cost under his/her contract or other contracts, which may be affected by the substitution.
 - f. Will reimburse the Owner for all redesign cost by the Architect for accommodation of the substitution.
- 4. Architect/ Owner reserves the right to act as the final authority on the acceptance or rejection of any or all bids, proposed alternate roofing systems or materials that have met ALL specified requirement criteria.
 - 5. Failure to submit substitution package, or any portion thereof requested, will result in immediate disqualification and consideration for that particular contractor's request for manufacturer substitution.

2.2 COLD APPLIED 2-PLY THERMOPLASTIC HYBRID ROOF SYSTEM - KEE-Stone

- A. Mechanically attached polyisocyanurate insulation fastened to the deck per wind uplift calculations
 - 1. R- 23.6 minimum
- B. Tapered polyisocyanurate insulation:
 - 1. Tapered per approved drainage calculations to the internal drains with min 1:12 slope
- C. Coverboard: GP Densdeck Prime
 - 1. ½" Densdeck Prime coverboard
- D. Interply Adhesive: (1)
 - 1. Green-Lock Plus Membrane Adhesive
- E. Base (Ply) Sheet: One-ply bonded to the prepared substrate with Interply Adhesive:
 - 1. Stressbase 80:
- F. Interply Adhesive: (2)
 - 1. KEE-Lock Foam Spatter applied:
- G. Thermoplastic Cap (Ply) Sheet: One ply bonded to the prepared substrate with Interply Adhesive (2):
 - 1. KEE-Stone FB 60:
- H. Flashing Adhesive: (1)
 - 1. Green-Lock Plus Membrane Adhesive
- I. Flashing Base Ply: One ply bonded to the prepared substrate with Flashing Ply Adhesive:
 - 1. Stressbase 80
- J. Flashing Adhesive: (2)
 - 1. KEE-Lock spatter spray foam adhesive

- K. Flashing Cap (Ply) Sheet: One ply bonded to the prepared substrate with Flashing Ply Adhesive:
 - 1. KEE-Stone FB 60 Flashing.
- L. Sealant
 - 1. Tuff-Stuff TruWhite
- M. Sheet Metal Flashings, coping, and trim
 - 1. R-Mer .040 aluminum flat sheet
- N. Accessories:
 - 1. Pre-molded reinforced KEE-Stone accessories for detail applications.
 - 2. Utility Roll Membrane Reinforced KEE-Stone butt ends.
 - 3. KEE-Lock Water Cut-Off Sealant for exposed cut edges on KEE-Stone membrane.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. Inspect and approve the deck condition, slopes and fastener backing if applicable, parapet walls, expansion joints, roof drains, stack vents, vent outlets, nailers and surfaces and elements.
- C. Verify that work penetrating the roof deck, or which may otherwise affect the roofing, has been properly completed.
- D. If substrate preparation and other conditions are the responsibility of another installer, notify the Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. General: Clean surfaces thoroughly prior to installation.
 - 1. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
 - 2. Fill substrate surface voids that are greater than 1/4 inch wide with an acceptable fill material.
 - 3. The roof surface to receive roofing system shall be smooth, clean, free from loose gravel, dirt and debris, dry and structurally sound.
 - 4. Wherever necessary, all surfaces to receive roofing materials shall be power broom and vacuumed to remove debris and loose matter prior to starting work.
 - 5. Do not apply roofing during inclement weather. Do not apply roofing membrane to damp, frozen, dirty, or dusty surfaces.
 - 6. Fasteners and plates for fastening components mechanically to the substrate shall provide a minimum pull-out capacity of 300 lbs. (136 k) per fastener. Base or ply sheets attached with cap nails require a minimum pullout capacity of 40 lb. per nail.
 - 7. Prime decks where required, in accordance with requirements and recommendations of the primer and deck manufacturer.

3.3 INSTALLATION - GENERAL

- A. Install modified bitumen membranes and flashings in accordance with manufacturer's instructions and with the recommendations provided by the National Roofing Contractors Association's Roofing & Waterproofing Manual, the Asphalt Roofing Manufacturers Association, and applicable codes.
- B. General: Avoid installation of modified bitumen membranes at temperatures lower than 40-45 degrees F. When work at such temperatures unavoidable use the following precautions:
 - 1. Take extra care during cold weather installation and when ambient temperatures are affected by wind or humidity, to ensure adequate bonding is achieved between the surfaces to be joined. Use extra care at material seam welds and where adhesion of the applied product to the appropriately prepared substrate as the substrate can be affected by such temperature constraints as well.
 - 2. Unrolling of cold materials, under low ambient conditions must be avoided to prevent the likelihood of unnecessary stress cracking. Rolls must be at least 40 degrees F at the time of application. If the membrane roll becomes stiff or difficult to install, it must be replaced with roll from a heated storage area.
- C. Commence installation of the roofing system at the lowest point of the roof (or roof area), working up the slope toward the highest point. Lap sheets shingle fashion so as to constantly shed water
- D. All slopes greater than 2:12 require back-nailing to prevent slippage of the ply sheets. Use ring or spiral-shank 1 inch cap nails, or screws and plates at a rate of 1 fastener per ply (including the membrane) at each insulation stop. Place insulation stops at 16 ft o.c. for slopes less than 3:12 and 4 feet o.c. for slopes greater than 3:12. On non-insulated systems, nail each ply directly into the deck at the rate specified above. When slope exceeds 2:12, install all plies parallel to the slope (strapping) to facilitate backnailing. Install 4 additional fasteners at the upper edge of the membrane when strapping the plies.

3.4 INSTALLATION COLD APPLIED ROOF SYSTEM

- A. Base Ply: Cut base ply sheets into 18-foot lengths and allow plies to relax before installing.. Shingle base sheets uniformly to achieve one ply throughout over the prepared substrate. Shingle in proper direction to shed water on each large area of roofing.
 - 1. Lap ply sheet ends 8 inches. Stagger end laps 12 inches minimum.
 - 2. Solidly bond to the substrate and adjacent ply
 - 3. Extend plies 2 inches beyond top edges of cants at wall and projection bases.
 - 4. Install base flashing ply to all perimeter and projection details.
 - 5. The modified membrane must be installed the same day as the base plies.
- B. Thermoplastic Cap Ply: Allow plies to relax before installing. Install in interply adhesive applied at the rate required by the manufacturer. Shingle sheets uniformly over the prepared substrate to achieve the number of specified plies. Shingle in proper direction to shed water on each large area of roofing.
 - 1. All field seams exceeding 10 feet in length shall be welded with an approved automatic welder.

2. All field seams must be clean and dry prior to initiating any field welding. Remove foreign materials from the seams (dirt, oils, etc.) with acetone or authorized alternative. Use CLEAN WHITE COTTON cloths and allow approximately five minutes for solvents to dissipate before initiating the automatic welder. Do not use denim or synthetic rags for cleaning.
 3. Contaminated areas within a membrane seam will inhibit proper welding and will require a membrane patch or strip.
 4. All welding shall be performed only by qualified personnel to ensure the quality and continuity of the weld. The lap or seam area of the membrane may be intermittently tack welded to hold the membrane in place.
 5. The back interior edge of the membrane shall be welded first, with a thin, continuous weld to concentrate heat along the exterior edge of the lap during the final welding pass.
 6. Follow local code requirements for electric supply, grounding and surge protection. The use of a dedicated, portable generator is highly recommended to ensure a consistent electrical supply, without fluctuations that can interfere with weld consistency.
 7. Properly welded seams shall utilize a 1.5-inch-wide nozzle, to create a homogeneous weld, a minimum of 1.5 inches in width.
- C. Fibrous Cant Strips: Provide non-combustible perlite or glass fiber cant strips at all wall/curb detail treatments where angle changes are greater than 45 degrees. Cant may be set in approved cold adhesives, hot asphalt or mechanically attached with approved plates and fasteners.
- D. Wood Blocking, Nailers and Cant Strips: Provide wood blocking, nailers and cant strips as specified in Section 06 11 00.
1. Provide nailers at all roof perimeters and penetrations for fastening membrane flashings and sheet metal components.
 2. Wood nailers should match the height of any insulation, providing a smooth and even transition between flashing and insulation areas.
 3. Nailer lengths should be spaced with a minimum 1/8-inch gap for expansion and contraction between each length or change of direction.
 4. Nailers and flashings should be fastened in accordance with Factory Mutual "Loss Prevention Data Sheet 1- 49, Perimeter Flashing" and be designed to be capable of resisting a minimum force of 200 lbs/lineal foot in any direction.
- E. Metal Work: Provide metal flashings, counter flashings, parapet coping caps and thru-wall flashings as specified in Section 07 62 00 or Section 07 71 23. Install in accordance with the SMACNA "Architectural Sheet Metal Manual" or the NRCA Roofing Waterproofing manual.
- F. Termination Bar: Provide a metal termination bar or approved top edge securement at the terminus of all flashing sheets at walls and curbs. Fasten the bar a minimum of 8 inches (203 mm) o.c. to achieve constant compression. Provide suitable sealant at the top edge if required.
- G. Flashing Base Ply: Install flashing sheets by the same application method used for the base ply.
1. Seal curb, wall, and parapet flashings with an application of mastic and mesh on a daily basis. Do not permit conditions to exist that will allow moisture to enter behind, around or under the roof or flashing membrane.

2. Prepare all walls, penetrations, expansion joints and where shown on the Drawings to be flashed with required primer at the rate of 100 square feet per gallon. Allow primer to dry tack free.
3. Adhere to the underlying base ply with specified flashing ply adhesive unless otherwise specified. Nail off at a minimum of 8 inches (203 mm) o.c. from the finished roof at all vertical surfaces.
4. Solidly adhere the entire flashing ply to the substrate. Secure the tops of all flashings that are not run up and over curb through termination bar fastened at 6 inches (152 mm) o.c. and sealed at top.
5. Seal all vertical laps of flashing ply with a three-course application of trowel-grade mastic and fiberglass mesh.
6. Coordinate counter flashing, cap flashings, expansion joints and similar work with modified bitumen roofing work as specified.
7. Coordinate roof accessories, miscellaneous sheet metal accessory items, including piping vents and other devices with the roofing system work.
8. Secure the top edge of the flashing sheet using a termination bar only when the wall surface above is waterproofed or nailed 4 inches o.c. and covered with an acceptable counter flashing.

H. Flashing Cap Ply:

1. Seal curb, wall and parapet flashings with an application of mastic and mesh on a daily basis. Do not permit conditions to exist that will allow moisture to enter behind, around or under the roof or flashing membrane.
2. Prepare all walls, penetrations, expansion joints and where shown on the Drawings to be flashed with required primer at the rate of 100 square feet per gallon. Allow primer to dry tack free.
3. Adhere to the underlying base flashing ply with specified flashing ply adhesive unless otherwise specified. Nail off at a minimum of 8 inches (203 mm) o.c. from the finished roof at all vertical surfaces.
4. Coordinate counter flashing, cap flashings, expansion joints and similar work with modified bitumen roofing work as specified.
5. Coordinate roof accessories, miscellaneous sheet metal accessory items with the roofing system work.
6. All stripping shall be installed prior to flashing cap sheet installation.
7. Heat and scrape granules when welding or adhering at cut areas and seams to granular surfaces at all flashings.
8. Secure the top edge of the flashing sheet using a termination bar only when the wall surface above is waterproofed or nailed 4 inches o.c. and covered with an acceptable counter flashing.

I. Roof Walkways: Provide walkways in areas indicated on the Drawings.

3.5 CLEANING

- A. Clean-up and remove daily from the site all wrappings, empty containers, paper, loose particles and other debris resulting from these operations.
- B. Remove asphalt markings from finished surfaces.
- C. Repair or replace defaced or disfigured finishes caused by Work of this section.

3.6 PROTECTION

- A. Provide traffic ways, erect barriers, fences, guards, rails, enclosures, chutes, and the like to protect personnel, roofs and structures, vehicles and utilities.
- B. Protect exposed surfaces of finished walls with tarps to prevent damage.
- C. Plywood required for traffic ways for material movement over existing roofs shall be not less than 5/8 inch thick.
- D. In addition to the plywood listed above, an underlayment of minimum 1/2-inch recovery board is required on new roofing.
- E. Special permission shall be obtained from the Manufacturer before any traffic shall be permitted over new roofing.

3.7 FIELD QUALITY CONTROL

- A. Inspection: Provide manufacturer's field observations at start-up and at daily intervals until completion. Provide a final inspection upon completion of the Work.
 - 1. A warranty shall be issued upon the manufacturer's acceptance of the installation.
 - 2. Field observations shall be performed by a Sales Representative employed full-time by the manufacturer and whose primary job description is to assist, inspect and approve membrane installations for the manufacturer.
 - 3. Provide observation reports from the Sales Representative indicating procedures followed, weather conditions and any discrepancies found during inspection.
 - 4. Provide a final report from the Sales Representative, certifying that the roofing system has been satisfactorily installed according to the project specifications, approved details and good general roofing practice.

3.8 SCHEDULES

- A. Base (Ply) Sheet:
 - 1. StressBase 80: 80 mil SBS (Styrene-Butadiene-Styrene) rubber modified roofing base sheet reinforced with a fiberglass scrim, performance requirements according to ASTM D 5147.
 - a. Tensile Strength, ASTM D 5147
 - 1) 2 in/min. @ 0 +/- 3.6 deg. F MD 100 lbf/in XD 100 lbf/in
 - 2) 50 mm/min. @ -17.78 +/- 2 deg. C MD 17.5 kN/m XD 17.5 kN/m
 - b. Tear Strength, ASTM D 5147
 - 1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 110 lbf XD 100 lbf
 - 2) 50 mm/min. @ 23 +/- 2 deg. C MD 489 N XD 444 N
 - c. Elongation at Maximum Tensile, ASTM D 5147
 - 1) 2 in/min. @ 0 +/- 3.6 deg. F MD 4 % XD 4 %
 - 2) 50 mm/min @ -17.78 +/- 2 deg. C MD 4 % XD 4 %
 - d. Low Temperature Flexibility, ASTM D 5147, Passes -40 deg. F (-40 deg. C)
- B. Thermoplastic Cap (Ply) Sheet:
 - 1. KEE-Stone HP: 60 mil thermoplastic, ketone ethylene ester (KEE) roofing membrane with polyester scrim. ASTM D 6754
 - a. Breaking Strength, ASTM D 751, Proc. B, Strip

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- 1) 375 lbf. (1,668 N)
 - b. Tear Strength, ASTM D 751
 - 1) 150 lbf. Min (667 N)
 - c. Elongation at Break (%), ASTM D 751, Proc. B, Strip
 - 1) 40.0%
- C. Interply Adhesive:
 - 1. Green-Lock Plus Membrane Adhesive: Cold applied solvent free membrane adhesive: zero V.O.C. compliant performance requirements:
 - a. Non-Volatile Content ASTM D 4586 100%
 - b. Density ASTM D 1475 11.4 lbs./gal. (1.36 g/m³)
 - c. Viscosity Brookfield 20,000-50,000 cPs.
 - d. Flash Point ASTM D 93 400 deg. F min. (232 deg. C)
 - e. Slope: up to 3:12
 - 2. KEE-Lock Foam: Dual component, single bead (ribbon applied) urethane insulation/membrane adhesive.
 - a. Tensile Strength (ASTM D 412) 250 psi
 - b. Density (ASTM D 1875) 8.5 lbs./gal.
 - c. Viscosity (ASTM D 2556) 22,000 - 60,000 cP
 - d. Peel Strength (ASTM D 903) 17 lb./in.
 - e. Flexibility (ASTM D 816) Pass @ -70 deg. F (-56.7 deg. C)
- D. Flashing Base Ply:
 - 1. StressBase 80: 80 mil SBS (Styrene-Butadiene-Styrene) rubber modified roofing base sheet reinforced with a fiberglass scrim, performance requirements according to ASTM D 5147.
 - a. Tensile Strength, ASTM D 5147
 - 1) 2 in/min. @ 0 +/- 3.6 deg. F MD 100 lbf/in XD 100 lbf/in
 - 2) 50 mm/min. @ -17.78 +/- 2 deg. C MD 17.5 kN/m XD 17.5 kN/m
 - b. Tear Strength, ASTM D 5147
 - 1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 110 lbf XD 100 lbf
 - 2) 50 mm/min. @ 23 +/- 2 deg. C MD 489 N XD 444 N
 - c. Elongation at Maximum Tensile, ASTM D 5147
 - 1) 2 in/min. @ 0 +/- 3.6 deg. F MD 4 % XD 4 %
 - 2) 50 mm/min @ -17.78 +/- 2 deg. C MD 4 % XD 4 %
 - d. Low Temperature Flexibility, ASTM D 5147, Passes -40 deg. F (-40 deg. C)
- E. Flashing Ply Adhesive:
 - 1. KEE-Lock Foam: Dual component, single bead (ribbon applied) urethane insulation/membrane adhesive.
 - a. Tensile Strength (ASTM D 412) 250 psi
 - b. Density (ASTM D 1875) 8.5 lbs./gal.
 - c. Viscosity (ASTM D 2556) 22,000 - 60,000 cP
 - d. Peel Strength (ASTM D 903) 17 lb./in.
 - e. Flexibility (ASTM D 816) Pass @ -70 deg. F (-56.7 deg. C)
 - 2. Green-Lock Plus Flashing Adhesive: Cold applied solvent free flashing adhesive: zero V.O.C.
 - a. Non-Volatile Content ASTM D 4586 100%
 - b. Density ASTM D 1475 11.8 lbs./gal. (1.17 g/m³)
 - c. Viscosity Brookfield 400,000 cPs.
 - d. Flash Point ASTM D 93 400 deg. F min. (232 deg. C)
 - e.

- F. Surfacing:
1. Flashing Cap (Ply) Sheet:
 2. KEE-Stone HP: 60 mil thermoplastic, ketone ethylene ester (KEE) roofing membrane with polyester scrim. ASTM D 6754
 - a. Breaking Strength, ASTM D 751, Proc. B, Strip
 - 1) 375 lbf. (1,668 N)
 - b. Tear Strength, ASTM D 751
 - 1) 150 lbf. Min (667 N)
 - c. Elongation at Break (%), ASTM D 751, Proc. B, Strip
 - 1) 40.0%

END OF SECTION

SECTION 07 60 00
FLASHING AND SHEET METAL

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Galvanized sheet metal.
 - 2. Fasteners.
 - 3. Fabrications.
 - 4. Finish.
- B. Related Sections:
 - 1. Section 06 10 00 - Rough Carpentry: Wood blocking, nailers, and grounds.
 - 2. Section 07 52 00 – Modified Bitumen Roofing.
 - 3. Section 07 90 00 - Joint Protection.
 - 4. Section 09 90 00 - Painting and Coatings

1.2 REFERENCES

- A. AA (Aluminum Association) - Aluminum Construction Manual: Aluminum Sheet Metal Work and Building Construction.
- B. AISI (American Iron and Steel Institute) - Stainless Steel - Uses in Architecture.
- C. ASTM A167 [2009] - Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip.
- D. ASTM A240/A240M [2020] - Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
- E. ASTM A653/A653M [2020] - Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
- F. ANSI/ASTM B32 [2020] - Solder Metal.
- G. ASTM D2244 [2016] – Standard for Calculation of Color
- H. FS O-F-506 - Flux, Soldering, Paste and Liquid.
- I. NRCA [2019 Edition] - National Roofing Contractors Association: Roofing Manual.
- J. SMACNA [2020 Edition] – Sheet Metal and Air Conditioning Contractor's National Association Manual.

1.3 QUALITY ASSURANCE

- A. Applicator: Company specializing in sheet metal flashing work with a minimum of three years' experience.

- B. Pre-installation Conference:
 - 1. Convene preinstallation conference in accordance with Section 01 30 00 – Administrative Requirements.
 - 2. Attend conference with roofing installer, roofing manufacturer's representative, General Contractor and the Facility Representative.
- 1.4 SUBMITTALS
 - A. Shop Drawings: Indicate overall layout of sheet metal work; type, thickness, and details of sheet metal components; joints, expansion joints, attachment and anchoring of sheet metal components.
 - B. Warranties: Sample of special warranties.
- 1.5 DELIVERY, STORAGE, AND HANDLING
 - A. Deliver flashing and sheet metal wrapped for protection and marked to facilitate identification.
 - B. Stack preformed [and prefinished] material to prevent twisting, bending, or abrasion, and to provide ventilation.
 - C. Prevent contact with materials during storage which may cause discoloration, staining, or damage.
 - D. Store and handle in protective wrapping until ready for use.
- 1.6 PROJECT CONDITIONS
 - A. Field Measurements: Before fabricating sheet metal, verify shapes and dimensions of surfaces to be covered.
- 1.7 SEQUENCING AND SCHEDULING
 - A. Coordinate Work of this Section with work of other Sections whose work affects or is affected by the Work of this Section.
- 1.8 WARRANTY
 - A. Special Warranty on Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.
 - 1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
 - b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
 - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

PART 2 PRODUCTS

2.1 MATERIALS

A. Sheet Metal:

1. Stainless Steel: ASTM A240/A240M, Type 304, 2D (dull, cold rolled) annealed finish, soft except where harder temper is required for forming or performance, 16 gauge unless otherwise indicated on Drawings.
2. Other sheet metal, unless otherwise specified or indicated, shall be 22-gauge zinc-Coated (Galvanized) Steel Sheet conforming to ASTM A653/A653M, G90 (Z275) coating designation; structural quality, mill phosphatized for field painting.
3. Provide associated trim, corner plates, clips, joint covers, and similar items, as required for a complete and watertight installation.

B. Fasteners:

1. Material:
 - a. Non-corrosive or hot-dipped galvanized, compatible with flashing and sheet metal material.
 - b. Provide stainless steel fasteners for stainless steel sheet metal.
2. Type and Size:
 - a. Nails, rivets, sheet metal screws as indicated and as required to hold flashing and sheet metal securely in place.
 - b. Where sheet metal is installed over other sheet metal, fasten through 1-inch diameter tinned discs.
3. Spacing: 3-inches on center, unless otherwise indicated.

C. Solder: ASTM B32, Alloy Grade 50A.

D. Flux: [FS O-F-506.]

E. Sealant: Type specified in Section 07 90 00.

F. Reglets:

1. Standard or surface mounting types, as indicated; of either galvanized steel or plastic, unless otherwise indicated.
2. For embedded types, provide with strippable tape covers or with channel prefilled with sealant.
3. Manufacturers
 - a. Fry Reglet Corp; Springlock Flashing System Type 'CO'
 - b. MM Systems Corp.
 - c. Equal

2.2 FABRICATION

- A. Field-fabricate only those items that cannot be fabricated in the shop.
- B. Fabricate products in accordance with the reviewed approved Shop Drawings and the SMACNA Architectural Sheet Metal Manual referenced standard, and NRCA Roofing Manual.
- C. Form sections true to shape, accurate in size, square, and free from distortion or defects.
- D. Form pieces in longest practical lengths.

- E. Form flashing and sheet metal to fit snugly and without sharp edges.
- F. Form seams neatly, and make straight.
- G. Hem exposed edges on underside 1/2 inch; miter and seam corners.
- H. Fabricate corners from one piece with minimum 18 inch long legs; seam for rigidity, seal with sealant.
- I. Fabricate flashings vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip.
- J. Joints
 - 1. Make joints watertight and allow for expansion.
 - 2. Reinforce sheet metal corners as required.
 - 3. Conceal reinforcement within finished assembly.
- K. Fastenings: Use concealed hook strips and fasteners. Exposed hook strips and fasteners not acceptable.

2.3 FINISH

- A. Galvanized Items: Mill phosphatized for painted finish in accordance with Section 09 90 00.
- B. Backpaint concealed metal surfaces with one coat protective backing paint.
- C. Coat contacting dissimilar metals with protective compound.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that conditions are satisfactory for the installation of flashing and sheet metal.
- B. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, cant strips and reglets are in place, and nailing strips located.
- C. Verify roofing membrane termination and base flashings are in place, sealed, and secure.
- D. If unsatisfactory conditions exist, do not commence installation until such conditions have been corrected. Beginning installation means acceptance of existing conditions.

3.2 PREPARATION

- A. Remove dirt, foreign objects, and foreign materials from surfaces to receive flashing and sheet metal.
- B. Surfaces shall be clean, smooth, even, and free from defects prior to installation.

3.3 INSTALLATION

- A. Soldering:
 - 1. Clean contact surfaces before soldering.

2. Perform soldering so as to thoroughly heat sheet metal and completely sweat solder through full seam width to produce joint of flowed solder 1-inch wide.
 3. Sweat lock seams full of solder flat and straight; clean with acid flux after soldering, and wash thoroughly.
- B. Mechanical Fastening:
1. Join parts with concealed rivets or sheet metal screws, type and spacing in accordance with manufacturer installation instructions, NRCA Roofing Manual and approved shop drawings.
 2. Place sheets together before drilling.
- C. Lap Joints:
1. Where lap joints are used, lap sheets at least 4 inches.
 2. Provide bead of sealant across lapped joints, placed 1 inch from exposed edge of joint.
- D. Butt Joints:
1. Where butt joints are used, provide concealed backing alignment plates or sleeves fitted to one side of joint.
- E. Perform cutting, fitting, drilling, and similar work as required to accommodate the Work of other Sections.
- F. Gravel Stops:
1. Fabricate gravel stops of galvanized steel.
 2. Provide prefabricated mitered and soldered internal and external corners.
 3. Leave joints between sections open 1/4 inch and back with formed back-up plates lapping each section and a minimum of 3 inches.
 4. Seal laps with butyl sealer.
 5. Fold back exposed edges 1/2 inch on the underside.
 6. Place gravel stops on roofs after roofing felts have been laid.
 7. Place in position on a 1/8 inch thick bed of black plastic cement the full width of the flange and nail not to exceed 12-inches on center.
- G. Parapet Caps:
1. Fabricate of 22 gauge galvanized steel unless otherwise indicated.
 2. Provide prefabricated mitered internal and external corners.
 3. Leave joints open 1/4 inch between sections, back with formed back-up plates lapping each section and a minimum of 3 inches.
 4. Seal laps with butyl sealer.
- H. Expansion Joints:
1. Fabricate of 22 gauge galvanized steel unless otherwise indicated.
 2. Fabricate in accordance with SMACNA Plate No. 76.
- I. Hanging Gutters:
1. Fabricate of 24 gauge galvanized steel, unless otherwise indicated.
 2. Lap joints between sections 1-1/2 inches, rivet and solder.
 3. Provide loose locked expansion joints midway between outlet tubes to provide for 1-1/2 inches movement in both directions.
 4. Provide expansion joints with cover strips in a manner to provide free movement and watertight connection.
 5. Form outlet tubes of same material and thickness as gutter and lock and solder the longitudinal seam.

6. Flange the upper end of tubes and rivet and solder to the lining.
 7. Extend tubes into downspouts at Support Gutters with 20 gauge strap hangers and install spreaders at midpoint between hangers.
- J. Downspouts:
1. Fabricate downspouts of 24 gauge galvanized steel unless otherwise indicated.
 2. Telescope end joints 1-1/2 inches and lock longitudinal joints.
 3. Hold downspouts in position 1 inch clear of the wall with 1/16 inch by 1 inch galvanized steel downspout straps spaced not more than 10 feet on center and securely fasten to the wall with expansion anchors.
- K. Conductor Heads:
1. Construct conductor heads of 24 gauge galvanized steel unless otherwise indicated.
 2. Use flat-locked and soldered seams.
 3. Provide 4 inch long outlet tubes.
 4. Close tops of conductor heads with a removable type 1/2 inch mesh stainless steel wire screen.
- L. Scupper Linings:
1. Unless otherwise indicated, line scuppers with galvanized steel extending through the walls and projecting into conductor heads.
 2. Join scupper linings to wall and roof flanges with locked and soldered seams.
 3. Prime concrete surfaces to receive the scupper lining and coat with plastic cement.
- M. Reglets and Counterflashings:
1. Install reglets and counterflashings in accordance with the manufacturer's printed installation drawings and instructions as indicated, and approved shop drawings.
- N. Completed installation shall be weathertight.
- 3.4 CLEANING
- A. Following installation, clean exposed surfaces of flashing and sheet metal of excess solder and dirt; remove grease and oil with appropriate solvent; wipe surfaces with clean rags, and leave in condition suitable for the application of paint.

END OF SECTION

SECTION 07 71 23
GUTTERS AND DOWNSPOUTS

PART 1 GENERAL

1. SECTION INCLUDES

- A. Materials: Steel sheet metal and galvanized plate steel.
- B. Components: Overflows, downspouts, and precast concrete splash pads.
- C. Accessories: Traffic guards, strainers, straps, and fasteners.
- D. Fabrication: Parapet Flashing and traffic guards.
- E. Installation: Overflows, parapet flashing, downspouts, and traffic guards.
- F. Cleaning and Testing: Overflows and downspout system.

2. RELATED SECTIONS

- A. Section 06 16 00 – Sheathing.
- B. Section 07 52 00 – SBS Modified Bitumen Membrane Roofing
- C. Section 07 62 00 - Sheet Metal Flashing and Trim.
- D. Section 09 90 00- Painting Maintenance.

3. REFERENCES

- A. California Building Code – 2025 Edition.
- B. ASTM A167 [2020] - Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
- C. ASTM A123 [2017] – Zinc (Hot-Dip Galvanized) Coatings for Iron and Steel Products.
- D. ASTM A653 [2020] - Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process.
- E. ASTM A924 [2020] - General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
- F. ASTM B32 [2020] - Solder Metal.
- G. ASTM B486 [1974]- Paste Solder.
- H. FS O-F-506 - Flux, Soldering, Paste and Liquid.

- I. SMACNA [2019 Edition] – Sheet Metal and Air Conditioning Contractor's Association Manual.

4. SUBMITTALS

- A. Submit information on all products used in work under provisions of Section 01 10 00 and 01 33 00.
- B. Shop Drawings: Indicate locations, configurations, gutter and downspout profiles, materials, jointing methods, fastening methods, support methods, locations, and installation details. Show proposed detail for gutter expansion joints per SMACNA requirements.
- C. Product Data: Provide data on prefabricated components.
- D. Provide 6 inch sample of gutter and downspout materials and provide sample gutter strap and downspout strap with fasteners.

5. DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products under provisions of Section 01 60 00.
- B. Stack preformed and prefinished material to prevent twisting, bending, or abrasion, and to provide ventilation. Slope to drain.
- C. Prevent discoloration, staining or damage of materials during storage. All damaged materials shall be replaced prior to final acceptance of the work.

6. COORDINATION

- A. Coordinate the installation of gutter and downspout system with work of other construction trades.

PART 2 PRODUCTS

2. MATERIALS

- A. Prefinished Kynar 500 22 gage gutters and downspouts.
- B. Plate Steel: ASTM A36 (galvanized per ASTM A123).
- C. Isolating Material: Alkali-resistant bituminous paint or varnish.

3. COMPONENTS

- A. Downspouts: SMACNA Rectangular profile, 4" x 6", stainless steel, 20 gage, with kick outs at reglet counterflashings. Brackets shall hold downspout away from wall to provide room for reglet counter flashing and cant.
 - 1. Straps: Straps and miscellaneous fastenings, where required, shall be stainless steel, half-hard copper, or half-hard 70-30 brass of size indicated or required. Where not indicated, provide straps of 1/16 inch thick by 1 inch wide size.
- B. Solder: ASTM B32; 50/50 type.
- C. Strainers: Commercially manufactured, heavy duty, 4", stainless steel, globe type, mesh strainers.

4. FABRICATION

- A. Form overflows and downspouts of profiles and size indicated. Downspouts must match profile of building.
- B. Fabricate with required connection pieces per SMACNA recommendations. Fabricate slotted holes through gutter at inches on center for fastening to wood nailer.
- C. Form sections square, true, and accurate in size, in maximum possible lengths, free of distortion or defects detrimental to appearance or performance. Allow for expansion at joints.
- D. Hem exposed edges of metal.
- E. Pre-tin edges of sheet. Solder shop formed metal joints. After soldering, remove flux. Wash and wipe solder joints clean. Weather seal joints.
- F. Fabricate prefinished downspout and accessories; seal seams watertight.
- G. Fabricate galvanized downspout guard in accordance with project drawings and these specifications. Provide any offset required by reglet counterflashings that empty onto splashpans. 18 gage brackets shall be used to hold downspout off wall surface.
- H. Fabricate parapet flashing in accordance with project drawings and these specifications. Finish color shall match existing.

PART 3 EXECUTION

1. EXAMINATION

- A. Verify that surfaces are ready to receive work, and that installation has been coordinated with work of other sections.

2. INSTALLATION

- B. Install new downspouts, and accessories at roof perimeter in accordance with manufacturer's instructions, and SMACNA details, these specifications and project drawings.
- C. Fasten gutters to wood blocking at 18 inches on-center through slotted holes. Installation shall allow gutter expansion.
- D. Caulk or seal joints and laps of sheet metalwork as indicated or required for a waterproof installation. Beads of sealant which will be concealed in the finished work shall be continuous with no voids or material.
- E. Install gutters level. Level shall be true and not based on any existing building features. Flood test performed under III.3.C below shall be performed prior to dripedge metal installation.
- F. Install gutter expansion joints at locations shown on project drawings.
- G. Isolate and protect dissimilar metals from contact with each other by applying specified isolation material to contact surfaces. Protect surfaces of sheet metal in contact with concrete, treated wood, or aluminum with a heavy coating of bituminous paint.
- H. Provide waterproof neoprene washers wherever required fasteners penetrate sheet metal. Exposed fasteners will not be permitted for any portion of this work.
- I. Set splash blocks under all downspouts. Install 18"x30" walk pad under splash pans on roof. Spot attach splash pans and walk pads with mastic on roof surface.
- J. Provide new commercial type stainless steel globe strainers at all new downspouts.
- K. Install downspout traffic guards at all locations shown on project drawings. Install the traffic guard over the bottom four feet of vertical section and above the angled discharge section of downspout. Anchor the traffic guard to the wall as shown on project drawings. Downspouts shall have a minimum of two supports at traffic guard locations.

3. CLEANING AND TESTING

- A. Clean new downspout of all dirt and debris, ensure new globe strainers are installed in all downspouts.
- B. Flood test all downspouts to ensure there is no leakage. Solder seal joints in gutters or downspouts which leak at no additional cost to the Government.
- C. **Flow test roof to ensure proper drainage to downspouts prior to installation of drip edge.** Ponding water near overflows is cause for rejection of work.

END OF SECTION

SECTION 07 90 00
JOINT PROTECTION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Preparing sealant substrate surfaces.
 - 2. Sealant and backing.
- B. Related Sections:
 - 1. Section 09 01 00 – Paint Maintenance
 - 2. Sealants used in conjunction with Building Components as indicated in all divisions.

1.2 REFERENCES

- A. ASTM C732 [2017]- Aging Effects of Artificial Weathering on Latex Sealing Compounds.
- B. ASTM C834 [2023] - Latex Sealing Compounds.
- C. ASTM C881 [2020] - Epoxy-Resin Base Bonding Systems for Concrete.
- D. ASTM C882 [2024] - Test Method for Bond Strength of Epoxy - Resin Systems Used with Concrete by Slant Shear.
- E. ASTM C920 [2018] - Elastomeric Joint Sealants.
- F. ASTM D695 [2026] - Compressive Properties of Rigid Plastics.
- G. ASTM D2240 [2021] - Test Method for Rubber Property-Durometer Hardness.

1.3 SUBMITTALS

- A. Product Data
 - 1. For sealants and sealant primers used inside the weatherproofing system, including printed statement of VOC content.
- B. Samples: Submit showing the standard colors available for each sealant material intended for installation in an exposed location.
- C. Certificates: Submit certificate that materials specified and proposed for use are suitable for intended application.
- D. Manufacturer's installation instructions.
- E. Warranties: Sample of special warranties.

1.4 QUALITY ASSURANCE

- A. Applicator: Company with minimum [3] years' experience in the application of materials of the type specified in this Section.
- B. Regulatory Requirements: Joint Sealers shall meet all current limits set by regulatory agencies regarding Volatile Organic Compounds (VOC).

1.5 FIELD SAMPLES

- A. Provide field samples in accordance with Section 01 45 00.
- B. Construct field sample panel of size reviewed by the Facility Representative, illustrating sealant types, colors, and tooled surfaces.
- C. Locate as directed.
- D. Accepted sample may remain as part of the Work.

1.6 MOCK-UPS

- A. Provide sealant and related accessories for mock-ups in accordance with Section 01 45 00.10 20.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in the unopened, original containers or unopened packages with manufacturer's name, labels, product identification, and lot numbers where appropriate.
- B. Store materials in the original, unopened containers or packages, and under conditions recommended by manufacturer.

1.8 WARRANTY

- A. Special Installer's Warranty: Manufacturer's standard form in which Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Failures include but are not limited to the following:
 - a. Air and/or water penetration.
 - b. Loss of adhesion or cohesion.
 - c. Failure to cure.
 - 2. Warranty Period: **Two** years from date of Project completion.
- B. Special Manufacturer's Warranty: Manufacturer's standard form in which joint-sealant manufacturer agrees to furnish joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Failures include but are not limited to the following:
 - a. Loss of adhesion or cohesion.
 - b. Failure to cure.

2. Warranty Period: **[2]** years from date of Project completion.
- C. C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:
 1. Movement of the structure caused by structural settlement or errors attributable to design or construction resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
 2. Disintegration of joint substrates from natural causes exceeding design specifications.
 3. Mechanical damage caused by individuals, tools, or other outside agents.
 4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 PRODUCTS

2.1 MATERIALS, GENERAL

- A. A. VOC Content of Interior Sealants: Provide sealants and sealant primers for use inside the weatherproofing system that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 1. Architectural Sealants: Not more than 250 g/L.
 2. Nonmembrane Roof Sealants: 300 g/L.
 3. Single-Ply Roof Membrane Sealants: 450 g/L.
 4. Sealant Primers for Nonporous Substrates: Not more than 250 g/L.
 5. Sealant Primers for Porous Substrates: Not more than 775 g/L.
 6. Modified Bituminous Sealant Primers: 500 g/L.

2.2 SEALANTS

- A. Type A Sealant:
 1. Manufacturers:
 - a. [Euclid Chemical Company; Eucolastic II - Pourable].
 - b. [Mameco International; Vulkem 245].
 - c. [Pecora Corp.; Urexpan NR-200].
 - d. [Sika Corp.; Sikaflex 2C-SL].
 - e. [Sonneborn Building Products; Sonolastic SL II].
 2. Multiple components, self-leveling polyurethane based sealant in accordance with ASTM C920, Type M, Grade P, Class 25.
- B. Type B Sealant: Not used
- C. Type C Sealant: Not Used
- D. Type D Sealant:
 1. Manufacturers:
 - a. [Adco Seal; No. B-100].
 - b. [Pecora Corp.; BC-158].
 - c. [PTI Sealants ; No. 707].
 - d. [Tremco; Butyl Sealant].
 2. Butyl rubber based sealant in accordance with ASTM C920, Type S, Grade NS, Class 7.5.

- E. Type E Sealant:
 - 1. Manufacturers:
 - a. Pecora Corp.; AC-20].
 - b. Sonneborn Building Products; Sonolac.
 - c. Tremco; Acrylic Latex Caulk.
 - 2. Latex acrylic based sealant in accordance with ASTM C834.
- F. Type F Sealant:
 - 1. Manufacturers:
 - a. Dow Corning Corp.; No. 795.
 - b. General Electric Co.; Silpruf.
 - c. Pecora Corp.; 864].
 - d. Sika Corp.; Sikaflex 1A.
 - e. Tremco, Spectrem 1.
 - 2. Low-modulus silicone sealant in accordance with ASTM C920, Type S, Grade NS, Class 50.
- G. Type G Sealant: Not used
- H. Type H (Acoustical) Sealant:
 - 1. Tape:
 - a. Manufacturers:
 - 1) Arlon; Series 6A.
 - 2) Norton Co.; Norseal V30 Series.
 - 3) Williams Products, Inc.; U-Gasket.
 - b. Polyvinylchloride foam tape with pressure sensitive adhesive on one side, 3/4 inch wide by the thickness required to accommodate unevenness of substrate and completely fill openings between partition framing and building floors and concrete or masonry walls.
 - 2. Compound:
 - a. Manufacturers:
 - 1) Ohio Sealants; Sound Caulk (solvent type).
 - 2) Pecora Corp.; BA-98.
 - 3) Tremco; Acoustical Sealant.
 - b. Permanently resilient type manufactured specifically for acoustical applications.

2.3 MISCELLANEOUS MATERIALS

- A. Backer Rod:
 - 1. Material: Closed-cell foam, nonstaining, nongassing, resilient material such as neoprene, butyl, or polyurethane, compatible with sealant to be used.
 - 2. Sized and shaped to control depth of sealant and to provide 20 percent to 50 percent compression upon insertion.
- B. Joint Cleaner:
 - 1. For metal and glass: [Xylol, xylene, toluol, or toluene].
 - 2. For removing lacquer coatings: [Lacquer thinner].
- C. Primer: As recommended by sealant manufacturer for use intended.

- D. Masking Tape: Pressure-sensitive adhesive paper type.
- E. Bond Breaker: Pressure-sensitive adhesive polyethylene tape.

2.4 SEALANT COLORS

- A. Sealant color for use in exposed locations shall be as selected by the Facility Representative from manufacturer's standard colors.
- B. Wherever sealants are not exposed to view, provide manufacturer's standard color which has the best overall performance characteristics for the application indicated.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Inspect joints to be sealed to determine if conditions are satisfactory for the proper installation of joint sealants.
- B. If unsatisfactory conditions exist, do not commence Work until such conditions have been corrected. Beginning of installation means acceptance of existing conditions.

3.2 GENERAL

- A. Provide sealant wherever necessary to:
 - 1. Prevent light leakage.
 - 2. Prevent moisture leakage.
 - 3. Facilitate cleaning and sanitation.
 - 4. Seal exposed joints around door and window frames, signs, display boards, casework, fire extinguisher cabinets, fire alarm boxes, plumbing fixtures, electrical device cover plates, light fixtures, and other items indicated to be set in sealant.

3.3 PREPARATION

- A. Cleaning: Clean joint surfaces, using joint cleaner as necessary, of dust, dirt, oil, grease, rust, lacquers, laitance, release agents, moisture, and other matter which could adversely affect adhesion of sealants.
- B. Masking: Mask areas adjacent to joints.
- C. Priming: Apply primer, if required, in accordance with manufacturer's printed instructions.
- D. Joints shall enclose sealant on three sides.
 - 1. Where adequate joints for sealants have not been provided, suitable joints shall be cleaned out to the depth required, or as indicated, and ground to a minimum width of 1/4 inch without damage to the adjoining Work, unless otherwise specified or indicated.
 - 2. No grinding shall be performed on metal surfaces.

3.4 APPLICATION

- A. Install sealant and backing materials in accordance with manufacturer's instructions.
- B. Apply in accordance with manufacturer's instructions regarding ambient temperature for application and curing.
- C. Install backing materials in joints using blunt instrument to avoid puncturing.
 - 1. Do not twist backing while installing.
 - 2. Install backing so that joint depth is 50 percent of joint width, minimum ¼ inch deep.
- D. Apply sealants in joints using pressure gun with nozzle cut to fit joint width.
- E. Place sealants in uniform, continuous beads without gaps or air pockets.
- F. Tool joints to required configuration within 10 minutes of sealant application.
- G. If masking materials are used, remove immediately after tooling.
- H. Seal joints adjacent to painted Work before the final coat of paint is applied.
- I. Verify adhesion of sealants to substrates.

3.5 CLEANING

- A. Remove spilled and excess materials adjacent to joints without damaging adjacent surfaces.
- B. Leave finished Work in neat, clean condition with no evidence of spillovers or damage to adjacent surfaces.

3.6 SCHEDULE

- A. Type A:
 - 1. Joints in concrete and tile floors and paved surfaces subject to foot traffic.
- B. Type D:
 - 1. Interior wall penetrations for pipe and conduit that will be concealed by escutcheons and other trim and plate, and for lap joints in sheet metal.
- C. Type E:
 - 1. Joints, voids and penetrations not otherwise specified for interior surfaces exposed to view and requiring painting.
 - 2. Bedding of fixtures, partitions, equipment and accessories fastened to walls and floors, and flanges and escutcheons of items penetrating surfaces in the following locations: kitchens, dining rooms, staff and public toilet rooms, inmate toilet rooms except as otherwise specified, change rooms, and other areas requiring sanitary conditions to eliminate any open joints between contact surfaces.

- D. Type F:
 - 1. Exterior and interior joints in contact with organically-coated aluminum.
 - 2. Exterior and interior vertical joints in concrete, except as otherwise specified.
 - 3. Exterior joints in masonry and portland cement plaster.
 - 4. Around metal door, window and louver frames penetrating exterior concrete, masonry and portland cement plaster surfaces, except as otherwise specified.
- E. Type H:
 - 1. Perimeter joints around sound-retardant partitions and electrical boxes and other penetrations in such partitions.
- F. Conflicts:
 - 1. In the event of conflict between the above Schedule and sealant type indicated on Drawings, notify the Facility Representative.
 - 2. The Facility Representative will determine sealant type to be installed in location in question.
 - 3. Install sealant type directed by the Facility Representative, complete with all necessary joint preparation and accessories.

END OF SECTION

SECTION 09 01 90

PAINTING MAINTENANCE

PART 1 GENERAL

1. SCOPE

- A. Paint all surfaces uncovered by work specified herein except those specified not to be painted hereunder or finished by others.
- B. Repaint previously painted surfaces damaged, defaced or altered under work of this project.
- C. Surface treatment includes surface preparation, priming and 2 coats of paint as specified in this Section. Number of coats specified is a minimum. Uniform coverage is required, free from defects and blemishes.

2. SECTION INCLUDES

- A. Submittals.
- B. Quality Assurance.
- C. Material and Equipment.
- D. Painting Maintenance.
- E. Preparation.
- F. Application.

3. RELATED SECTIONS

- A. Section 06 10 00 – Rough Carpentry

4. DO NOT PAINT

- A. Surfaces within concealed areas.

5. SUBMITTALS

- A. Material List. Submit copies of complete material list and color samples together with statement of intended use for each material in accordance with Section 01 33 00. Do not apply material without written approval from the Engineer or Inspector of Record.
- B. Samples. Submit sample draw sheets for each color proposed for use to the Architect of Record.

6. QUALITY ASSURANCE

- A. The Contractor shall wait for approval in writing by the Contract Manager stating what parts of the building are approved for receiving their first coat of primer and shall not start applying primer or paint until such approval has been received.
- B. Regulations. Materials and processes shall comply with California Air Quality Management standards and all applicable local restrictions.
- C. Qualification of manufacturer. Products used in the work of this Section shall be produced by manufacturers regularly engaged in manufacture of similar items and with a history of successful production of architectural coatings.
- D. Manufacturers Standards. Comply with manufacturer's recommendations and instructions.

7. DELIVERY AND STORAGE

- A. Deliver, store and protect products in accordance with Section 01 70 00.

PART 2 PRODUCTS

1. QUALITY

- A. Paint manufacturer shall be existing coating systems manufacturer.
- B. Materials not bearing manufacturer's identification are not acceptable.

2. DURABILITY

- A. Paints and finishes shall be durable, washable and shall stand up under washing required to remove pencil marks, ink, ordinary soil, etc., without showing discoloration, loss of gloss, staining, peeling or other damage.

3. PAINT MANUFACTURER AND COLOR

- A. Paint manufacturer and color shall match existing building coating systems.

4. ACRYLIC SYSTEM

- A. Metal Surfaces. Paint metal surfaces as defined below:

- 1. Unprimed and Primed Metal, Ferrous:

- a. Prime Coat: PPG Seal Grip 3210 or equal.
 - b. Second Coat: PPG Fortis 6407 or equal.
 - c. Finish Coat: PPG Fortis 6407 or equal.

- 2. Galvanized Metal:
 - a. Prime Coat: PPG Seal Grip 3210 or equal.
 - b. Second Coat: PPG Fortis 6407 or equal.
 - c. Finish Coat: PPG Fortis 6407 or equal.
- B. Exterior wood. Paint exterior wood surfaces as defined below:
 - 1. Exterior wood surfaces:
 - a. Prime Coat: PPG Seal Grip 3210 or equal.
 - b. Second Coat: PPG 6407 or equal.
 - c. Finish Coat: PPG 6407 or equal.
- G. Exterior Concrete. Paint exterior concrete surfaces as defined below:
 - 1. Concrete Surfaces **(12 Mil. D.F.T.):**
 - a. Prime Coat: Thoro Primer 2K or equal.
 - b. Second Coat: S i k a Thorocoat 200 or equal.
 - c. Finish Coat: Sika Thorocoat 200 or equal.
- H. Above manufacturer product numbers are intended for contractor's general reference. The contractor shall use materials supplied by the government for the work of this section.

PART 3 EXECUTION

- 1. GENERAL
 - A. Comply with this Section and manufacturer's specifications.
- 2. PROTECTION
 - A. The Contractor shall provide protective devices, such as tarpaulins, screens or covers, as necessary to prevent damage to the work and to other property or persons from all cleaning and painting operations.
 - B. Paint or paint stains which result in an unsightly appearance on surfaces not designated to be painted shall be removed or obliterated by the Contractor at his expense and to the satisfaction of the CM.

3. SURFACE PREPARATION

- A. Existing surfaces. Thoroughly clean all grease, dirt, dust or other foreign matter from existing surfaces requiring paint. Cleaning shall consist of high pressure water blasting using suitable pressure washer equipment. Pressure washer operating pressure shall be between 1500 and 4000 PSI depending upon the surface to be cleaned. Surfaces shall be cleaned as required under criteria of the proposed paint manufacturer. Perform all other preparation and cleaning of surfaces as required by the painting manufacturer.
- B. Apply paints and finishes only when surfaces are dry and properly prepared, and surrounding conditions are satisfactory for painting.
- C. Remove blistering, cracking, flaking, and peeling or other deteriorated coatings on areas required to receive painting by coating manufacturer's recommendations.
- D. Slick surfaces shall be roughened and damaged areas such as, but not limited to, nail holes, cracks, chips, and spalls, shall be repaired with suitable material to match adjacent undamaged areas.
- E. Edges of chipped paint shall be feather edged and sanded smooth in accordance with trade standards and coating manufacturer's recommendations. Rusty metal surfaces shall be cleaned by solvent and wire brush or other mechanical cleaning, to provide surfaces suitable for repainting. Treat all bare and clean metal with Primer Pre-treatment prior to priming.
- F. All galvanized material shall have all oils removed with white vinegar (20%) and water mixed (80%) prior to manufacturers recommended prep treatment.

4. MIXING AND THINNING

- A. General. Unless otherwise recommended by the manufacturer or restricted by Air Quality Management rules, paints may be thinned immediately prior to application with not more than 1-pint of suitable thinner per gallon when necessary to suit conditions of surface, temperature, weather, and application methods. The use of thinner shall not relieve the Contractor from obtaining complete hiding, full film thickness, or required gloss, and shall not adversely affect the VOC limits of the paints. Paints of different manufacturers shall not be mixed. Maintain containers used in storage, mixing, and application of paint in a clean condition, free from foreign materials and residue.

5. APPLICATION EQUIPMENT

- A. Spray Equipment shall be proper type for work as specified.
- B. Roller Equipment shall be type that will produce finish work equal to best brush applied work.
- C. Mechanical Equipment shall be operated to insure good visibility and control of paint film.

6. APPLICATION METHODS

- A. Wood Primer (Smooth surface only). Shall be applied by brush only.
- B. Stipple Enamel shall be applied by brush, then back rolled.
- C. All other application; other than as specified above, shall be applied by brush, roller, spray, or airless equipment.
- D. Primer coats shall be continuous over areas requiring work of this section. All other application; other than as specified above, shall be applied by brush, roller, spray, or airless equipment.
- E. Primer coats shall be continuous over areas requiring work of this section.

7. QUALITY CONTROL

- A. To insure proper quality control and record keeping, comply with Sections 01 45 00 and 01 70 00.

8. APPLICATION

- A. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, curtains, ropiness, improper cutting in, overspray, or other surface deviations and imperfections are not acceptable.
- B. Undercoats shall be provided with a difference in shade in order to distinguish between coats.
- C. Topcoats shall be applied to all surfaces as designated in items II.4, and shall match color of existing finish coat and closely match approved samples. Remove, refinish or repaint work not in compliance with requirements.

9. CLEAN-UP

- A. During the progress of the work, the contractor shall remove daily from the job site discarded painting materials and debris generated by him/her. Cloths, cotton waste and other debris that might constitute a fire hazard shall be placed in closed metal containers and removed at the end of each day. All window glass, hardware, floors, walks etc., shall be cleaned of paint residue to the satisfaction of the COR or his Representative. Upon completion of the work, the contractor's equipment and all debris shall be removed from the job site.

10. EXTRA MATERIALS

- A. Upon completion of work, the contractor shall provide the Government the minimum amount of stock that leaves 5 gallons of each material used.

END OF SECTION

SECTION 09 51 00
ACOUSTICAL CEILINGS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Acoustical tile.
 - 2. Suspended metal grid ceiling system, materials and fastening.
 - 3. Trim, clips, adhesives, and other related accessories.
- B. Related Sections
 - 1. Section 01 33 00 – Submittal Procedures

1.2 SECTION 09 21 16 - GYPSUM BOARD ASSEMBLIES.REFERENCES

- A. ASTM A641 - 2025 Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
- B. ASTM C635 - 2022 Manufacture, Performance and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings
- C. ASTM C636 – 2025 Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels.
- D. ASTM D1779 – 98 [2024] Adhesive for Acoustical Materials.
- E. ASTM D5116 – [2017] Standard Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions From Indoor Materials/Products
- F. ASTM E84 - 2021 Test Method for Surface Burning Characteristics of Building Materials.
- G. ASTM E119 - 2026 Test Methods for Fire Tests of Building Construction and Materials.
- H. ASTM E580 - 2024 Practice for Application of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Requiring Moderate Seismic Restraint.
- I. ASTM E1264 - 2023 Classification for Acoustical Ceiling Products.
- J. DSA Interpretations of Regulations, IR 25-2 - Metal Suspension Systems for Lay-In Panel Ceilings

1.3 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: Where indicated, provide acoustical ceilings identical to those of assemblies tested for fire resistance per ASTM E119 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.

PART 2 SUBMITTALS

2.1 SUBMITTALS

- A. Submit in accordance with Section 01 33 00 and 01 33 23.
 - 1. Panels to 24" X 24" smooth anti-microbial and bleach cleanable acoustical panel.
 - 2. Shop Drawings: Indicate panel layout; show locations of mechanical grills, lighting, access panels, sprinkler heads, and other items affecting ceiling installation.
 - 3. Submit full range of manufacturer's standard colors for color selection.
 - 4. Submit 12-inch square samples for each type and size acoustical unit required.
 - 5. Submit sample of suspension system; 12 inches long.
- B. Manufacturer's installation instructions for suspended grid system and adhesives.

2.2 DELIVERY, STORAGE, AND HANDLING

- A. Provide factory wrapping, packaging, and other means necessary to prevent damage or deterioration during shipment, handling, and storage.
- B. Maintain protective coverings in place and in good repair until removal is necessary for the Work.
- C. Store products inside enclosed storage facilities or closed building, supported above grade and slabs-on-grade.
- D. Maintain storage spaces and products in dry condition, and within temperature extremes recommended by manufacturer.
- E. Follow special instructions of manufacturer.

2.3 PROJECT CONDITIONS

- A. Building shall have been entirely enclosed, with temperature and humidity closely approximating the conditions that will exist during occupancy, for not less than 10 days before start of installation.
- B. Before installation, acoustical units shall have been stored within the spaces where they are to be used, for at least 3 days with cartons opened and stripped sufficiently to permit units to stabilize to ambient conditions.

2.4 EXTRA MATERIALS

- A. In addition to acoustical units required for installation, furnish additional units in typical field sizes for each type of unit used in the Work.
- B. Deliver extra materials to project premises just prior to final acceptance and store at location directed by the Contract Manager.
- C. Furnish extra units from production lots or color runs the same as for units used in the Work and furnish in factory packaged and labeled cartons.
- D. Identify cartons with Contents and Project Name as follows:
 - 1. EXTRA TYPE CEILING PANELS, TILE, etc.

- E. For each type of unit:
 - 1. Furnish in quantity of not less than 10 percent of total installed area.
 - 2. Furnish in full carton lots.
 - 3. Furnish not less than one full carton.
- F. Furnish written certification that extra materials supplied have been inspected and reconfirmed to be the same as those used in the Work.

PART 3 PRODUCTS

3.1 ACOUSTICAL TILE

- A. Acoustical Panels, General
 - 1. Recycled Content: Provide acoustical panels with recycled content such that postconsumer recycled content plus one-half of preconsumer recycled content constitutes a minimum of 2% percent by weight.
 - 2. Sustainability Requirements: Provide acoustical as follows:
 - a. Zero-emitting: Acoustic panels tested according to ASTM D 5116 and shown to emit less than 3 $\mu\text{g}/\text{m}^3$ (2 ppb) formaldehyde, **or**
 - b. Low Emitting: Acoustic panels tested according to ASTM D 5116 and shown to emit less than 14 $\mu\text{g}/\text{m}^3$ (11.5 ppb) formaldehyde
- B. Manufacturers
 - 1. New Ceiling Tiles, LLC ; Genesis Food grade ceiling tiles
 - 2. Armstrong World Industries, Inc;
 - 3. Celotex;
- C. Tile
 - 1. Description: Modulated, cast or molded incombustible mineral fiber; border units for tiles less than full size.
 - 2. Design: Fissured.
 - 3. Class A Fire Rating
 - 4. Field Size:
 - a. 2 x 2 feet, 1/2-inch thick.
 - 5. Edges: Square.
 - 6. NRC Range: 0.60 to 0.70
 - 7. Ceiling Attenuation Class: 28;
 - 8. Flame Spread Classification, ASTM E84: 0-25.
 - 9. Light Reflectance Classification: LR-1.
 - 10. Finish and Color: Factory-applied, washable, in manufacturer's standard white color.

3.2 SUSPENDED GRID SYSTEM

- A. General
 - 1. Recycled Content: Provide products made from steel sheet with average recycled content such that postconsumer recycled content plus one-half of preconsumer recycled content is not less than **25** percent.

- B. Manufacturers
 - 1. Chicago Metallic Corp; 1800 System for non-rated assemblies.
 - 2. Armstrong Industries.
 - 3. USG Interiors, Inc.; DX System.
 - 4. Roblin Industries.
- C. Type: Direct suspension, supported and braced by connections to overhead structures; non fire-rated, exposed steel grid system.
- D. Structural Classification: Heavy duty, meeting requirements of ASTM C635, and as specified.
- E. Components:
 - 1. Factory fabricated, punched, and otherwise prepared to facilitate rapid installation with minimum field Work for typical conditions.
 - 2. Items of like type and size shall be readily interchangeable without modification.
- F. Grid Runners:
 - 1. Type: Bulb tee section, double-web type, formed from electro-galvanized steel strip in thickness required to meet specified duty classification, 24 gauge minimum.
 - 2. Main Runners: 15/16-inch wide flange, 1-1/2-inch high web.
 - 3. Cross Runners: 15/16-inch wide flange, 1 1/8-inch high web.
- G. Exposed-grid Accessories:
 - 1. Perimeter angles, reveals, and other items detailed; roll formed from electro-galvanized steel strip to sizes indicated or required for Project conditions, and as accepted.
 - 2. For fixed connection of runner ends to wall angles, 1/8-inch diameter pop rivets; head color to match exposed grid.
- H. Finish: Manufacturer's standard low-gloss sheen baked enamel, color as selected by Facility Representative.
- I. Panel Hold-Down Clips:
 - 1. Chicago Metallic; Hold Down Clip, Model [935].
 - 2. USG Industries Inc.; Retention Clip [#20428].
 - 3. Armstrong World Industries; Hold Down Clip 7878.
- J. Removable Panel Hold-Down Clips:
 - 1. Armstrong World Industries; Hold Down Clip, Model 425.
 - 2. U.S. Industries.
 - 3. Armstrong World Industries.

3.3 SUSPENSION MATERIALS AND FASTENINGS

- A. Wire
 - 1. General: ASTM A641, galvanized double-annealed steel, regular coating, soft temper; factory pre-straightened units.
 - 2. Hanger and Safety Wires: 12 gauge, unless otherwise indicated.
 - 3. Ceiling and Partition Bracing Wires: 10 gauge, unless otherwise indicated.

- B. Turnbuckles: As required for leveling grid assemblies, of adequate size, electroplated.
- C. Wire Connections to Overhead Structures
 - 1. Concrete Filled Metal Deck Attachment:
 - a. Post-installed anchors as described below.
 - b. Pre-installed wires looped around reinforcing bars.
 - c. Hanger tabs provided with metal decking.
 - 2. Unfilled Metal Decking: Steelcon Fastening System 3 x 4 inches x 12-gauge steel strap clips with two #8 self tapping sheet metal screw per clip.
- D. Fastenings for Accessories
 - 1. Bolts or screws of adequate size, in types appropriate for conditions and materials involved, and made of corrosion-resistant materials or coated as accepted.
 - 2. Concealed only, unless otherwise indicated or accepted.
- E. Post-Installed Anchors: Proprietary type, designed for intended uses, and ICC ESR evaluated.
 - 1. Manufacturers
 - a. ITW Ramset/Red Head.
 - b. Simpson.
 - c. Hilti Co.

3.4 MISCELLANEOUS PRODUCTS

- A. Perimeter Trim:
 - 1. Molded plastic channel type trim.
 - 2. White color closely keyed to tile color.
 - 3. Required for each installation area, unless otherwise indicated.
- B. Panel Perimeter Trim at Ceiling Access Panels in Rated Ceiling Areas:
 - 1. 24 gauge minimum metal channel type perimeter trim.
 - 2. White color closely keyed to tile color.
 - 3. Provide for full perimeter of each access panel.
- C. Installation Adhesive: ASTM D1779, Class A flame spread as recommended by acoustical tile manufacturer for application of acoustical tile to gypsum wallboard substrates.
 - 1. Use adhesives that have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

PART 4 EXECUTION

4.1 EXAMINATION

- A. Verify that conditions are satisfactory for the installation of acoustical ceiling systems.
- B. Verify that wet work such as plastering and painting has been completed and is thoroughly dry, and that rough mechanical and electrical Work has been completed in the area above which the ceiling will be installed.
- C. If unsatisfactory conditions exist, do not commence installation until such conditions have been corrected. Beginning installation means acceptance of existing conditions.

4.2 PREPARATION

- A. Coordinate installation of hangars with contract documents.

4.3 INSTALLATION

- A. Installation shall be in accordance with the manufacturer's printed instructions, the requirements of Interpretation of Regulations IR 25-2, ASTM C636, these Specifications, and as indicated.
- B. Hanger Wires:
 - 1. Provide for main runners and cross runners within 8 inches of ceiling perimeter and breaks in ceiling plane.
 - 2. Provide counterbraced wires for hanger wires more than 1 to 6 out of plumb.
 - 3. Secure hanger wires with three tight turns within 1-1/2 inches maximum length.
 - 4. Drilled-in Anchors in Concrete: Field test 1 out of 10 anchors for hanger wires and 1 out of 2 for bracing wires. If any anchor fails, test all anchors.
 - a. Hanger Wires Test Load: 200 pounds tension.
 - b. Brace Wires Test Load: 440 pounds tension.
 - c. Shot-in Anchors: Not allowed.
 - 5. Separate hanger and bracing wires from unbraced ducts, pipes, etc.
- C. Bracing-Wire Assemblies:
 - 1. Provide hanger and four-way bracing wire sets for each 96 square feet of ceiling area, located and spaced in accordance with referenced standards.
 - 2. Bracing Wires: Provide set of four of splay wires at a maximum of 45 degrees unless other specifically designed and detailed bracing is provided. Provide first set of splay wires at 48 inches from walls.
 - a. Wires: Taut without causing ceiling to lift.
 - b. Secure bracing wires with four tight turns for 12 and 10 gauge and three tight turns for 8 gauge within 1-1/2 inches maximum length.
 - 3. Attachment of Clip to Unfilled Metal Decking overhead: Locate clip on the side of the deck flute furthest from the ceiling splay point such that connecting screws are acting in shear rather than in tension (pull out).
- D. Ceiling Grid:
 - 1. Attach to adjacent walls, Separate at least 1 inch from adjacent walls.
 - 2. Interconnect cross runners over 12 inches long and main runners not connected to walls.
 - 3. Interconnect near free end with 16-gauge tie wire or metal strut securely attached to prevent spreading.
 - 4. Unless otherwise indicated, center system on room axis leaving equal border units greater than one half panel width on each side.
- E. Installation Tolerances:
 - 1. Bottom surface plane of each assembly shall be within plus-or-minus 1/8 inch of ceiling height required.
 - 2. Bottom surface plane of each assembly shall be level and true to plane within 1/8 inch in 12 feet.

4.4 MECHANICAL AND ELECTRICAL WORK

- A. For locating safety wires, obtain layouts and/or instructions specified to be furnished as part of the existing layout.
- B. Secure light fixtures to ceiling grid to resist horizontal force equal to weight of fixture.
 - 1. Flush or Recessed Light Fixtures, Air Terminals, and Services: Independently support by not less than four taut 12-gauge wires capable of supporting four times load.
 - 2. Surface Mounted Light Fixtures: Support with at least two positive clamped devices made of minimum 14-gauge steel surrounding ceiling runner and supported from structure above with 12-gauge wire. Rotational spring clips not allowed.
 - 3. Pendant Mounted Light Fixtures: Support directly to structure above with hanger wires through each pendant capable of supporting four times load.
- C. Secure air diffusers and registers to ceiling grid with tamper proof metal fasteners in accordance with Section 05 05 55.

4.5 PERIMETER TRIM

- A. Trim shall be of same material, finish, and color as that of suspension system, unless otherwise specified, and of size and configuration indicated.
- B. Provide in longest lengths available and combinations of lengths to minimize number of joints required.
- C. Pieces shorter than 48 inches will not be permitted.
- D. Miter joints at corners.
- E. Install to neatly close with adjoining vertical surfaces.

4.6 INSTALLATION OF ACOUSTIC PANELS

- A. Prepare acoustic panels to be used as ceiling access panels with full panel perimeter trim. Install panels at location of access requirements. Secure to metal ceiling grid with #8 x 1 inch long tamper proof metal fastener screws at 16 inches on center, equally spaced and no further than 8 inches from any corner.
- B. Install acoustic panels using hold-down clips so that no individual panel may be removed without visible damage to panel; minimum 4 clips per panel. Install panels loose, without hold-down clips, where specifically indicated.
- C. Install removable acoustic panels using hold-down clips secured to suspended grid with tamper proof metal fasteners, so that no individual panel may be removed without special tools or visible damage to panel; minimum 4 clips per panel.

4.7 ADHESIVE INSTALLATION OF ACOUSTICAL TILE

- A. Apply adhesive in accordance with the manufacturer's printed instructions.
- B. Install acoustical tile with edges lightly butted, and with units securely adhered to substrate.

4.8 FIELD QUALITY CONTROL

- A. When complete, grid members of each assembly shall be mutually parallel/square, accurately aligned to positions intended, with joints neatly formed, closely fitted and aligned flush; and each assembly shall be securely anchored and braced to structure to prevent movement.
- B. Acoustical units installed in grids shall rest uniformly on their supporting members and shall be flat and free from twist and warp.
- C. Joints of adhesive-installed acoustical units shall be accurately aligned, straight, and free from gaps and offsets across adjoining units.

PART 5

5.1 CLEANING

- A. Exposed surfaces of grids and acoustical units shall be clean and free from scratches, dents, tool marks, stains, discoloration, fingerprints, and other defects and damage.

END OF SECTION

SECTION 09 65 00
RESILIENT FLOORING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Vinyl Composition Tile.
 - 2. Resilient bases.
 - 3. Related accessories.
- B. Related Sections:
 - 1. Section 07 90 00 – Joint Protection.

1.2 REFERENCES

- A. ASTM D2047 – [2025] Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine
- B. ASTM E84 – [2021] Surface Burning Characteristics of Building Materials.
- C. ASTM F1066 - [2025] Vinyl Composition Floor Tile.
- D. ASTM F1303 [2021] Sheet Vinyl Floor Covering with Backing.
- E. ASTM F1700 - [2020] Solid Vinyl Floor Tile.
- F. ASTM F1869 - [2023] Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
- G. ASTM F1913 - [2025] Sheet Vinyl Floor Covering without Backing.
- H. ASTM F2170 - [2020] Determining Relative Humidity in Concrete floor Slabs Using in situ Probes.
- I. FS L-F-1641 - Floor Covering, Translucent or Transparent Vinyl Surface, with Backing.
- J. FS L-F-475 - Floor Covering, Vinyl Surface (Tile and Roll), with Backing.
- K. FS RR-T-650 - Treads, Metallic and Non-metallic, Non-skid.
- L. FS SS-W-40 - Wall Base: Rubber and Vinyl Plastic.
- M. ADA Accessibility Guidelines for Buildings and Facilities (ADAAG).

1.3 SUBMITTALS

- A. Submit in accordance with Section 01 33 00.
- B. Product Data: For each type of product indicated.
 - 1. For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating costs for each product having recycled content, the manufacturer, and the source of the recycled content data.
 - 2. For adhesives, sealants, and chemical-bonding compounds include printed statement of VOC content.
 - 3. For linoleum flooring include printed statement of costs for each rapidly renewable resource.
 - 4. For resilient flooring include documentation of FloorScore™ Certification.
- C. Samples:
 - 1. Submit samples of manufacturer's full line of patterns and colors for selection by the CMD Representative.
 - 2. Submit for each type, pattern, and color of resilient flooring material selected.
 - 3. Tile samples shall be full size.
 - 4. Sheet vinyl samples shall be 12 inch by 12 inch.
 - 5. Accessories shall be 9 inches long, minimum.
- D. Manufacturer's installation instructions.
- E. Manufacturer's instructions for maintenance and stain removal.

1.4 QUALITY ASSURANCE

- A. Slip Resistance: Where required for conformance to accessibility standards, flooring shall conform to a minimum coefficient of friction of 0.5 when tested in accordance with ASTM D2047.
- B. Minimum recycled content 50 percent post-consumer of vinyl and 90 percent of rubber base.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in manufacturer's original unopened containers with labels indicating brand names, colors and patterns, and quality designations legible and intact.
- B. Do not remove markings until materials have been inspected and accepted.
- C. Store and protect accepted materials in accordance with manufacturer's printed instructions.
- D. Store materials in the original containers at not less than 70 degrees F for a minimum of 48 hours immediately prior to installation.

1.6 PROJECT CONDITIONS

- A. Maintain the temperature in spaces to receive resilient flooring materials between 70- and 90-degrees F for a minimum of 48 hours prior to installation, during installation,

and 48 hours after installation. Thereafter, maintain a minimum temperature of 55 degrees F.

1.7 EXTRA MATERIALS

- A. Provide resilient flooring materials for replacement and maintenance.
- B. Clearly identify each carton as to contents. Indicate Project, Bid Package, Building and Room numbers.
- C. Include materials of each size, color, pattern, and type incorporated in the Work.
- D. Vinyl Composition Tile: Provide two cartons for each 1,500 square feet, or fraction thereof, of vinyl composition tile installed.
- E. Seamless Flooring: Provide one percent of total installed area for each type, pattern, and color of sheet vinyl and seamless flooring installed.
- F. Accessories: Provide one percent of each type of accessory and trim for each size, color and type installed.

PART 2 PRODUCTS

2.1 VINYL COMPOSITION TILE

- A. Manufacturer:
 - 1. Armstrong [Excelon] Series.
 - 2. Azrock Floor Products Div: []
 - 3. Tarkett Inc: []
- B. Type: Composition of vinyl resins and fiber fillers, conforming to ASTM F1066, Type IV, Composition 1.
- C. Pattern and Color: Will be selected by the CMD Representative from manufacturer's standard range.
- D. Size: 12-inch square, 1/8 inch thick.
- E. Vinyl Composition Tile shall contain minimum of 25 percent recycled content.

2.2 RUBBER BASE

- A. Acceptable Manufacturers:
 - 1. Burke Flooring Products.
 - 2. Roppe Rubber Corp.
 - 3. Johnsonite.
- B. Base: FS SS-W-40, Type I rubber; coved; 6 inches high; 1/8 inch thick.
- C. Base Accessories: Premolded end stops, internal corners, and external corners of same material, size, and color as base.
- D. Color: Selected by the CMD Representative from manufacturer's standard range.
- E. Resilient base shall contain minimum of 25 percent recycled content.

2.3 ACCESSORIES

- A. Material: Rubber or vinyl.
- B. Reducer Strips: ASTM F1066, Type II, tapered- edge style, of thickness to suit abutting floor covering material.
- C. Cap Strip: Round style, minimum 3/4-inch size.
- D. Tread Nosing: Type indicated on the Drawings.
- E. Color: To be selected by the CMD Representative from the manufacturer's standard range.
- F. Thickness: Matching, or compatible with, thickness of abutting flooring material.

2.4 INSTALLATION MATERIALS

- A. Installation materials shall be of the types and brands recommended by the flooring material manufacturer for the specific installation conditions, and include:
 - 1. Adhesives: Water-resistant type recommended by floor covering manufacturer for products and substrates indicated.
 - a. For sheet vinyl floor covering use adhesives that have a VOC content of not more than **[50 g/L] [60 g/L] <Insert requirement>** when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - b. For linoleum flooring use adhesives that have a OC content of not more than **[50 g/L] <insert requirement>** when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - 1) VCT and Asphalt Tile Adhesives: Not more than 50 g/L.
 - 2. Primer.
 - 3. Crack filler and leveling compound; Industrial Products, Inc. [Vi-Tex Leveling Compound,] Armstrong Floor Div. [Underlayment S-180,].
 - 4. Welding rods for seamless flooring shall be in color selected by the CMD Representative from manufacturer's standards.
 - 5. Chemical-Bonding Compound: Manufacturer's product for chemically bonding seams.
 - a. Use chemical-bonding compound that has a VOC content of **350 g/L** or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - 6. Cove backing.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that conditions are satisfactory for the installation of resilient flooring materials.
- B. Verify surfaces are smooth and flat.

- C. Perform moisture test series to determine volume of vapor emission by standard anhydrous calcium chloride crystal test. Test results shall be expressed in pounds of emission within 1,000 square feet during 24 hours.
- D. Verify that concrete floors exhibit negative alkalinity, and do not exhibit carbonization or dusting, at the time of application of flooring.
- E. Correct all unsatisfactory conditions prior to the installation of resilient flooring materials.

3.2 PREPARATION

- A. Remove dirt, oil, grease, and other foreign matter from surfaces to receive resilient flooring materials.
- B. Fill cracks to provide a level surface for application of resilient flooring.
- C. Prohibit traffic from area until filler is cured.
- D. Vacuum substrate clean.
- E. Prime surfaces, if recommended by resilient flooring adhesive manufacturer.
- F. Seal concrete surfaces to receive resilient flooring with a topical vapor emissions membrane or sealer which is compatible with the adhesive and/or flooring if the vapor emissions rate from the concrete exceeds the recommendations of the flooring and/or adhesive manufacturer.

3.3 APPLICATION OF ADHESIVES

- A. Mix and apply adhesives in accordance with the manufacturer's printed instructions, except as specified.
- B. Provide safety precautions during mixing and applications as recommended by adhesive manufacturer.
- C. Apply adhesives uniformly over surfaces.
- D. Apply no more adhesive at any time than can be covered by resilient flooring material within manufacturer's recommended working time of the adhesive.
- E. Remove adhesive which dries or films over.
- F. Do not soil walls or adjacent areas with adhesive.
- G. Promptly remove spillage.

3.4 INSTALLATION - VINYL COMPOSITION TILE

- A. Install tile in accordance with manufacturer's instructions, except as specified.
- B. Mix tile from container to ensure shade variations are consistent.
- C. Install tile to square grid pattern with joints aligned.

- D. Do not lay tile less than one half width of a field tile, except where accepted by the CMD Representative for irregularly shaped rooms or spaces.
- E. Cut border tile neatly and accurately to fit within 1/64 inch of abutting surfaces.
- F. Fit tile neatly and tightly into breaks and recesses, around pipes and penetrations, under saddles or thresholds, and around permanent cabinets and equipment.
- G. At door openings where tile and other floor materials meet, make joinings under centers of doors.
- H. Following installation of tile, divert traffic from installation area for at least 24 hours.

3.5 INSTALLATION - SHEET VINYL

- A. Install sheet vinyl in accordance with manufacturer's instructions, except as specified.
- B. Cut sheet material in lengths and sizes required.
 - 1. Cut for minimum number of seams and for pattern match between adjacent abutting edges.
 - 2. Double-cut, if required.
 - 3. Lay cut sheets flat and allow to acclimate to room temperature prior to installation.
- C. Work out wrinkles and air pockets.
- D. Roll material in two directions, starting at center of sheet.
- E. Butt edges of adjoining sheets.
- F. Heat-weld joints thoroughly.
- G. Self-coved Base
 - 1. Cut, fit, and miter sheet material at interior and exterior corners to form integral bases 5 inches high, unless otherwise indicated.
 - 2. Install fillet member to ease transition at intersection between floor and wall.
 - 3. Apply heavy coat of adhesive to vertical wall surfaces where sheet vinyl will be applied.
 - 4. Mask upper wall surface to avoid excessive adhesive above contact line.
 - 5. Install cap strip.

3.6 INSTALLATION - REDUCER STRIPS

- A. Apply adhesive and bond securely to substrate in straight, true lines.
- B. Provide where floor covering terminates exposing the edge of the covering.
- C. Center edge strips under doors where floor covering terminates at a door opening.
- D. Cut ends to fit edges of door frames and abutting surfaces; fit edges to adjoining floor coverings.
- E. Top of strips shall be flush with top of resilient flooring material.

3.7 INSTALLATION - RESILIENT BASE

- A. Install base in lengths as long as practical to minimize the number of joints and suit installation conditions.
- B. Install with tight butt joints. Fit joints tight and vertical.
- C. Install on solid backing. Bond tight to wall surfaces.
- D. Press down so that bottom edge follows floor profile.
- E. Use pre-molded units at exposed ends and external corners; miter internal corners.
- F. Scribe and fit to door frames and other interruptions.

3.8 INSTALLATION - MISCELLANEOUS ACCESSORIES

- A. Install accessories in accordance with manufacturer's instructions.

3.9 CLEANING AND PROTECTION

- A. Prohibit traffic on floor finish for 48 hours after installation.
- B. Not less than four days following completion of installation of resilient flooring, clean surfaces with a neutral cleaner recommended by the flooring materials manufacturer for the type of material installed. Remove excess adhesive without damaging surfaces.
- C. For flooring materials requiring waxing, apply two coats of nonslip wax or other finish recommended by the flooring materials manufacturer following cleaning of flooring materials, and buff to a sheen.
- D. Protect completed installation from traffic and damage with a covering of heavy Kraft paper, taped at edges.

END OF SECTION

SECTION 09 65 16
RESILIENT SHEET VINYL FLOORING

PART 1 - GENERAL

1.1 SUMMARY

- A. Work of this Section consists of film print patterned resilient sheet vinyl flooring and accessories including, but not limited to:
 - 1. TOLI **Mature® Select™** Sheet Vinyl Flooring
 - 2. Accessories
 - a. Adhesives
 - b. Cleaning solutions
 - c. Finish top coatings.

1.2 SUBMITTALS

- A. Submittal Requirements per Section 01 33 00: Submit manufacturer's printed descriptions for each specified product.
- B. Shop Drawings per Section 01 33 00: Submit keyed location plans, plans indicating resilient sheet flooring type, layout, pattern direction, edge transitions, columns, doorways, enclosing partitions, built-in furniture, cabinets, cutouts, expansion and control joints, and attachment requirements.
- C. Samples per Section 01 33 00 as follows:
 - 1. Initial Selection: Submit printed color charts, sample chains or Architectural Binder indicating manufacturer's complete range to determine color, texture, shape, and/or composition for each type of material finish.
 - 2. Final Selection: Submit two (2) cut 9 x 12-inch samples of each different type, color and pattern selected for acceptance.
- D. Quality Assurance Submittals per Section 01 45 00.10 20: Test and Evaluation Reports, and Qualification Statements.
- E. Closeout Submittals per Section 01 70 00 unless noted otherwise.
 - 1. Operation and Maintenance Data: Including, but not limited to, methods for maintaining installed products and precautions against cleaning materials with methods detrimental to finishes and performance.
 - 2. Warranty Documentation: Manufacturers' material warranties and installers workmanship warranty.
 - 3. Record Documents: Drawings, Specifications, and Product Data.
- F. Maintenance Material Submittals - Extra Materials: Submit no less than five (10) percent additional full and unopened rolls of each type and pattern of sheet good used.

1.3 QUALITY ASSURANCE

A. Regulatory Requirements

1. Fire-Test-Response Characteristics: As determined by testing identical products as follows by a qualified testing agency.
 - a. ASTM E648: Critical Radiant Flux Classification: Class I
 - b. ASTM E662: Smoke Density: 450 or less

B. Qualifications:

1. Manufacturer: A company with a minimum of ten (10) years' experience in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance. A single source manufacturer supplying both product and adhesive.
 - a. The company shall be ISO 9001 Certified.
 - b. The company shall be ISO 14001 Certified.
2. Installer / Applicator: Perform installation with skilled, experienced, and trained workmen with demonstrated ability to install TOLI products supervised by trained personnel who shall have a minimum three (3) years successful experience in installations of similar size and scope. The testing agency: An independent testing agency with the experience and capability to conduct the testing indicated, meeting requirements of ISO/IEC Standard 17025 or ASTM E699 and ASTM E329.

C. Source Limitations: Obtain primary resilient tile flooring materials through one source from a single manufacturer, and secondary materials from source recommended by manufacturer of primary materials.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Delivery, Storage and Handling per industry guidelines, product manufacturer guidelines, and Section 01 60 00.

1.5 WARRANTY

- #### A. Manufacturer Warranty. Provide manufacturer's limited warranty to be free from defects in material and workmanship, under normal use and service, to repair or replace all defective sheet flooring.
1. Warranty Period: Fifteen (15) year limited warranty from the date of CBC invoice. Warranty to include reasonable labor. [Product Warranty](#)

PART 2 PRODUCTS

2.1 MANUFACTURER

A. Manufacturer List:

1. TOLI Corporation,
2. Or Approved manufacturer.

B. Product Options

1. Flooring Type: TOLI **Mature Select**
 - a. TOLI **Mature Select**:
 - 1). Size: 6 x 66 feet by 0.080 inches (1.8m x 20m x 2.0mm)
 - 2). Color and Pattern: [The Collection](#)

2. Accessories:

- a. Underlayment leveling compound per Section 03 54 16
- b. Expansion joints per Sections 07 92 00 and 07 95 13
- c. CBC 5001 High Performance Resilient Flooring Adhesive
- d. CBC 951 Epoxy Adhesive
- f. [Cleaning products](#)
- g. TOLI Welding Rod to match

2.2 DESCRIPTION

- A. TOLI **Mature Select** has a Type I, Grade 1, commercial 20-mil patent-pending ClearGuard wear layer and a factory applied polyurethane wear layer with embossed, clear, semi-rigid PVC over a photographic print film design with a Class B, 3-ply, fused backing system containing a fiberglass inner layer.

2.3 MATERIALS

- A. TOLI **Mature Select** Sheet per ASTM F1303: Type I, Grade I, printed film sheet vinyl.
 - 1. Composition: Sheet vinyl formed under heat and pressure from a PVC layer formulated from polyvinyl esters and inorganic filler materials, with a backing material of a fiberglass inner layer, a PVC layer, with the top layer overlaid with a printed film 20 mil patent pending ClearGuard wear layer and coated with a factory applied polyurethane wear layer.
 - 2. Roll Size: 6 x 66 feet (1.8m x 20m) by 0.080 inches (2.0mm) thick
 - 3. Color and Pattern - TOLI **Mature Select** Sheet: As selected by Architect from [Manufacturer's standard Collection](#).

2.4 ACCESSORIES

- A. Leveling and Patching Compound: Trowelable, latex-modified Portland cement-based formulation provided or approved by manufacturer for applications indicated.
- B. Self-Leveling Underlayment: Pourable latex-modified Portland cement-based formulation provided or approved by manufacturer for applications indicated.
- C. Expansion Joints: Refer to SECTION 079200 and SECTION 079500 or 079513.
- D. Adhesive - Acrylic: Solvent-free, low odor, acrylic based, high tack type adhesive acceptable to resilient sheet flooring manufacturer to suit flooring product and substrate conditions indicated.
 - 1. Manufacturer / Product: CBC 5001 High Performance Resilient Floor Adhesive
- E. Adhesive – Heavy Duty: CBC 951 solvent-free, hard-setting, reactive, epoxy-type adhesive acceptable to sheet vinyl manufacturer to suit substrate and in-use requirements.
- F. Adhesive Equipment: Professional adhesive application trowel for interior applications.
 - 1. V-notch 1/16 x 1/16 x 1/16 inch for porous substrates.
 - 2. U-notch 1/32 x 1/16 x 1/32 inch for non-porous substrates or use with CBC 951 2-Part Epoxy
- G. Seam Sealing:
 - 1. Heat Welding
 - a. Welding Rod: 3.5mm diameter TOLI weld rod as recommended for the product(s) specified.

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- b. Color: As selected by Architect from manufacturer's full range.
- H. Floor Maintenance Systems: Provide maintenance process system as recommended by flooring manufacturer's most recent published written [Maintenance Product Guide](#).

PART 3 – EXECUTION

3.1 FIELD CONDITIONS

- A. Conditions and Measurements: Visit jobsite to verify installation conditions and floor measurements.

3.2 EXAMINATION, PREPARATION AND INSTALLATION

- A. Proceed with installation only after unsatisfactory conditions have been corrected.
- 1. Verify conditions and test substrates as recommended to meet requirements.
 - B. Prepare substrates to ensure proper adhesion of resilient flooring system per adhesive manufacturer's written instructions.
 - C. Install resilient flooring per manufacturer's most recent published written installation instructions. [Installation Guide](#).
 - D. Expansion Joints: Locate movement joints where indicated prior to installation of adhesive and resilient flooring and use appropriate expansion joint cover.
 - E. Protect flooring from foot traffic for time specified for adhesive before and after installation per adhesive manufacturer's instructions to allow proper set up time.
 - F. Protect flooring from traffic, point or rolling loads for 48 hours or longer after installation per manufacturer's most recent published written instructions to allow proper set up time.
 - G. Wait 48 hours before wet cleaning.

3.3 CLEANING, MAINTENANCE AND PROTECTION

- A. Provide Progress Cleaning, Final Cleaning and Initial Maintenance in accordance with manufacturer's most recent published written instructions. [Maintenance Guide](#), 01 70 00 or 01 74 19 or 01 78 00 requirements, and the following:
 - 1. Protect newly installed flooring from traffic for specified time on adhesive label.
 - 2. Traffic can be permitted after:
 - a. 48 hours if installed with CBC 5001 acrylic adhesive.
 - b. 72 hours if installed with CBC 951 epoxy adhesive .
 - c. Provide surface protection for installed product and use plywood or rigid panels to roll or move all heavy objects across the flooring before and after owner's acceptance.
- 3. Permit only light damp mopping with well wrung mop during the first 2-4 days after installation.

3.4 CLOSEOUT ACTIVITIES

- A. Substantial Completion Requirements per Section 01 70 00 or 01 78 00 requirements: Closeout procedures, demonstration and training, and sustainable design closeout documentation.

END OF
SECTION

APPENDIX I – SUBMITTALS

List of Required Submittals											
Project:	Camp San Luis Obispo Bldg. 632 - Roof Replacement										
SPEC. SECTION	DESCRIPTION OF ITEM TO BE SUBMITTED	D A T A	S H O P D W G	S A M P L E	T E S T R E P O R T	C E R T I F I C A T E	G U A R A N T E E	HAS REQUIREMENT BEEN MET?	DATE	REVIEWER	
	DIVISION 1 -General Requirements										
01 32 00	SD-01 Preconstruction Submittals										
	Construction Schedule	X									
01 33 00	SD-01 Preconstruction Submittals										
	Submittal Register	X									
	Certificate of Insurance	X				X					
	Schedule of Values	X									
01 35 29	SD-01 Preconstruction Submittals										
	Accident Prevention Plan	X									
	Activity Hazard Analysis	X									
	SD-06 Test Reports										
	Incident Reports	X									
	Accident Reports	X									
	Citations and Violations	X									
01 74 19	SD-01 Preconstruction Submittals		X			X					
	Construction Waste Management Plan										
01 78 00	SD-10 Close out Documents										
	As-Built Drawings	X									
	As-Built Specifications	X									
	Product Data	X	X								
	Warranties	X				X	X				

List of Required Submittals												
Project:	Camp San Luis Obispo Bldg. 632 - Roof Replacement											
SPEC. SECTION	DESCRIPTION OF ITEM TO BE SUBMITTED	D A T A	S H O P D W G	S A M P L E	T E S T R E P O R T	C E R T I F I C A T E	G U A R A N T E E	HAS REQUIREMENT BEEN MET?	DATE	REVIEWER		
01 78 23	SD-09 Operation and Maintenance Data											
	Operations Manual	X	X		X							
	Occupant Notification					X						
	Hazard Abatement					X						
	Clearance Certification					X						
	SD-11 Closeout Submittals											
	Hazardous Waste Manifest					X						
	Weight Tickets					X						
	SD-7 Certificates Materials and Equipment											
	Bolts					X						
	SD-09 Operation and Maintenance Data											
	Plumbing System						X					
	DIVISION 2 - Existing Conditions											
02 41 00	Demolition											
	SD-1 Preconstruction Submittals											
	Salvage & Removal Procedures	X										
	Receipts	X										

List of Required Submittals												
Project:	Camp San Luis Obispo Bldg. 632 - Roof Replacement											
SPEC. SECTION	DESCRIPTION OF ITEM TO BE SUBMITTED	D A T A	S H O P D W G	S A M P L E	T E S T R E P O R T	C E R T I F I C A T E	G U A R A N T E E	HAS REQUIREMENT BEEN MET?	DATE	REVIEWER		
	DIVISION 5 - METALS											
05 52 00	Safety Railing											
	SD-2 Shop Drawings											
	Piping Plan		X									
	SD-3 Product Data											
	Material	X										
	SD-4 Samples											
	Finished product paint chips			X								
	DIVISION 6 - WOOD											
06 10 00	Rough Carpentry											
	SD-3 Product Data											
	Material	X										
	DIVISION 7 -Thermal & Moisture Protection											
07 22 00	Roof and Deck Insulation											
	SD-3 Product Data											
	Material	X										
	Installation Drawings	X										
07 52 00	TPO Membrane Roofing											
	SD-3 Product Data											
	Material	X										
	Warranty					X	X					
	MSDS Data	X										

List of Required Submittals											
Project:	Camp San Luis Obispo Bldg. 632 - Roof Replacement										
SPEC. SECTION	DESCRIPTION OF ITEM TO BE SUBMITTED	D A T A	S H O P D W G	S A M P L E	T E S T R E P O R T	C E R T I F I C A T E	G U A R A N T E E	HAS REQUIREMENT BEEN MET?	DATE	REVIEWER	
07 54 20	Roof Walkway										
	SD-3 Product Data										
	Material	X									
	Warranty					X					
07 60 00	Flashinng and Sheet Metal										
	SD-3 Product Data										
	Material	X									
07 71 23	Gutters and Downspouts										
	SD-3 Product Data										
	Material	X									
	Installation Data	X									
07 90 00	Joint Protection										
	SD-3 Product Data										
	Material	X									
	Installation Drawings	X									
	DIVISION 09 - Finishes										
09 01 00	Paint Maintenance										
	SD-3 Product Data										
	Material	X									
	VOC	X									

List of Required Submittals											
Project:	Camp San Luis Obispo Bldg. 632 - Roof Replacement										
SPEC. SECTION	DESCRIPTION OF ITEM TO BE SUBMITTED	D A T A	S H O P D W G	S A M P L E	T E S T R E P O R T	C E R T I F I C A T E	G U A R A N T E E	HAS REQUIREMENT BEEN MET?	DATE	REVIEWER	
	DIVISION 09 - Finishes (cont.)										
	SD-4 Samples										
	Colors and Finishes			X							
	Material			X							

[illegible]

Submittals - Logged In - Logged Out									
Project: 06EXXXX Camp San Luis Obispo Bldg. 632 - Roof Replacement									
DESCRIPTION of what was received	RECEIVED		REVIEWED		RETURNED to Contractor		REMARKS		
During Review: Improve this description if useful. Break out into separate line items if needed, for example, for major items, different disciplines, or parts reviewed differently (approved / rejected).	Date	By Who	Date	Reviewer	Date	By Who	Including result of the review.		