New Jersey Sports & Exposition Authority
Lyndhurst, New Jersey

PROJECT MANUAL

for

NJSEA Lyndhurst Admin Building Partial Roof Replacement

Contract No.CN-308

Book 4 of 4

DESIGN DOCUMENTS

November 10, 2026

Project CN-308 NJSEA Lyndhurst Admin Building Partial Roof Replacement
DESIGN DOCUMENTS

DRAWINGS

DRAWING NO.	Title	DATE
A-000	COVER SHEET	11/02/2026
D-101	DEMOLITION ROOF PLAN	11/02/2026
D-102	DEMOLITION ROOF DETAILS	11/02/2026
A-101	NEW WORK ROOF PLAN	11/02/2026
A-102	ROOF DETAILS	11/02/2026
A-103	TYPICAL ROOF DETAILS	11/02/2026

TECHNICAL SPECIFICATIONS

SPECIFICATION NO.	Title
01 10 00	Summary
01 22 00	Unit Prices
01 32 00	Construction Progress Documentation
01 33 00	Submittal Procedures
01 35 16	Alteration Project Procedures
01 40 00	Quality Requirements
01 50 00	Temporary Facilities and Controls
01 73 00	Execution
01 74 19	Construction Waste Management & Disposal
07 78 23	Operation and Maintenance
02 41 19	Selective Demolition
06 10 53	Miscellaneous Rough Carpentry
07 54 23	TPO Thermoplastic Single-Ply Roofing
07 62 00	Sheet Metal Flashing and Trim
07 72 00	Roof Accessories
07 92 00	Joint Sealants
09 96 00	High-Performance Coatings

Project CN-308 NJSEA Lyndhurst Admin Building Partial Roof Replacement
DESIGN DOCUMENTS

SITE MAP



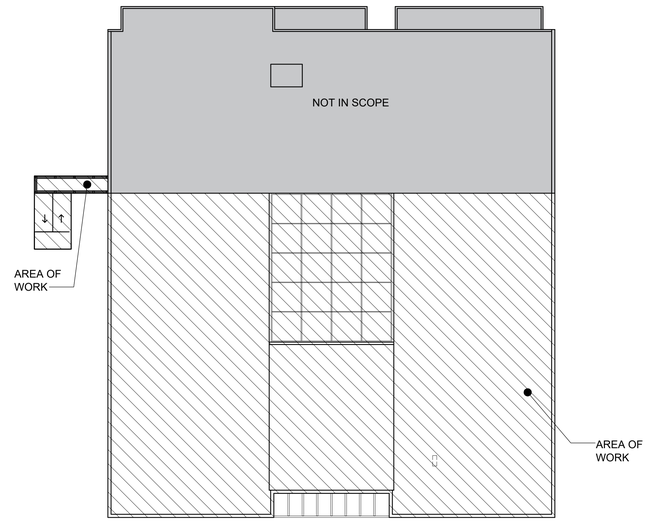
PARTIAL ROOF REPLACEMENT at:

NJSEA LYNDHURST ADMINISTRATION BUILDING
1 DeKorte Park Plaza
Lyndhurst, New Jersey 07071

Abbreviations

A.F.F.	ABOVE FINISH FLOOR
ALUM.	ALUMINUM
@	AT
ACT.	ACOUSTIC CEILING TILE
ALT.	ALTERNATE
BM.	BEAM
B.E.J.	BUILDING EXPANSION JOINT
BET.	BETWEEN
BLK.	BLOCK OR BLOCKING
BD.	BOARD
BOT.	BOTTOM
BLDG.	BUILDING
B.O.	BOTTOM OF
C.B.	COLLECTOR BOX
CEM.	CEMENT
CEM. PLAS.	CEMENT PLASTER
C.L.	CENTER LINE
CONC.	CONCRETE
C.M.U.	CONCRETE MASONRY UNIT
CONT.	CONTINUOUS
CONTR.	CONTRACTOR
C.J.	CONTROL JOINT
COORD.	COORDINATE
CT.	CERAMIC TILE
DET.	DETAIL
DIAM.	DIAMETER
D.F.	DRINKING FOUNTAIN
DR.	DOOR
DN.	DOWN
EA.	EACH
EIFS	EXTERIOR INSULATION FIN. SYSTEM
EL.	ELEVATION
E.O.S.	EDGE OF SLAB
EXIST.	EXISTING
EXP. JT.	EXPANSION JOINT
EXP.	EXPOSED
EXT.	EXTERIOR
EQ.	EQUAL
FT.	FEET
FIN.	FINISH
FIN. FLR.	FINISH FLOOR
F.G	FINISH GRADE
F.E	FIRE EXTINGUISHER
F.P.	FIREPROOFING
F.O.	FACE OF
FL.	FLOOR
F.D.	FLOOR DRAIN
F.O.W.	FACE OF WALL
FNDTN.	FOUNDATION
GALV.	GALVANIZED
GA.	GAUGE
G.C.	GENERAL CONTRACTOR
H.R.	HAND RAIL
HDWR.	HARDWARE
H.S.S.	STEEL TUBE BEAM OR COLUMN
HT.	HEIGHT
H.P.	HIGH POINT
H.M.	HOLLOW METAL
HOR.	HORIZONTAL
I.D.	INSIDE DIAMETER
I.D.F.	INTERMEDIATE DISTRIBUTION FRAME
INSUL.	INSULATION
L.D.R.	LEADER
L.F.	LINEAR FEET
M.H.	MANHOLE
M.O.	MASONRY OPENING
MAX.	MAXIMUM
M.E.P.	MECHANICAL, ELECTRICAL & PLUMBING
M.E.R.	MECHANICAL EQUIPMENT ROOM
MTL.	METAL
M.F.D.	METAL FLOOR DECK
M.F.T.R.	MANUFACTURER
M.R.D.	METAL ROOF DECK
MISC.	MISCELLANEOUS
N.R.	NOT REQUIRED
N.J.P.E.	NEW JERSEY PROFESSIONAL ENGR.
N.I.C.	NOT IN CONTRACT
N.T.S.	NOT TO SCALE
NO.	NUMBER
O.C.	ON CENTER
OPNG.	OPENING
O.D.	OUTSIDE DIAMETER
O.A.	OVERALL
PART.	PARTITION
PLAS.	PLASTER
PL.	PLATE
PNT.	PAINT
P.T.	PRESSURE TREATED
PTD.	PAINTED
REV.	REVISION
R.	RISERS
R.D.	ROOF DRAIN
RM.	ROOM
R.O.	ROUGH OPENING
SECT.	SECTION
SIM.	SIMILIAR
S.P.	STEEL PIPE COLUMN
SPECS.	SPECIFICATIONS
SQ.	SQUARE
SQ. FT.	SQUARE FEET
S.S.	STAINLESS STEEL
ST. STL.	STAINLESS STEEL
STL.	STEEL
STRUCT.	STRUCTURAL
SUSP.	SUSPENDED
T.O.	TOP OF
T.O.C.	TOP OF CURB
T.O.S.	TOP OF SLAB
T.O.STL.	TOP OF STEEL
TERR.	TERRAZZO FLOOR
TER. T.	TERRAZZO TILE
T.O.W.	TOP OF WALL
TYP.	TYPICAL
U.L.	UNDERWRITERS LABORATORY
U.O.N.	UNLESS OTHERWISE NOTED
VERT.	VERTICAL
V.I.F.	VERIFY IN FIELD
W.C.	WATER CLOSET
W.F.	WIDE FLANGE BEAM OR COLUMN
W.P.	WORK POINT
WPFG.	WATERPROOFING
WWM.	WELDED WIRE MESH
W/	WITH
WD.	WOOD

KEY PLAN



SITE PLAN



General Notes:

A. PERMITTED HOURS OF WORK: 7:00 AM TO 4:00 PM MONDAY THROUGH FRIDAY. WORK ON SATURDAYS AND/OR SUNDAYS SHALL BE APPROVED BY OWNER. **CONTRACTOR SHALL SUBMIT A DETAILED CONSTRUCTION SCHEDULE TO THE OWNER FOR REVIEW AND APPROVAL PRIOR TO BEGINNING ANY WORK ON SITE.**

B. PRIOR TO PROCEEDING WITH ANY WORK, THE CONTRACTORS SHALL REVIEW FOR APPROVAL, SITE ACCESS, STAGING AND PROPOSED WORK SCHEDULE WITH:

JOE ABRAMO - FACILITIES MANAGER
201-460-4635

C. ALL CONTRACTORS WILL BE REQUIRED TO WEAR AN IDENTIFICATION BADGE BEARING THEIR COMPANY NAME AND PHOTOGRAPH. BADGES SHALL BE ONE COLOR AND SHALL BE VISIBLE AT ALL TIMES.

D. PRIOR TO SUBMITTING A BID, ALL CONTRACTORS SHALL FIELD VERIFY ALL EXISTING FIELD CONDITIONS & DIMENSIONS INDICATED ON THESE DRAWINGS AS THEY ARE APPROXIMATE AND ARE TO BE USED AS A GUIDE ONLY. CONTRACTORS SHALL ALSO BE RESPONSIBLE TO MAKE A QUANTITATIVE TAKE OFF, AND INCLUDE IN HIS BID, THE AMOUNT FOR ALL WORK REQUIRED AT ROOF TOP EQUIPMENT, ROOF DRAINS, WALL AND ROOF INTERSECTIONS AND ALL OTHER CONDITIONS DEEMED NECESSARY FOR THE COMPLETE INSTALLATION OF THE NEW ROOF SYSTEM INDICATED ON THESE DRAWINGS AND AS SPECIFIED.

E. THE GENERAL CONTRACTOR SHALL OBTAIN AND ADHERE TO ANY / ALL WRITTEN GUIDELINES CONCERNING MATERIAL SEPARATION PROCEDURES FOR DUMP SITE DISPOSAL BY AGENCIES HAVING JURISDICTION.

F. THE CONTRACTORS AND SUBCONTRACTORS SHALL OBTAIN ALL CONST. PERMITS AND PAY ALL FEES RELATED TO SAME PERMITS CONCERNING EVERY ASPECT OF THE WORK DESCRIBED REREIN. CONTRACTOR SHALL ARRANGE FOR ALL REQUIRED INSPECTIONS.

G. THE CONTRACTOR SHALL PROTECT ALL SITE UTILITIES DURING THE COURSE OF CONSTRUCTION, INCLUDING BUT NOT LIMITED TO GAS, WATER, ELEC., UTILITY POLES AND ALL BUILDING-MOUNTED EQUIPMENT SUCH AS CONDUIT, JUNCTION BOXES, LIGHTING, CAMERAS, LOUVERS AND VENTS.

H. COORDINATE DELIVERY AND STAGING OF EQUIPMENT WITH OWNER. PARKING LOTS ARE NOT TO BE USED TO STORE MATERIAL EXCEPT WHERE INDICATED ON THESE DRAWINGS. BUILDING'S TOILET FACILITIES ARE NOT TO BE USED BY CONTRACTORS AT ANY TIME.

I. CONTRACTOR IS TO PROVIDE AND MAINTAIN PORTABLE TOILETS AND SHALL LOCATE THEM AS DIRECTED BY THE OWNER. UNITS SHALL BE REMOVED BY THE DATE OF SUBSTANTIAL COMPLETION.

J. CONTRACTORS SHALL PROVIDE ALL PROTECTION AS REQUIRED TO PREVENT REMAINING EXISTING SURFACES AND ROOF TOP EQUIPMENT FROM BEING DAMAGED DURING THE COURSE OF PERFORMING THE ROOFING WORK. ALL DAMAGED AND/ OR DISTURBED AREAS AND/ OR EQUIPMENT CAUSED BY THE CONTRACTOR OR HIS SUBCONTRACTORS, DUE TO WATER PENETRATION, DURING THE COURSE OF ROOFING WORK SHALL BE RESTORED TO THEIR ORIGINAL CONDITION OR REPLACED BY THE ROOFING CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER AND TO THE SATISFACTION OF THE OWNER AND ARCHITECT.

K. OWNER'S DUMPSTERS ARE NOT TO BE USED FOR DISPOSAL OF ANY CONSTRUCTION DEBRIS AND ARE NOT TO BE USED BY CONTRACTORS FOR DISPOSAL OF ANY PERSONAL DEBRIS.

L. THE CONTRACTOR AND/OR CONTRACTORS SHALL PROVIDE ALL LABOR, EQUIPMENT AND MATERIALS REQUIRED TO INSTALL AND COMPLETE ALL THE WORK DESCRIBED IN THE CONTRACT DOCUMENT DRAWINGS AND SPECIFICATIONS.

M. ALL NEW MATERIALS AND ASSEMBLIES REQUIRED AND/OR DESCRIBED IN THE DRAWINGS, DRAWING NOTES AND SPECIFICATIONS TO "MATCH EXISTING" OR DESCRIBED AS "MATCHING" SHALL BE THE EXACT OR SAME MATERIAL AND ASSEMBLY, IN EVERY RESPECT.

N. THE CONTRACTOR/S, AFTER NOTIFYING THE OWNER, SHALL PERFORM ANY REQUIRED SYSTEM SHUT-OFF AND / OR SHUTDOWN CONCERNING MECHANICAL AIR OR HEAT, PLUMBING, GAS, ELECTRICAL, CONTROLS AND ANY ALARM OR DETECTION SYSTEM, NECESSARY TO FACILITATE THE WORK.

O. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE (NEC) AND THE LOCAL UTILITY COMPANY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING AND REINSTALLING ALL CABLE AND/ OR CONDUIT ASSOCIATED WITH THE TEMPORARY EXHUAST FAN REMOVAL. ALL ELECTRICAL WORK MUST BE PERFORMED BY A QUALIFIED ELECTRIC SUB-CONTRACTOR LICENSED IN THE STATE OF NEW JERSEY. VERIFY LOCATION IN FIELD PRIOR TO SUBMITTING A BID.

P. THE PLANS AND SPECIFICATIONS FOR THIS PROJECT MAY CONTAIN REQUIREMENTS FOR PERFORMANCE OF THE WORK THAT ARE HIGHER OR MORE STRINGENT THAN, OR OTHERWISE DEPART FROM, CUSTOMARY STANDARDS OF THE INDUSTRY OR THE MANUFACTURER'S RECOMMENDATIONS. THE BIDDER SHALL TAKE THOSE DIFFERING REQUIREMENTS INTO ACCOUNT WHEN PREPARING ITS BID. THE BIDDER ACKNOWLEDGES THAT IF IT FAILS TO ACCOUNT FOR THOSE DIFFERING REQUIREMENTS IN ITS BID, IT WILL NOT BE ENTITLED TO CHANGES OF THE CONTRACT SUM OR CONTRACT TIME.

Q. CONTRACTORS SHALL MAINTAIN WATERTIGHT AND WEATHERTIGHT CONDITIONS AT THE ENTIRE BUILDING ENVELOPE DURING THE COURSE OF CONSTRUCTION.

R. PRIOR TO THE COMMENCEMENT OF ANY ON-SITE CONSTRUCTION ACTIVITY, THE CONTRACTOR SHALL PHOTOGRAPH AND / OR VIDEO RECORD THE CONDITION OF THE EXISTING CURBING, SIDEWALKS, DRAINAGE INLETS, LAWN, LANDSCAPING AND PAVING ADJACENT TO THE BUILDING WINGS (PARKING LOT SIDE) WHICH ARE RECEIVING IMPROVEMENTS. THE PURPOSE OF THIS EXERCISE IS TO DOCUMENT ANY DAMAGED AREAS OF THE BUILDING AND SITE FOR FUTURE REFERENCE. ALL DOCUMENTATION IS TO BE SUBMITTED TO THE OWNER AND ARCHITECT PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITY.

S. ALL MATERIALS, EQUIPMENT AND FLUIDS WITHIN EQUIPMENT, IDENTIFIED TO BE REMOVED SHALL BE DISPOSED OF IN LEGAL DUMPSITES AND / OR UTILIZING LEGAL PROCEDURES APPROVED BY ALL AGENCIES HAVING JURISDICTION CONCERNING THE WORK AND LOCATION OF THIS CONTRACT. FLUIDS FOR DISPOSAL WITHIN EQUIPMENT SHALL BE CONTAINERIZED AND DISCARDED IN ACCORDANCE WITH THE GOVERNING AGENCIES GUIDELINES.

T. ALL REMOVED ROOF MATERIAL AND EXCESS ROOF CONSTRUCTION MATERIAL SHALL BE LEGALLY DISPOSED OF OFFSITE BY THE CONTRACTOR.

U. AT THE COMPLETION OF ALL EQUIPMENT DRAIN DOWNS, REMOVAL AND / OR EQUIPMENT REMOVALS, BROOM AND / OR RAKE CLEAN ROOF AND SITE SURFACES ADJACENT TO THE AREAS OF WORK AT THE COMPLETION OF THAT WORKDAY.

V. IT IS THE INTENT OF THE WORK RELATED TO THESE CONTRACT DOCUMENTS TO MAINTAIN ELECTRIC POWER TO THE BUILDINGS WITHOUT ELECTRIC POWER LOSS OR INTERRUPTION.

W. THE ROOFING CONTRACTOR SHALL REVIEW ALL FLASHING AND ROOFING DETAIL CONDITIONS INDICATED ON THE DRAWINGS WITH THE ROOF MANUFACTURER. THE CONTRACTOR SHALL RECEIVE THE WRITTEN APPROVAL OF ALL ROOF DETAILS FROM THE MANUFACTURER PRIOR TO STARTING WORK. ALL METAL FLASHING AND ROOF BASE FLASHING SHALL BE TIED INTO AND BE COMPATIBLE WITH THE EXISTING TYPE ROOFING SUBSTRATE MATERIAL AND THE EXISTING ROOF EDGE CONDITIONS.

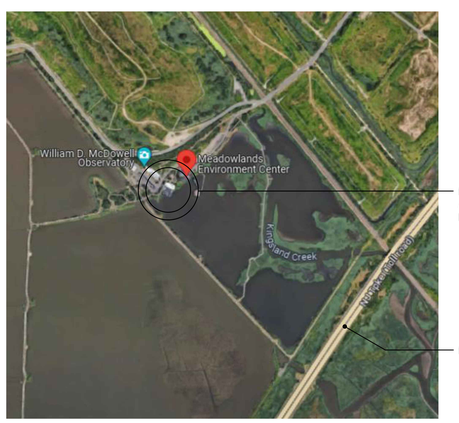
X. THE CONTRACTOR SHALL FIELD REVIEW ALL EXISTING ROOF CONDITIONS TO VERIFY ROOF ASSEMBLY CONDITIONS AND DISCUSS POTENTIAL DISCREPANCIES PRIOR TO START OF WORK.

Y. ALUM. EDGE FLASHING / COPING / GUTTER & DOWNSPOUT / SCUPPER / FASCIA COLOR IS TO BE CHOSEN BY ARCHITECT - FROM MANUFACTURER'S FULL RANGE OF COLORS.

Z. FOR ALL EXPOSED PIPES, PROVIDE NEW NON-PENETRATING PIPE SUPPORTS OF ADEQUATE SIZE PER PIPE POSITION, DIAMETER AND HEIGHT. SUPPORTS TO BE PLACED ON 1/2" THICK SOLID RUBBER PADS THAT ARE 2" WIDER IN ALL DIRECTIONS, AS PER MANUFACTURER'S RECOMMENDATIONS. BASIS OF DESIGN: MIRO INDUSTRIES - MODEL # 3-RAH-7 WITH A MAX. SPAN OF 8'-0" O.C.

AA. EXISTING PLUMBING ROOF VENTS SHALL BE PROTECTED AND MAINTAINED EXCEPT AS NOTEDON DEMOLITION ROOF PLAN.

LOCATION MAP



Drawing Index

A000	PROJECT DATA / COVER
D101	DEMOLITION ROOF PLAN
D102	DEMOLITION ROOF DETAILS
A101	NEW WORK ROOF PLAN
A102	ROOF DETAILS
A103	TYPICAL ROOF DETAILS

Code Data

CONSTRUCTION TYPE: IIB (NONCOMBUSTIBLE / UNPROTECTED)
USE GROUP: USE GROUP: B (BUSINESS)

Applicable Codes

UNIFORM CONSTRUCTION CODE (N.J.A.C. 5:23)
2021 INTERNATIONAL BUILDING CODE (NJAC 5:23-3.14)
2021 NATIONAL STANDARD PLUMBING CODE (NJAC 5:23-3.15)
NFPA 70/2020 NATIONAL ELECTRICAL CODE (NJAC 5:23-3.16)
2021 INTERNATIONAL MECHANICAL CODE (NJAC 5:23-3.20)
REHABILITAION SUBCODE (NJAC 5:23-6)

Nature of Work (Code)

"REPAIR" AS DEFINED BY THE REHABILITATION SUBCODE (NJAC 5:23-6). THE WORK IN QUESTION INCLUDES THE RESTORATION TO A GOOD OR SOUND CONDITION OF MATERIALS, SYSTEMS AND / OR COMPONENTS THAT ARE WORN, DETERIORATED OR BROKEN USING MATERIALS OR COMPONENTS IDENTICAL TO OR CLOSELY SIMILAR TO THE EXISTING.

11/02/2026 BID SET

No.	Date	Description
Revisions / Issues		

DIG ARCHITECTURE
15 Bethany Street | New Brunswick, NJ 08901
T: (732) 249-6242

Richard D. Alderiso , AIA
NJ RA AI 15023, NY RA 027416, PA RA 405474

DO NOT SCALE, DRAWING MAY BE PRINTED AT REDUCED SCALE. CONSULT WITH ARCHITECT FOR DIMENSIONS.

Client:
New Jersey Sports & Exposition Authority
50 State Route 120
East Rutherford, NJ 07073

Project:
NJSEA Lyndhurst Admin Building
Partial Roof Replacement
1 DeKorte Park Plaza,
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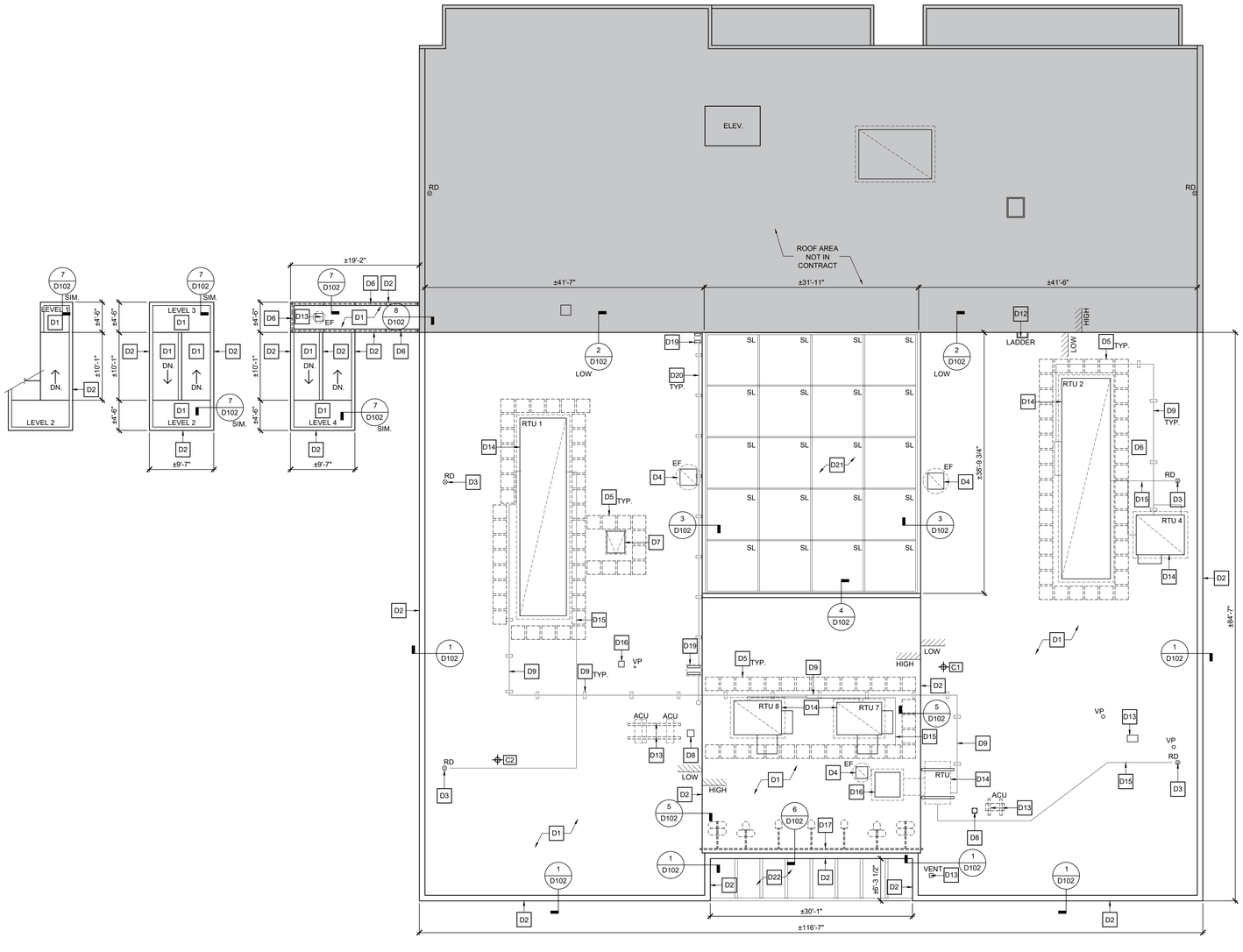
Drawing Information:
Project No: 26.073
Date: 11/02/2026
Drawn By: KT
Checked By: WH

Sheet Name:
Project Data / Cover

Sheet No:
A000
Sheet 1 of 6

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ROOF CORE SAMPLES		
SAMPLE NUMBER		LAYERS
C1 C2	THICKNESS: 3-1/2"	METAL DECK
		3" POLY-ISO INSULATION
		1/2" STORMBOARD
		EPDM ROOF



1 Demolition Roof Plan

SCALE: 1/8" = 1'-0"

D10 D11 D18

DEMOLITION ROOF KEY NOTES

SPECIAL CARE MUST BE TAKEN DURING DEMOLITION OF THE ROOF AND EXTERIOR WALL SYSTEMS TO CONTAIN ALL CONSTRUCTION MATERIAL AND DEBRIS TO THE AREAS OF WORK. SURROUNDING SITE, WALKWAYS, ROADWAYS, FOLIAGE AND WATERWAYS MUST BE INSPECTED REGULARLY AND KEPT CLEAN AT ALL TIMES.

CAREFULLY TRACE ALL EXISTING CONDUIT WITHIN THE EXISTING ROOF ASSEMBLY (ABOVE THE DECK) IN COORDINATION WITH THE REMOVAL OF THE ROOF SYSTEM. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DISCONNECT POWER TO ALL CIRCUITS BEFORE DEMOLITION WORK BEGINS, FOLLOWING THE PROPER LOCKOUT/TAGOUT PROCEDURES.

D1 SCRAPE AND CUT TO REMOVE AND DISCARD ALL EXISTING ROOF SYSTEM INCLUDING POLY-ISO INSULATION AND RECOVERY BOARD DOWN TO COMPLETELY EXPOSE EXISTING METAL DECK. REMOVE AND DISCARD ALL PROJECTING FASTENING DEVICES AND ACCUMULATED ROOF ASPHALT AND/OR MASTIC TO PROVIDE A SMOOTH ROOF SURFACE FOR THE INSTALLATION OF NEW ROOF ASSEMBLY. SEE ALL ROOFING DETAILS FOR BLOCKING TO BE REMOVED. REMOVALS ARE TO BE PERFORMED BY HAND, WITH HAND TOOLS, IN ORDER TO MINIMIZE DAMAGE OF EXISTING ROOF DECK. HAMMERING AND CHOPPING WILL NOT BE PERMITTED.

D2 CUT TO REMOVE AND DISCARD ALL PERIMETER, CONTINUOUS METAL ROOF COPINGS, FASCIA AND ALL FASTENING DEVICES COMPLETELY ELIMINATING ALL PROJECTIONS FROM ROOF SUBSTRATE. SEE ROOFING DETAILS FOR SPECIFIC CONDITIONS.

D3 REMOVE EXISTING ROOF DRAINS, DOMES AND FITTINGS. INSTALL NEW ROOF DRAIN UNITS WITH ALL REQUIRED FITTINGS, SUMPS, AND COLLARS AS SPECIFIED. CONTRACTOR SHALL DETERMINE SIZE AND LOCATION OF ALL EXISTING DRAINS AND LEADERS. EXTEND LEADER WITH MATCHING PIPES AS REQUIRED TO SUIT NEW DRAIN INSTALLATIONS. CONTRACTOR SHALL CLEAN OUT ALL EXISTING LEADERS BELOW FLOOR LEVEL (SIMILAR TO ROTO-ROOTER METHOD). UPON COMPLETION OF ALL ROOFING AND DRAIN WORK, THE CONTRACTOR SHALL PROVIDE A HOSE TEST AROUND EACH ROOF DRAIN FOR LEAKS IN THE PRESENCE OF THE OWNER AND ARCHITECT. REFER TO DETAIL 4/A103.

D4 CAREFULLY DISASSEMBLE AND TEMPORARILY REMOVE ALL EXISTING ROOF TOP MECHANICAL UNITS, CONDENSERS, FANS, ETC. CUT TO REMOVE AND DISCARD BASE FLASHING. REMOVE ALL FASTENING DEVICES. CURBS ARE TO REMAIN. REINSTALL ALL EQUIPMENT ONCE ROOF, BASE FLASHING AND COUNTER FLASHING WORK IS COMPLETE.

D5 EXISTING ROOF WALKING PADS TO BE REMOVED AND DISPOSED

D6 REMOVE AND DISPOSE EXISTING ROOF TOP RAILING SYSTEM.

D7 EXISTING ROOF HATCH TO REMAIN AND TO BE PROTECTED.

D8 REMOVE EXISTING PIPE PORTAL AND CURBING. PREPARE FOR NEW PIPE PORTAL INSTALLATION.

D9 EXISTING GAS PIPING TO REMAIN. CLEAN, SCRAPE AND PREPARE EXISTING GAS PIPE FOR NEW PRIMER AND PAINT. SEE SPECIFICATION SECTION 09 96 00. REMOVE AND DISPOSE EXISTING PIPE SUPPORTS. TEMPORARILY SUPPORT PIPING AS REQUIRED FOR NEW SUPPORTS TO BE INSTALLED.

D10 DUMPSTER STAGING AREA: DUMPSTER STAGING AREA TO BE COORDINATED WITH OWNER. PROVIDE APPROPRIATE PROTECTION AND CARE IN PLACING AND REMOVING DUMPSTER(S). ALL ACCUMULATED DEBRIS AROUND DUMPSTERS IS TO BE CLEANED AT THE END OF EACH WORK DAY. MAGNETIC SWEEPER TO BE USED ON GROUND AROUND ALL WORK AREAS TO PICK UP NAILS AND FASTENERS. ANY DAMAGE TO PAVEMENT, SIDEWALKS, CURBING, LIGHTPOLES, UTILITIES, SIGNAGE, LAWNS OR LANDSCAPING IS TO BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE. GENERAL AREA IS TO BE PHOTO DOCUMENTED BY CONTRACTOR PRIOR TO THE COMMENCEMENT OF ANY WORK.

D11 ANY MATERIAL STORED OR STAGED ON THE ROOF SURFACE MUST BE DISTRIBUTED SO THAT EXCESSIVE LOADS (EXCEEDING 500 LBS) ARE NOT STORED IN ANY ONE LOCATION.

D12 EXISTING ROOF ACCESS LADDER TO REMAIN AND TO BE PROTECTED.

D13 CAREFULLY REMOVE EXISTING MECHANICAL VENT COVER AND PREPARE FOR NEW MECHANICAL EXHAUST COVER AND CURB.

D14 EXISTING ROOF TOP MECHANICAL UNITS AND CURBING TO REMAIN AND BE PROTECTED. CUT TO REMOVE AND DISCARD BASE FLASHING. REMOVE ALL FASTENING DEVICES. PREPARE CURB FOR NEW BASE FLASHING AND COUNTER FLASHING.

D15 REMOVE EXISTING CONDENSATE LINE TO BE STORED FOR REINSTALLATION.

D16 EXISTING THRU-ROOF MECHANICAL EQUIPMENT PENETARTION AND CURBING TO REMAIN AND TO BE PROTECTED. CUT TO REMOVE AND DISCARD BASE FLASHING. PREPARE CURB FOR NEW BASE FLASHING AND COUNTER FLASHING.

D17 EXISTING NON-PENETRATING RAILING SYSTEM TO BE REMOVED AND STORED FOR REINSTALLATION.

D18 CUT TO REMOVE AND DISCARD ALL VENT PIPE AND FLASHING AROUND ELECTRICAL CONDUIT WITH ANY AND ALL FASTENING DEVICES COMPLETELY REMOVED. ELIMINATE ALL PROJECTION FROM ROOF SUBSTRATE TO FACILITATE INSTALLATION OF NEW ROOF ASSEMBLY AND FLASHING.

D19 EXISTING ELECTRICAL UNIT AND SUPPORTS TO REMAIN AND BE PROTECTED. PROVIDE NECESSARY SUPPORT FOR REMOVAL OF EXISTING ROOF SYSTEM AND INSTALLATION OF NEW ROOF SYSTEM.

D20 EXISTING ELECTRICAL CONDUIT AND SUPPORTS TO REMAIN AND BE PROTECTED. PROVIDE NECESSARY SUPPORT FOR REMOVAL OF EXISTING ROOF SYSTEM AND INSTALLATION OF NEW ROOF SYSTEM.

D21 EXISTING SKYLIGHT SYSTEM TO REMAIN AND BE PROTECTED. SEE A101 FOR SCOPE OF RELATED SCOPE OF WORK.

D22 EXISTING SKYLIGHT SYSTEM TO REMAIN AND BE PROTECTED.

No.	Date	Description
	11/02/2026	BID SET

Revisions / Issues

DIG ARCHITECTURE

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New Jersey Sports & Exposition Authority
50 State Route 120
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Project:

NJSEA Lyndhurst Admin Building
Partial Roof Replacement
1 DeKorte Park Plaza,
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Drawing Information:

Project No: 26.073
Date: 11/02/26
Drawn By: KT
Checked By: WH

Sheet Name:

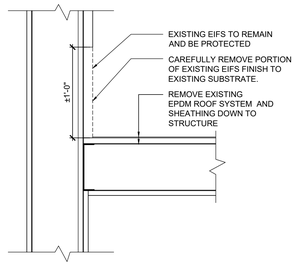
Demolition Roof Plan

Sheet No:

D101

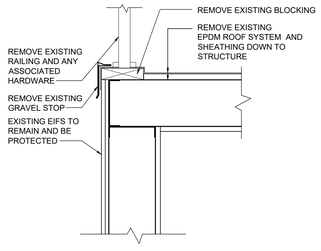
Sheet 3 of 6

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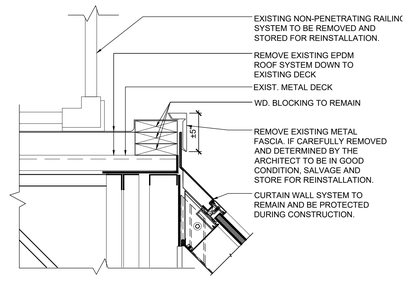
8 DETAIL - ROOF / WALL

SCALE: 1 1/2" = 1'-0"



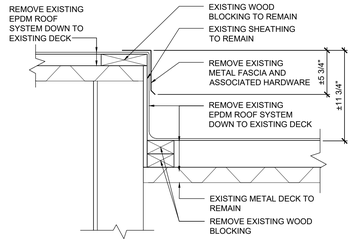
7 DETAIL - ROOF EDGE

SCALE: 1 1/2" = 1'-0"



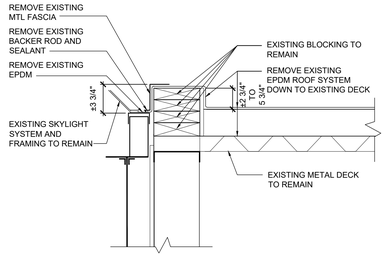
6 DETAIL - ROOF EDGE

SCALE: 1 1/2" = 1'-0"



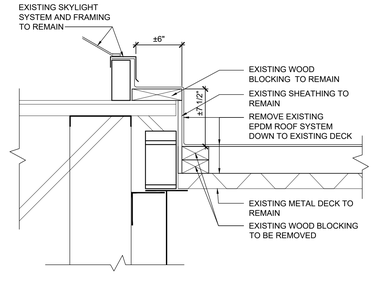
5 DETAIL - ROOF

SCALE: 1 1/2" = 1'-0"



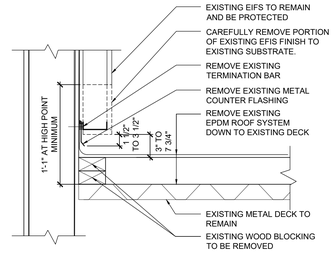
4 DETAIL - ROOF / SKYLIGHT

SCALE: 1 1/2" = 1'-0"



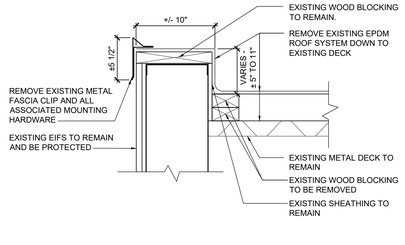
3 DETAIL - ROOF / SKYLIGHT

SCALE: 1 1/2" = 1'-0"



2 DETAIL - ROOF / WALL

SCALE: 1 1/2" = 1'-0"



1 DETAIL - ROOF EDGE

SCALE: 1 1/2" = 1'-0"

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Sheet Name:

DEMOLITION ROOF DETAILS

Sheet No:

D102

Sheet 1 of 6

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3 Stair Tower Elevations

SCALE: 1/8" = 1'-0"

Grid-Skylight Notes - Unit Pricing

- **PROVIDE TEMPORARY PROTECTION OF ADJACENT ROOF, EQUIPMENT, INTERIOR SPACES AND EXISTING SKYLIGHT. ACCESS WORK FROM INDEPENDENTLY SUPPORTED, ENGINEERED PLATFORMS / LIFTS THAT DO NOT BEAR ON ACRYLIC PYRAMIDS OR UNSUPPORTED FRAMING. DO NOT WALK ON, STAND ON, PLACE LADDERS ON OR STORE MATERIALS ON SKYLIGHT GLAZING. PROVIDE FALL PROTECTION, CONTROLLED DEBRIS COLLECTION AND TEMPORARY WEATHER PROTECTION; MAINTAIN BUILDING WATERTIGHTNESS THROUGHOUT WORK.**

UP1 **UNIT PRICE - UP1: ADDITIONAL GRID JOINT RESEALING**

PROVIDE A UNIT PRICE PER LINEAR FOOT (LF) FOR ADDITIONAL JOINT-SEALANT REPLACEMENT AT INTERIOR ALUMINUM GRID MEMBERS AND PYRAMID-TO-FRAME JOINTS LOCATED BEYOND THE BASE-BID PERIMETER WORK, AS DIRECTED IN WRITING BY ARCHITECT.

UNIT PRICE SHALL INCLUDE SAFE ACCESS AND INDEPENDENT PROTECTION / PLATFORMS; LOCALIZED REMOVAL AND DISPOSAL OF EXISTING SEALANT; SUBSTRATE CLEANING, DRYING AND APPROVED PREPARATION; PRIMER, BOND BREAKER / BACKER ROD WHERE REQUIRED; FURNISHING AND INSTALLING COMPATIBLE NEUTRAL-CURE SILICONE WEATHERSEAL; RESEALING EXPOSED FASTENER HEADS ALONG THE DESIGNATED JOINT; FIELD ADHESION / QUALITY CHECKS; TEMPORARY WEATHER PROTECTION; CLEANUP; LABOR, EQUIPMENT, SUPERVISION, OVERHEAD AND PROFIT.

MEASURE ONLY THE ACTUAL LINEAR LENGTH OF JOINT EXPRESSLY AUTHORIZED AND SATISFACTORILY RESEALED, MEASURED ALONG JOINT CENTERLINE; NO SEPARATE PAYMENT FOR MULTIPLE SEALANT PASSES, INTERSECTING FASTENERS, ACCESS OR PROTECTION. DO NOT DOUBLE-COUNT INTERSECTIONS OR BASE-BID PERIMETER JOINTS.

UP2 **UNIT PRICE - UP2: INDIVIDUAL PYRAMID REPLACEMENT**

PROVIDE A UNIT PRICE EACH TO REMOVE AND REPLACE ONE EXISTING ACRYLIC PYRAMID SKYLIGHT GLAZING UNIT AT LOCATIONS DIRECTED IN WRITING BY ARCHITECT. INCLUDE FIELD MEASUREMENT AND VERIFICATION OF EXISTING GEOMETRY, GLAZING THICKNESS / CONSTRUCTION, TINT, LIGHT TRANSMISSION, ATTACHMENT AND MANUFACTURER COMPATIBILITY; FABRICATION / PROCUREMENT OF A MATCHING NEW UV-STABILIZED ACRYLIC PYRAMID.

UNIT PRICE SHALL INCLUDE SAFE ACCESS, TEMPORARY PROTECTION AND WEATHERPROOFING; CAREFUL REMOVAL, HOISTING AND DISPOSAL OF EXISTING PYRAMID; REPLACEMENT OF DISTURBED GASKETS, SETTING MATERIALS, COMPATIBLE FASTENERS, RETAINERS AND SEALANT; REINSTALLATION AND WATERTIGHT INTEGRATION WITH RETAINED GRID FRAMING; INSPECTION AND CLEANUP; LABOR, EQUIPMENT, SUPERVISION, OVERHEAD AND PROFIT.

NEW UNIT SHALL MATCH ADJACENT UNITS IN PROFILE, NOMINAL DIMENSIONS, BRONZE APPEARANCE AND PERFORMANCE TO THE EXTENT AVAILABLE AND COMPLY WITH APPLICABLE CODE / DESIGN LOADS. EXISTING PRIMARY FRAMING AND CURBS ARE TO REMAIN UNLESS SEPARATELY AUTHORIZED. UNIT PRICE ASSUMES A COMPLETE PYRAMID ASSEMBLY, NOT A SINGLE SLOPING FACE.

Grid-Skylight Notes - Base Bid

- **BEFORE STARTING SKYLIGHT REPAIR WORK, DOCUMENT EXISTING CRACKS, GLAZING DISTRESS, FAILED GASKETS, FRAME DISTORTION, CORROSION, SUSPECT WATER-ENTRY LOCATIONS AND AREAS INACCESSIBLE WITHOUT SPECIAL ACCESS. NOTIFY ARCHITECT OF CONDITIONS BEYOND SEALANT REPAIR SCOPE. CONFIRM ACTUAL PERIMETER LENGTH AND JOINT CONFIGURATION; COORDINATE LIMITS SHOWN ON ROOF PLAN WITH WALL ABUTMENTS AND CURB CONDITIONS.**
- **PROVIDE TEMPORARY PROTECTION OF ADJACENT ROOF, EQUIPMENT, INTERIOR SPACES AND EXISTING SKYLIGHT. ACCESS WORK FROM ROOF SURFACES ONLY. DO NOT WALK ON, STAND ON, PLACE LADDERS ON OR STORE MATERIALS ON SKYLIGHT GLAZING. PROVIDE FALL PROTECTION, CONTROLLED DEBRIS COLLECTION AND TEMPORARY WEATHER PROTECTION; MAINTAIN BUILDING WATERTIGHTNESS THROUGHOUT WORK.**

A AT THE ENTIRE ACCESSIBLE PERIMETER OF THE EXISTING GRID SKYLIGHT SYSTEM, COMPLETELY REMOVE EXISTING EXPOSED JOINT SEALANT AT ACRYLIC-TO-METAL, METAL-TO-METAL, PERIMETER FRAME-TO-CURB AND FRAME-TO-ADJACENT CONSTRUCTION JOINTS DESIGNATED FOR RESEALING. INCLUDE SEALANT AT FRAME CORNERS, INTERSECTIONS, END CONDITIONS AND EXPOSED FASTENER HEADS / PENETRATIONS WITHIN THE INDICATED WORK LIMITS. DO NOT MERELY OVERLAY OR ENCAPSULATE DETERIORATED SEALANT. PRESERVE EXISTING SOUND GLAZING, GASKETS, FRAMING AND COORDINATE WITH NEW ROOF MEMBRANE INSTALLATION. INCLUDE 225 LINEAR FEET OF JOINT SEALANT REPLACEMENT (AT SKYLIGHT SYSTEM) IN THE BASE BID. SEE UP1 FOR ADDITIONAL REQUIREMENTS.

B CAREFULLY CUT OUT SEALANT USING NON-DAMAGING METHODS. REMOVE RESIDUAL MATERIAL AND CONTAMINATION WITHOUT GOUGING ACRYLIC, REMOVING PROTECTIVE FINISHES OR DAMAGING GASKETS. CLEAN AND DRY SUBSTRATES IN ACCORDANCE WITH SEALANT MANUFACTURER'S WRITTEN INSTRUCTIONS; USE ONLY MANUFACTURER-APPROVED, ACRYLIC-COMPATIBLE CLEANERS AND PRIMERS. REPLACE BACKER ROD OR BOND-BREAKER TAPE WHERE REQUIRED. PROVIDE PROPER JOINT GEOMETRY AND TWO-SIDED ADHESION. INSTALL CONTINUOUS, PROPERLY TOOLED, WATERTIGHT SEALANT BEADS WITH COMPLETE ADHESION TO PREPARED SUBSTRATES.

C PROVIDE A PREMIUM, EXTERIOR-GRADE, NON-STAINING, NEUTRAL-CURE SILICONE WEATHERSEAL EXPRESSLY APPROVED IN WRITING BY ITS MANUFACTURER FOR ADHESION AND CHEMICAL COMPATIBILITY WITH THE EXISTING ACRYLIC GLAZING, ALUMINUM FRAME FINISH, EXISTING GASKETS AND ADJACENT MATERIALS. BASIS-OF-DESIGN PERFORMANCE: ASTM C920, TYPE S, GRADE NS, CLASS 50 (OR APPROVED EQUIVALENT WHERE APPROPRIATE). OBTAIN WRITTEN SUBSTRATE-SPECIFIC APPROVAL, INCLUDING PRIMER REQUIREMENTS; DO NOT SUBSTITUTE GENERIC POLYURETHANE, ROOFING MASTIC OR ACETOXY-CURE SILICONE. PERFORM FIELD ADHESION TESTING BEFORE PRODUCTION WORK.

D CLEAN AND RESEAL EXISTING EXPOSED FASTENER HEADS, WASHERS AND PENETRATIONS WITHIN THE PERIMETER REPAIR AREA. REPLACE VISIBLY LOOSE, MISSING, STRIPPED OR CORRODED FASTENERS WITH MATCHING CORROSION-RESISTANT, COMPATIBLE FASTENERS WHERE DIRECTED BY ARCHITECT; DO NOT CONCEAL DEFECTIVE FASTENING WITH SEALANT. MAINTAIN DRAINAGE / WEEP PATHS; DO NOT SEAL INTENDED VENTS, WEEPS OR MOVEMENT JOINTS. AT MEMBRANE / CURB INTERFACES, USE A ROOFING-SYSTEM-COMPATIBLE DETAIL RATHER THAN RELYING ON SILICONE ALONE TO BRIDGE ROOFING MEMBRANE.

New Work Roof Notes

- **SEE DEMOLITION NOTES ON DRAWING D-101 FOR INFORMATION NOT INDICATED ON THIS DRAWING.**
- **SEE ALL TECHNICAL SPECIFICATIONS ALONG WITH DETAILS FOR THE DESCRIPTION AND BALANCE OF INFORMATION REGARDING THE NEW ROOF SYSTEM AND ASSEMBLY.**
- **ALL TAPERED INSULATION TO BE 1/8" PER FOOT (UNLESS OTHERWISE NOTED)**

1 NEW ROOFING SYSTEM OVER EXISTING ROOF DECK. SEE SPECIFICATION FOR ADDITIONAL INFORMATION.

2 NEW .040" ALUMINUM PRE-MANUFACTURED FASCIA TRIM. SEE TECHNICAL SPECIFICATION AND DETAILS FOR ADDITIONAL INFORMATION.

3 PROVIDE AND INSTALL NEW EQUIPMENT CURB (RAILS) AT EXISTING ROOF TOP MECHANICAL EQUIPMENT, EXTENSION OF EXISTING MECHANICAL LINES AND ELECTRICAL CIRCUITING AS REQUIRED, SEE DETAIL 5/A103.

4 NEW WALKWAY PADS. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION. (TYPICAL)

5 EXISTING CURB TO REMAIN AND TO BE PROTECTED. INSTALL ROOF BASE, FLASHING AND COUNTER FLASHING IN ACCORDANCE WITH 11/A103.

6 INSTALL 1/2" PER FOOT TAPERED CRICKET BEHIND ALL ROOF TOP EQUIPMENT AND PENETRATIONS. (TYPICAL)

7 NEW PIPE SUPPORT CURB REFER TO DETAIL 7/A103. PROVIDE CURB SPACING AND QUANTITY FROM MANUF. RECOMMENDATIONS (TYPICAL).

8 NEW ROOF DRAIN FITTED WITH TAPERED SUMP. SEE DETAIL 4/A103 FOR ADDITIONAL INFORMATION.

9 ALL DIMENSIONS FOR THE TAPERED INSULATION LAYOUT AND FLAT AREAS OF ROOF ARE PREDICATED ON THE EXISTING ROOF DRAIN LOCATIONS. CRICKETS SHALL BE 1/2" PER FT. SUBMIT DIMENSIONED, TAPERED INSULATION SHOP DRAWINGS AFTER EXACT ROOF DRAIN LOCATIONS HAVE BEEN DETERMINED INDICATING ALL SLOPES, CRICKETS, AND FLAT AREAS.

10 EXISTING ROOF HATCH AND CURBING TO REMAIN AND PROTECTED. INSTALL NEW BASE AND COUNTER FLASHING . SEE DETAIL 1/A103 FOR CURB DETAIL.

11 CAREFULLY REMOVE MECHANICAL EQUIPMENT IN ACCORDANCE WITH DEMOLITION NOTES ON DRAWING D101. REINSTALL EQUIPMENT ONCE FOR BASE FLASHING WORK IS COMPLETE. SEE 2/A103 FOR CURB DETAIL. REINSTALL AND TEST MECHANICAL EQUIPMENT AFTER IT HAS BEEN SET.

12 INSTALL NEW GREENHECK (OR EQUAL) FLAT ROOF CAP MOUNTED ON NEW PRE-FABRICATED CURB. EXTEND EXISTING DUCT WORK WITH NEW AS REQUIRED. SEE DETAIL 3/A103 FOR CURB DETAIL.

13 REINSTALL EXISTING CONDENSATE LINE

14 REINSTALL EXISTING NON-PENETRATING RAILING SYSTEM.

15 PROVIDE AND INSTALL NEW SEAGRIST PIPE CHASE (OR EQUAL). SEE DETAIL 6/A103. CAREFULLY REINSTALL/ CONNECT EXISTING LINES AS REQUIRED FOLLOWING PIPE CHASE INSTALLATION.

16 NEW 0.050 6"x4-3/4" ALUMINUM GUTTER AND FASCIA TRIM. SEE SPECIFICATION AND DETAILS FOR ADDITIONAL INFORMATION. COLOR TO BE SELECTED BY ARCHITECT.

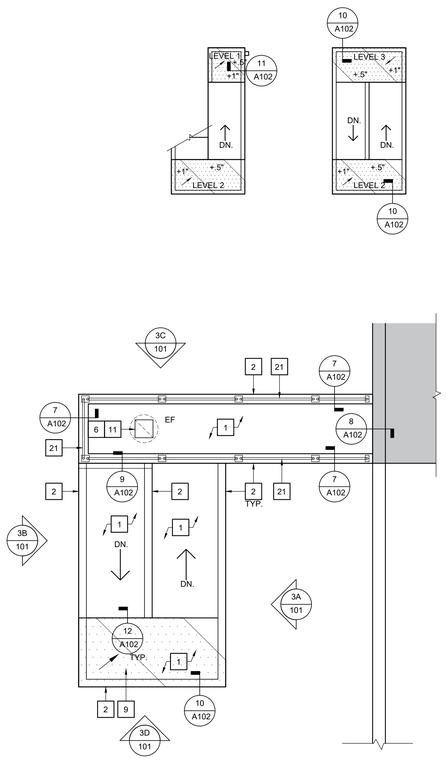
17 NEW NON-PENETRATING SAFETY GUARDRAIL SYSTEM. "GARLOCK SAFETY SYSTEMS' RAILING GUARD 200 OR APPROVED EQUAL.

18 EXISTING THRU-ROOF MECHANICAL PENETRATION AND CURB. FLASH PENETRATION WITH LIQUID FLASHING AS PRE ROOF MANUFACTURER'S REQUIREMENTS.

19 NEW 4"x4" ALUMINUM DOWNSPOUT AND MOUNTING HARDWARE TO GRADE OR ROOF BELOW. SEE DETAIL 11/A103

20 SCRAPE, PRIME AND REPAINT EXISTING GAS PIPES. COLOR TO BE SELECTED BY ARCHITECT AND OWNER. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.

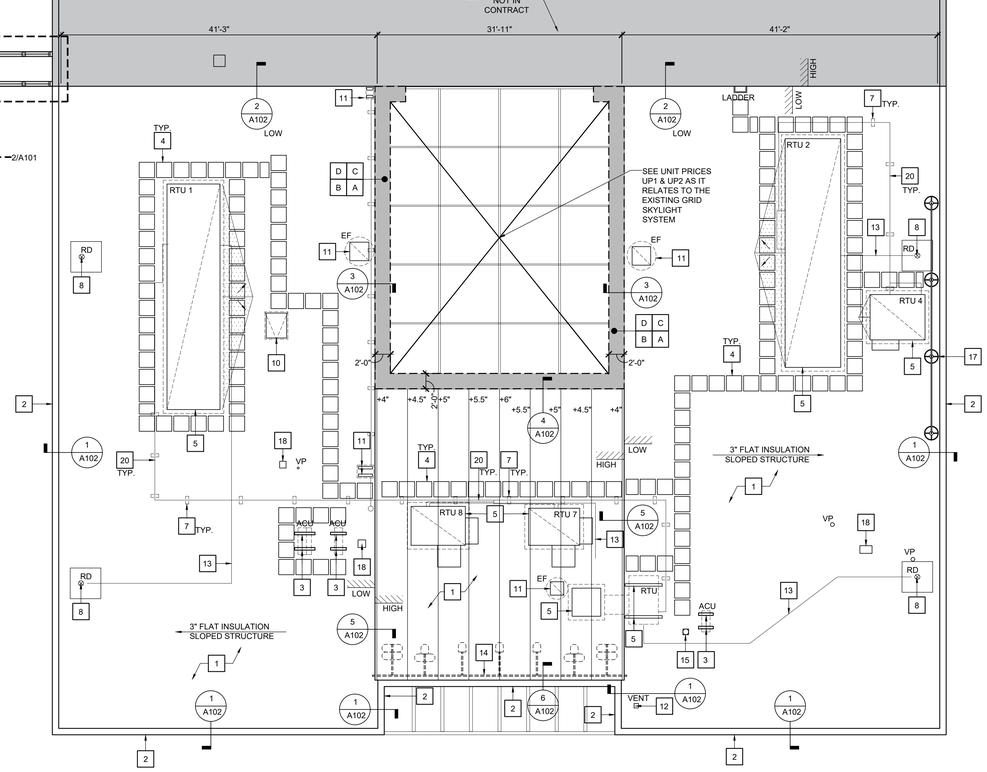
21 NEW SAFETY GUARDRAIL SYSTEM MANUFACTURED BY SAFETY RAIL COMPANY- PERMANENT GUARDRAIL - HARDWARE SECURED MOUNTING AND MOBILE SAFETY RAIL SYSTEM OR APPROVED EQUAL.



2 Enlarged Partial Roof Plan

SCALE: 1/4" = 1'-0"

6 9



1 New Work Roof Plan

SCALE: 1/8" = 1'-0"

6 9

N

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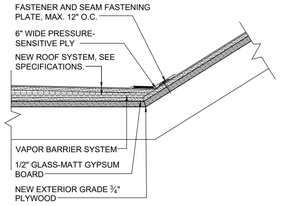
New Work Roof Plan

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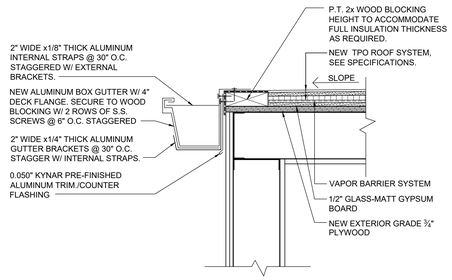
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Sheet 4 of 6

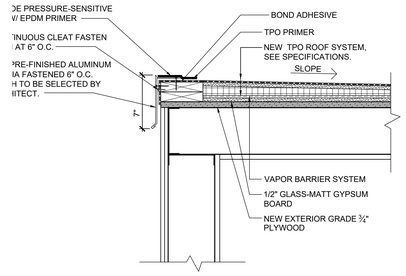
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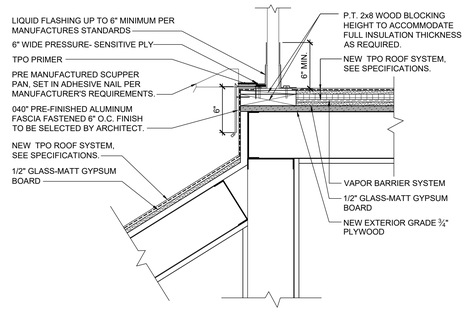
12 DETAIL - INTERSECTION
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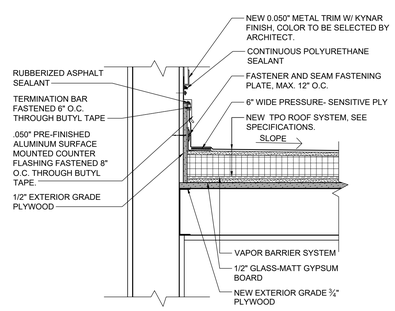
11 DETAIL - ROOF EDGE
SCALE: 1 1/2" = 1'-0"



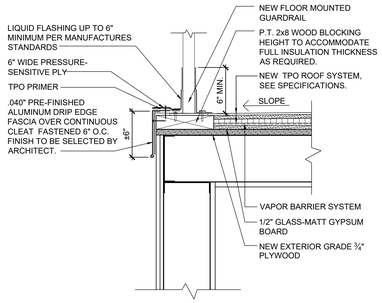
10 DETAIL - ROOF EDGE
SCALE: 1 1/2" = 1'-0"



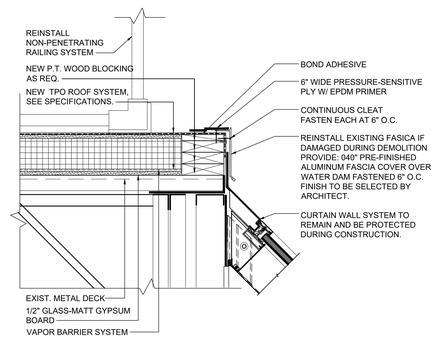
9 DETAIL - ROOF EDGE
SCALE: 1 1/2" = 1'-0"



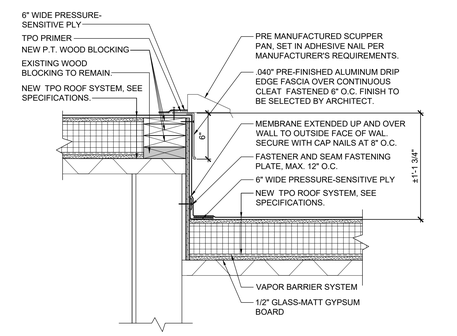
8 DETAIL - WALL BASE
SCALE: 1 1/2" = 1'-0"



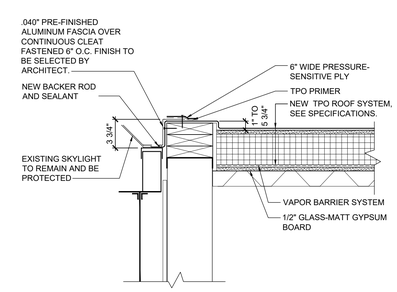
7 DETAIL - ROOF EDGE
SCALE: 1 1/2" = 1'-0"



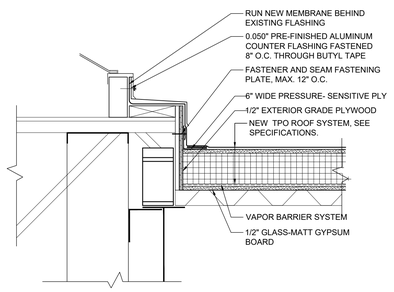
6 DETAIL - ROOF EDGE
SCALE: 1 1/2" = 1'-0"



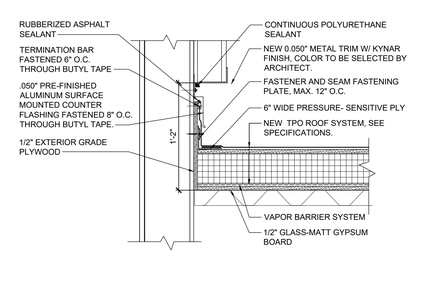
5 DETAIL - ROOF
SCALE: 1 1/2" = 1'-0"



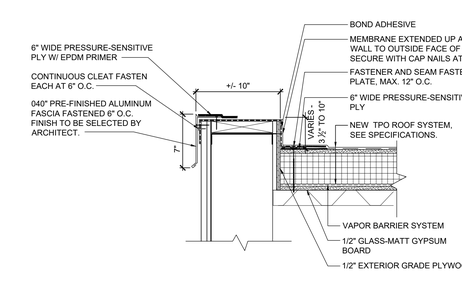
4 DETAIL - ROOF / SKYLIGHT
SCALE: 1 1/2" = 1'-0"



3 DETAIL - ROOF / SKYLIGHT
SCALE: 1 1/2" = 1'-0"



2 DETAIL - ROOF / WALL BASE
SCALE: 1 1/2" = 1'-0"



1 DETAIL - ROOF EDGE
SCALE: 1 1/2" = 1'-0"

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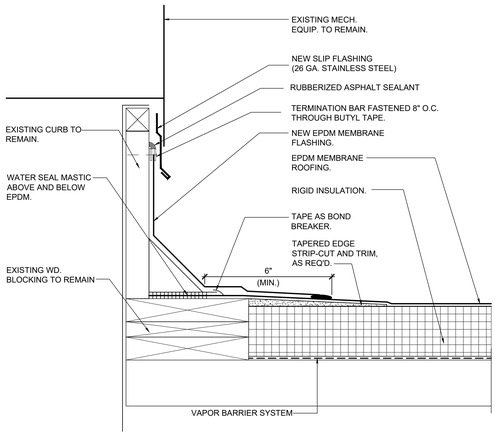
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ROOF DETAILS

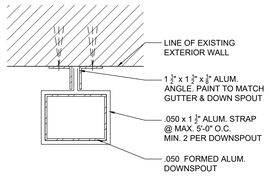
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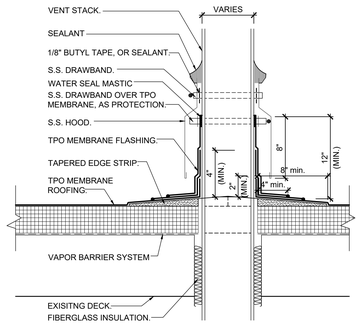
11 DETAIL - EXISTING CURB

SCALE: 3" = 1'-0"



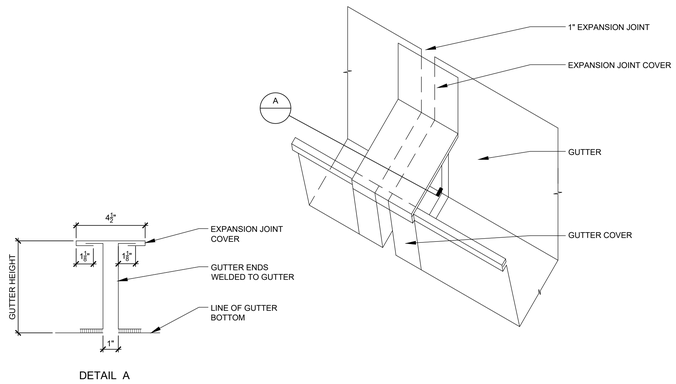
10 DETAIL - DOWNSPOUT

SCALE: 3" = 1'-0"



9 DETAIL - VENT PIPE

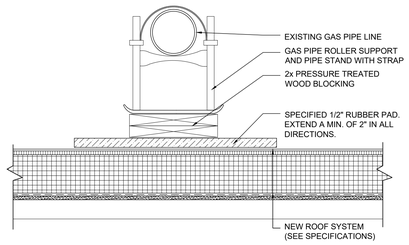
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DETAIL A

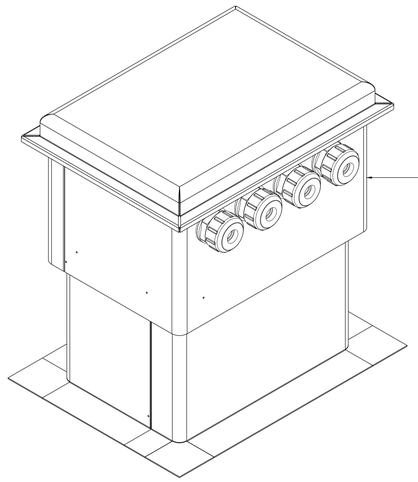
8 DETAIL - VENT PIPE

SCALE: 3" = 1'-0"



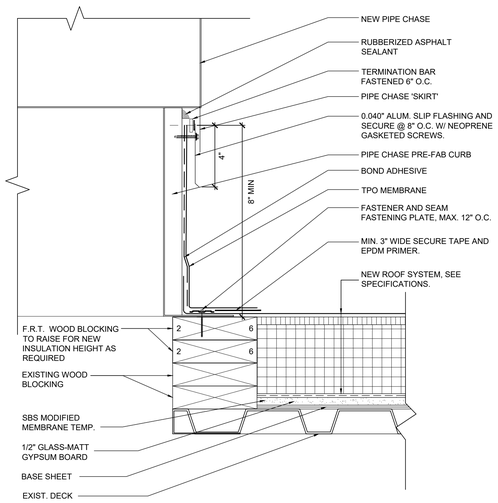
7 PIPE SUPPORT DETAIL

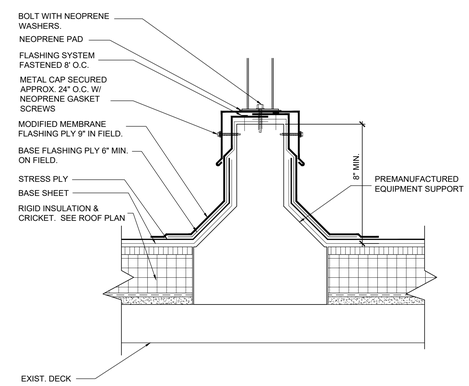
SCALE: 1 1/2" = 1'-0"



6 DETAIL- PIPE PORTAL

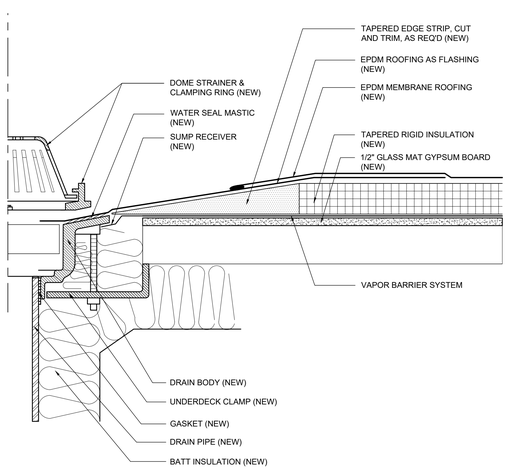
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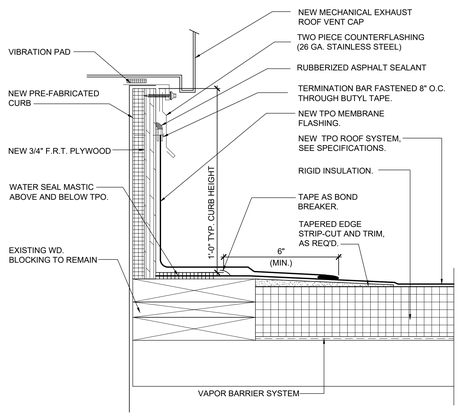
5 DETAIL- MECHANICAL SUPPORT CURB

SCALE: 3" = 1'-0"



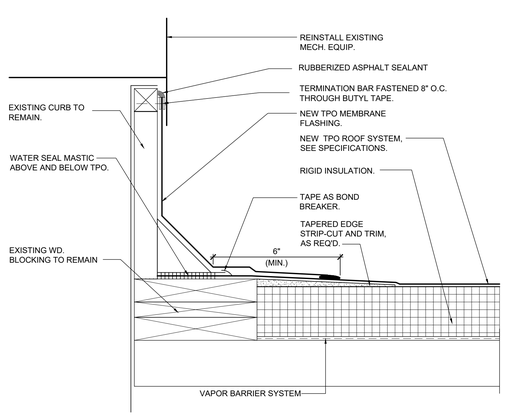
4 DETAIL- ROOF DRAIN

SCALE: 3" = 1'-0"



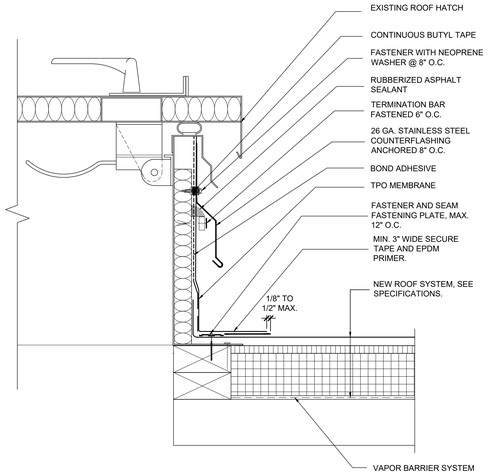
3 DETAIL- NEW CURB

SCALE: 3" = 1'-0"



2 DETAIL- EXISTING CURB

SCALE: 3" = 1'-0"



1 DETAIL- EXISTING ROOF HATCH

SCALE: 3" = 1'-0"

NOTE: MOST DETAILS ON THIS SHEET ARE NOT REFERENCED ON THE ROOF PLAN. HOWEVER THEY DO APPLY TO THE ITEMS LISTED IN THEIR TITLES & ARE PART OF THIS PROJECT.

No.	Date	Description
Revisions / Issues		
	11/02/2026	BID SET

DIG ARCHITECTURE
15 Bethany Street | New Brunswick, NJ 08901
T: (732) 249-6242

Richard D. Alderiso , AIA
NJ RA AI 15023, NY RA 027416, PA RA 405474

DO NOT SCALE. DRAWING MAY BE PRINTED AT REDUCED SCALE. CONSULT WITH ARCHITECT FOR DIMENSIONS.

Client:
New Jersey Sports & Exposition Authority
50 State Route 120
East Rutherford, NJ 07073

Project:
NJSEA Lyndhurst Admin Building
Partial Roof Replacement
1 DeKorte Park Plaza,
Lyndhurst, New Jersey 07071

Drawing Information:
Project No: 26.073
Date: 11/02/26
Drawn By: KT
Checked By: WH

Sheet Name:
TYPICAL ROOF DETAILS

Sheet No:
A103
Sheet 6 of 6

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SECTION 01 10 00 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General, Special and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

A. Project Identification: Partial Roof System Replacement at the NJSEA Lyndhurst Administration Building.

1.3 Project Location:

A. 1 DeKorte Park Plaza, Lyndhurst, New Jersey 07071

B. Architect Identification: The Contract Documents, dated November 2, 2026, were prepared by DIG Architecture, LLC.

Project Summary: Partial Roof System Replacement and Grid-Skylight Repairs

1. Scope of work includes, but is not limited to, the following (see contract drawings and specifications for the balance of scope not described in this summary):
    a. Remove and legally dispose of approximately 8,950 square feet of existing EPDM roof membrane, insulation, cover board and associated roofing materials down to the existing metal roof deck, within the limits indicated on the Drawings. Protect existing decking and construction designated to remain.
    b. Furnish and install a complete new TPO roof assembly, including insulation, cover board, membrane, attachment, roof drains, flashings, edge metal, curbs, blocking, accessories and associated work as indicated on the Drawings and specified.
    c. Perform repairs to the existing grid-skylight system, including removal and replacement of deteriorated joint sealants at the designated accessible perimeter and exposed fasteners, with 225 linear feet of joint-sealant replacement included in the Base Bid, as indicated on the Drawings.
    d. Provide unit prices for additional grid-skylight joint resealing and individual acrylic pyramid skylight unit replacement, as described on the Drawings. Perform unit-price work only when authorized in writing by the Owner.
    e. Temporarily disconnect, remove, support, protect, modify and reinstall rooftop equipment, piping, supports and related components as required for the roof replacement, including necessary trade coordination, reconnection and testing as indicated on the Drawings.
    f. Provide new and replacement roof flashings and terminations at skylights, walls, parapets, penetrations, roof drains and roof edges. Protect and restore adjacent EIFS, curtain walls, existing skylights, roof areas outside the work limits and other construction designated to remain.
    g. Provide temporary weather protection, fall protection, controlled debris handling, access and staging, and daily watertight tie-ins. Maintain building operations,

protected egress and weather-tight conditions throughout construction. See Section 1.7 for Exterior Access Requirements.

1.4 WORK SEQUENCE

A. Sequence removal and replacement of existing roofing in manageable areas. Do not expose more roof area than can be made fully watertight the same day. Coordinate temporary protection and skylight repairs with new roofing installation and ongoing building operations.

1.5 WORK HOURS

A. Permitted work hours are 7:00 AM to 4:00 PM, Monday through Friday. Saturday and Sunday work requires prior Owner approval. Coordinate shutdowns, crane picks and disruptive operations with the Owner before proceeding.

1.6 USE OF PREMISES

A. General: Contractor's use of premises is limited by Owner's right to perform work and to operate business functions or to retain other contractors on portions of Project.

B. Contractor will not be allowed to store tools or materials inside or outside of the building unless otherwise approved in writing by Owner.

C. Contractor will not be allowed to use the Owner’s toilet facilities.

D. Egress must be maintained and protected at all exits immediately adjacent to the work area.

E. Nonsmoking and Nonvaping Building and Site: Smoking and/or Vaping is not permitted on School Grounds (Building and / or Site). Contractor will be fined $500 dollars per incident for smoking. Monies will be deducted from Contractor’s General Conditions accordingly.

G. Controlled Substances: Use of tobacco products and other controlled substances on Grounds (Building and / or Site) is not permitted.

H. Shirts: Contractor personnel and / or vendors are to wear shirts at all times while on Grounds (Building and / or Site).

I. Employee Identification: Provide laminated identification tags for ALL Contractor personnel working on Project site. Identification Tags are to be worn on ALL Contractor personnel AT ALL TIMES while they are on the Project Site.

Identification Tags Requirements:

1. Color: Orange.
2. Size: 2” x 4”.
3. Must contain photograph of personnel and name of company.
4. Must be worn (around neck) exposed to view at all times.
5. Must be laminated.

J. Employee Screening: Comply with Owner's requirements for drug and background screening of Contractor personnel working on Project site.

1. Maintain list of approved screened personnel with Owner's representative.

1.7 EXTERIOR ACCESS REQUIREMENTS

A. The Work includes roof replacement, rooftop equipment coordination, and repairs to the existing grid-skylight system at an occupied building. Access, staging and lifting shall be coordinated with the Owner and shall not obstruct designated ingress and egress routes.

B. The Contractor shall provide all means of access, scaffolding, lifts, rigging, engineered platforms, hoisting and fall protection necessary to complete the Work. Do not walk on, stand on, place ladders on or store materials on acrylic skylight glazing or unsupported framing. Provide independently supported access where required for skylight unit replacement.

C. The Architect and Owner do not prescribe or control the Contractor’s means and methods of construction. Access systems and procedures shall be designed, furnished and maintained by the Contractor in accordance with applicable codes and safety regulations.

D. All costs associated with providing safe and adequate access for the Work shall be included in the Contractor’s bid price.

E. Prior to roof and skylight operations, submit an access, staging, hoisting and protection plan, including protection of the existing skylight, adjacent roof areas, building occupants, landscaping, roadways and waterways.

1.8 CONTRACTOR QUALIFICATIONS

A. A list of proposed subcontractors shall be included with the Bid as required by the Bid Forms. The list shall be accompanied by an experience statement for each subcontractor indicating each subcontractor's qualifications. If the NJSEA, after due investigation, has reasonable objection to any proposed subcontractor, the NJSEA may, before giving the notice of award, request the apparent Successful Bidder to submit an acceptable substitute without an increase in bid price. If the apparent Successful Bidder declines to make any such substitution, the Contract shall not be awarded to said Bidder; but its declining to make such a substitution will not constitute grounds for sacrificing its bid security. Any subcontractor, to whom the NJSEA does not make a written objection prior to the giving of the notice of award, shall be deemed acceptable to the NJSEA.

B. No Contractor shall be required to employ any subcontractor against whom it has objection.

C. The attention of the bidder is directed to GENERAL CONDITIONS for further information on Subcontractors.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 10 00

SECTION 01 22 00 - UNIT PRICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for unit prices.

B. Related Sections include the following:

1. Division 01 Section "Allowances" for procedures for using unit prices to adjust quantity allowances.
2. Division 01 Section "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
3. Division 01 Section "Quality Requirements" for general testing and inspecting requirements.

1.3 DEFINITIONS

A. Unit price is an amount proposed by bidders, stated on the Bid Form, as a price per unit of measurement for materials or services added to or deducted from the Contract Sum by appropriate modification, if estimated quantities of Work required by the Contract Documents are increased or decreased.

1.4 PROCEDURES

A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.

B. Measurement and Payment: Refer to individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.

C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.

D. List of Unit Prices: A list of unit prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 LIST OF UNIT PRICES

A. Unite Price No. 1: Additional Grid Joint Sealant (Skylights)

1. Unit of Measurement: Per linear feet
2. Description of Work: At the existing grid-skylight system, provide additional joint-sealant replacement at interior aluminum grid members and pyramid-to-frame joints located beyond the base-bid perimeter work (which included 225 linear feet), as directed in writing by Architect. Unit price shall include safe access and independent protection/platforms; localized removal and disposal of existing sealant; substrate cleaning, drying and approved preparation; primer, bond breaker/backer rod where required; furnishing and installing compatible neutral-cure silicone weatherseal; resealing exposed fastener heads along the designated joint; field adhesion/quality checks; temporary weather protection; cleanup; labor, equipment, supervision, overhead and profit. Measure only the actual linear length of joint expressly authorized and satisfactorily resealed, measured along joint centerline; no separate payment for multiple sealant passes, intersecting fasteners, access or protection. Do not double-count intersections or base-bid perimeter joints.

B. Unit Price No. 2: Individual Pyramid replacement (Skylights)

1. Unit of Measurement: Per Unit
2. Description of Work: Remove and replace one existing acrylic pyramid skylight glazing unit at locations directed in writing by Architect. Include field measurement and verification of existing geometry, glazing thickness / construction, tint, light transmission, attachment and manufacturer compatibility; fabrication / procurement of a matching new UV-stabilized acrylic pyramid; safe access, temporary protection and weatherproofing; careful removal, hoisting and disposal of existing pyramid; replacement of disturbed gaskets, setting materials, compatible fasteners, retainers and sealant; reinstallation and watertight integration with retained grid framing; inspection and cleanup; labor, equipment, supervision, overhead and profit. New unit shall match adjacent units in profile, nominal dimensions, bronze appearance and performance to the extent available and comply with applicable code/design loads. Existing primary framing and curbs are to remain unless separately authorized. Unit price assumes a complete pyramid assembly, not a single sloping face
3. Manufacturer: Plasteco or Approved Equivalent
    a. Phone: 713-673-7710
    b. Address: P.O. Box 24158, Houston Texas, 77229-4158
    c. Contact: Heath Pocock; email: hpocock@plasteco.com

C. Unit Price No. 3: Preservative Treated Wood Blocking 2 x 6

1. Unit of Measurement: Per linear feet
2. Description of Work: Remove and dispose of existing, furnish and install new.

D. Unit Price No. 4: Preservative Treated Wood Blocking 2 x 8

1. Unit of Measurement: Per linear feet
2. Description of Work: Remove and dispose of existing, furnish and install new.

E. Unit Price No. 5: Preservative Treated Wood Blocking 2 x 10

1. Unit of Measurement: Per linear feet
2. Description of Work: Remove and dispose of existing, furnish and install new.

F. Unit Price No. 6: Tapered 1/8" Per Foot Polyisocyanurate Roof Insulation

1. Unit of Measurement: Per 100 square feet
2. Description of Work: Furnish and Install.

G. Unit Price No. 7: Tapered 1/4" Per Foot Polyisocyanurate Roof Insulation

1. Unit of Measurement: Per 100 square feet
2. Description of Work: Furnish and Install.

H. Unit Price No. 8: 1-1/2" (20 Gauge) Metal Roof Decking

1. Unit of Measurement: Per 100 square feet
2. Description of Work: Remove and dispose of existing, furnish and install new.

END OF SECTION 01 22 00

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Contractor's Construction Schedule.
2. Construction schedule updating reports.
3. Daily construction reports.
4. Material location reports.
5. Site condition reports.
6. Unusual event reports.

B. Related Requirements:

1. Section 012900 "Payment Procedures" for schedule of values and requirements for use of cost-loaded schedule for Applications for Payment.
2. Section 014000 "Quality Requirements" for schedule of tests and inspections.

1.2 DEFINITIONS

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction Project. Activities included in a construction schedule consume time and resources.

1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
2. Predecessor Activity: An activity that precedes another activity in the network.
3. Successor Activity: An activity that follows another activity in the network.

B. Cost Loading: The allocation of the schedule of values for completing an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum.

C. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine the critical path of Project and when activities can be performed.

D. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

E. Event: The starting or ending point of an activity.

F. Float: The measure of leeway in starting and completing an activity.

1. Float time belongs to Owner.
2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.

3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

G. Resource Loading: The allocation of labor and equipment necessary for completing an activity as scheduled.

1.3 INFORMATIONAL SUBMITTALS

A. Format for Submittals: Submit required submittals in the following format:

1. Working electronic copy of schedule file.
2. PDF file.

B. Startup Network Diagram: Of size required to display entire network for entire construction period. Show logic ties for activities.

C. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.

1. Submit a working digital copy of schedule, using software indicated, and labeled to comply with requirements for submittals.

D. CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports to contain activity number, activity description, cost and resource loading, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.

1. Activity Report: List of activities sorted by activity number and then early start date, or actual start date if known.
2. Logic Report: List of preceding and succeeding activities for each activity, sorted in ascending order by activity number and then by early start date, or actual start date if known.
3. Total Float Report: List of activities sorted in ascending order of total float.

E. Construction Schedule Updating Reports: Submit with Applications for Payment.

F. Daily Construction Reports: Submit at weekly intervals.

G. Material Location Reports: Submit at weekly intervals.

H. Site Condition Reports: Submit at time of discovery of differing conditions.

1.4 COORDINATION

A. Coordinate Contractor's Construction Schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from entities involved.

2. Coordinate each construction activity in the network with other activities, and schedule them in proper sequence.

1.5 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

B. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Final Completion.

1. Contract completion date to not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

C. Activities: Treat each item of work as a separate numbered activity for each main element of the Work. Comply with the following:

1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.
2. Temporary Facilities: Indicate start and completion dates for the following as applicable:

a. Securing of approvals and permits required for performance of the Work.
b. Temporary facilities.
c. Construction of mock-ups, prototypes and samples.
d. Punch list.

3. Procurement Activities: Include procurement process activities for the following long lead-time items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.

a. TPO Roofing System, Including Membrane, Insulation, Cover Boards, and Associated Accessories.
b. Prefabricated Metal Copings, Fascia, Edge Flashings, and Related Components.
c. Roof Drains, Retrofit Drain Assemblies, and Associated Accessories.
d. Replacement Acrylic Pyramid Skylight Units, as Required by the Contract Documents and Authorized Unit-Price Work.

4. Submittal Review Time: Include review and resubmittal times indicated in Section 013300 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with submittal schedule.

5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.

6. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and Final Completion.

D. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.

1. Work Restrictions: Show the effect of the following items on the schedule:

    a. Building access constraints associated with adjacent body of water.
    b. Limitations of continued occupancies.
    c. Uninterruptible services.
    d. Provisions for construction at adjacent building (Environment Center)
    e. Seasonal variations.
    f. Environmental control.

2. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:

    a. Scaffolding.
    b. Purchases.
    c. Temporary Protection
    d. Fabrication.
    e. Deliveries.
    f. Installation.
    g. Tests and inspections.

3. Construction Areas: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:

    a. Temporary enclosure and space conditioning.
    b. Permanent space enclosure.
    c. Substantial Completion.

E. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:

1. Unresolved issues.
2. Unanswered Requests for Information.
3. Rejected or unreturned submittals.
4. Notations on returned submittals.
5. Pending modifications affecting the Work and the Contract Time.

F. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
3. As the Work progresses, indicate Final Completion percentage for each activity.

G. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working

hours, working days, crew sizes, equipment required to achieve compliance, and date by which recovery will be accomplished.

H. Distribution: Distribute copies of approved schedule to Architect**,** Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

1. Post copies in Project meeting rooms and temporary field offices.
2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

1.6 GANTT-CHART SCHEDULE REQUIREMENTS

A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's Construction Schedule within 30 days of date established for the Notice to Proceed.

1. Base schedule on the startup construction schedule and additional information received since the start of Project.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.

1. For construction activities that require three months or longer to complete, indicate an estimated completion percentage in five (5) percent increments within time bar.

1.7 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:

1. List of subcontractors at Project site.
2. List of separate contractors at Project site.
3. Approximate count of personnel at Project site.
4. Equipment at Project site.
5. Material deliveries.
6. High and low temperatures and general weather conditions, including presence of rain or snow.
7. Testing and inspection.
8. Accidents.
9. Meetings and significant decisions.
10. Unusual events.
11. Stoppages, delays, shortages, and losses.
12. Orders and requests of authorities having jurisdiction.
13. Change Orders received and implemented.
14. Construction Change Directives received and implemented.
15. Services connected and disconnected.
16. Substantial Completions authorized.

B. Material Location Reports: At monthly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List to be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site. Indicate the following categories for stored materials:

1. Material stored prior to previous report and remaining in storage.
2. Material stored prior to previous report and since removed from storage and installed.
3. Material stored following previous report and remaining in storage.

C. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

D. Unusual Event Reports: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, responses by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

1. Submit unusual event reports directly to Owner within one day(s) of an occurrence. Distribute copies of report to parties affected by the occurrence.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 32 00

SECTION 01 33 00 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Submittal schedule requirements.
2. Administrative and procedural requirements for submittals.

1.2 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."

B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

1.3 SUBMITTAL SCHEDULE

A. Submittal Schedule: Submit, as an action submittal, a list of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.

1.4 SUBMITTAL FORMATS

A. Submittal Information: Include the following information in each submittal:

1. Project name.
2. Date.
3. Name of Architect.
4. Name of Contractor.
5. Name of firm or entity that prepared submittal.
6. Names of subcontractor, manufacturer, and supplier.
7. Unique submittal number, including revision identifier. Include Specification Section number with sequential alphanumeric identifier; and alphanumeric suffix for resubmittals.
8. Category and type of submittal.
9. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.

10. Drawing number and detail references, as appropriate.
11. Indication of full or partial submittal.
12. Location(s) where product is to be installed, as appropriate.
13. Other necessary identification.
14. Remarks.
15. Signature of transmitter.

B. Options: Identify options requiring selection by Architect.

C. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by Architect on previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.

D. PDF Submittals: Prepare submittals as PDF package, incorporating complete information into each PDF file. Name PDF file with submittal number.

1.5 SUBMITTAL PROCEDURES

A. Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

1. Email: Prepare submittals as PDF package, and transmit to Architect by sending via email. Include PDF transmittal form. Include information in email subject line as requested by Architect.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.

C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow seven (7) seven business days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
2. Resubmittal Review: Allow (5) five business days for review of each resubmittal.

D. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

E. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

F. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

1.6 SUBMITTAL REQUIREMENTS

A. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard published data are unsuitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:

    a. Manufacturer's catalog cuts.
    b. Manufacturer's product specifications.
    c. Standard color charts.
    d. Statement of compliance with specified referenced standards.
    e. Testing by recognized testing agency.
    f. Application of testing agency labels and seals.
    g. Notation of coordination requirements.
    h. Availability and delivery time information.

4. For equipment, include the following in addition to the above, as applicable:

    a. Wiring diagrams that show factory-installed wiring.
    b. Printed performance curves.
    c. Operational range diagrams.
    d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.

5. Submit Product Data before Shop Drawings, and before or concurrent with Samples.

B. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data unless submittal based on Architect's digital data drawing files is otherwise permitted.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

    a. Identification of products.
    b. Schedules.
    c. Compliance with specified standards.
    d. Notation of coordination requirements.
    e. Notation of dimensions established by field measurement.
    f. Relationship and attachment to adjoining construction clearly indicated.
    g. Seal and signature of professional engineer if specified.

C. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other materials.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Permanently attach label on unexposed side of Samples that includes the following:

    a. Project name and submittal number.
    b. Generic description of Sample.
    c. Product name and name of manufacturer.
    d. Sample source.
    e. Number and title of applicable Specification Section.
    f. Specification paragraph number and generic name of each item.

3. Email Transmittal: Provide PDF transmittal. Include digital image file illustrating Sample characteristics, and identification information for record.
4. Paper Transmittal: Include paper transmittal including complete submittal information indicated.
5. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

    a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
    b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

6. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.

    a. Number of Samples: Submit one full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.

7. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

    a. Number of Samples: Submit three sets of Samples. Architect will retain two Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a project record Sample.

1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

D. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

E. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.

F. Design Data: Prepare and submit written and graphic information indicating compliance with indicated performance and design criteria in individual Specification Sections. Include list of assumptions and summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Number each page of submittal.

G. Certificates:

1. Certificates and Certifications Submittals: Submit a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity. Provide a notarized signature where indicated.
2. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
3. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
4. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
5. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
6. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.

H. Test and Research Reports:

1. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
2. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

3. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
4. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
5. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
6. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:

    a. Name of evaluation organization.
    b. Date of evaluation.
    c. Time period when report is in effect.
    d. Product and manufacturers' names.
    e. Description of product.
    f. Test procedures and results.
    g. Limitations of use.

1.7 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are insufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF file and three paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional (professional engineer licensed in the State of New Jersey).

1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

1.8 CONTRACTOR'S REVIEW

A. Action Submittals and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.

B. Contractor's Approval: Indicate Contractor's approval for each submittal with a uniform approval stamp. Include name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

1. Architect will not review submittals received from Contractor that do not have Contractor's review and approval.

1.9 ARCHITECT'S REVIEW

A. Action Submittals: Architect will review each submittal, indicate corrections or revisions required**,** and return it.

1. PDF Submittals: Architect will indicate, via markup on each submittal, the appropriate action.

B. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.

D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

E. Architect will return without review submittals received from sources other than Contractor.

F. Submittals not required by the Contract Documents will be returned by Architect without action.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 33 00

SECTION 01 35 16 - ALTERATION PROJECT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes special procedures for partial removal and replacement of the existing EPDM roof assembly with a new TPO roof assembly, repairs to the existing grid-skylight system, and related alterations to existing roof components as indicated on Drawings.

1.2 DEFINITIONS

A. Alteration Work: This term includes selective roof demolition, replacement, repair, temporary removal and reinstallation of rooftop components, and work on existing roof and skylight surfaces as part of the Project.

B. Consolidate: To strengthen loose or deteriorated materials in place.

C. Design Reference Sample: A sample that represents the Architect's prebid selection of work to be matched; it may be existing work or work specially produced for the Project.

D. Dismantle: To remove by disassembling or detaching an item from a surface, using gentle methods and equipment to prevent damage to the item and surfaces; disposing of items unless indicated to be salvaged or reinstalled.

E. Match: To blend with adjacent construction and manifest no apparent difference in material type, species, cut, form, detail, color, grain, texture, or finish; as approved by Architect.

F. Refinish: To remove existing finishes to base material and apply new finish to match original, or as otherwise indicated.

G. Repair: To correct damage and defects, retaining existing materials, features, and finishes. This includes patching, piecing-in, splicing, consolidating, or otherwise reinforcing or upgrading materials.

H. Replace: To remove an existing item and install a new item or assembly as indicated on Drawings; replacement roofing materials are not required to match existing EPDM materials.

I. Replicate: To reproduce in exact detail, materials, and finish unless otherwise indicated.

J. Reproduce: To fabricate a new item, accurate in detail to the original, and from either the same or a similar material as the original, unless otherwise indicated.

K. Retain: To keep an element or detail secure and intact.

L. Strip: To remove existing finish down to base material unless otherwise indicated.

1.3 COORDINATION

A. Alteration Work Subschedule: A construction schedule coordinating the sequencing of roof demolition, temporary dry-in, TPO roof installation, flashings, rooftop equipment coordination, skylight repairs, inspections, and other alteration work, based on Contractor's Construction Schedule.

1. Schedule construction operations in sequence required to obtain best Work results.
2. Coordinate sequence of alteration work activities to accommodate the following:

    a. Owner's continuing occupancy of portions of existing building.
    b. Owner's continued use of occupied interior spaces below and adjacent to roof work.
    c. Other known work in progress.
    d. Tests and inspections.

3. Detail sequence of alteration work, with start and end dates.
4. Utility Services: Identify anticipated interruptions to rooftop mechanical, electrical, controls, and other services. Coordinate advance notice, shutdowns, temporary support, disconnection, reconnection, and restoration with Owner.
5. Use of designated roof access points, ladders, lifts, cranes, and approved material-hoisting routes.
6. Equipment Data: Identify loads and locations of proposed rooftop material stockpiles, equipment, carts, hoists, and temporary access platforms. Do not impose loads on existing roof deck, framing, or skylight assemblies beyond verified capacities; obtain evaluation by Contractor's professional engineer where necessary.

B. Pedestrian and Vehicular Circulation: Coordinate roofing operations, deliveries, cranes, dumpsters, and staging with Owner's occupied-building operations and designated site circulation. Maintain emergency access, exits, pedestrian routes, and ingress/egress roads; provide temporary closures and rerouting only with Owner approval.

1.4 MATERIALS OWNERSHIP

A. Historic items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, antiques, and other items of interest or value to Owner that may be encountered or uncovered during the Work, regardless of whether they were previously documented, remain Owner's property.

1. Carefully dismantle and salvage each item or object in a manner to prevent damage and protect it from damage, then promptly deliver it to Owner where directed at Project site.

1.5 INFORMATIONAL SUBMITTALS

A. Preconstruction Documentation: Photograph and document existing roof surfaces, skylight glazing and framing, roof drains, parapets, flashings, rooftop equipment, adjacent interior finishes, and site improvements that are to remain, including existing damage or suspected leakage.

1.6 STORAGE AND HANDLING OF SALVAGED MATERIALS

A. Existing Materials to Remain: Protect existing metal roof deck, skylight system, retained roof areas, curbs, equipment, piping, conduits, walls, finishes, and other construction indicated to remain. Items designated for temporary removal shall be labeled, protected, stored, and reinstalled after completion of associated roofing work.

B. Storage: Catalog and store salvaged rooftop components in secure, dry, weather-protected locations approved by Owner; protect glazing, metal finishes, fasteners, and equipment from damage.

1. Identify each item for reinstallation with a nonpermanent mark to document its original location. Indicate original locations on plans, elevations, sections, or photographs by annotating the identifying marks.
2. Secure stored materials to protect from theft.
3. Maintain storage conditions appropriate to the salvaged materials and manufacturers' instructions; prevent condensation, freezing damage, and corrosion.

1.7 FIELD CONDITIONS

A. Survey of Existing Conditions: Record roof assembly thicknesses, drainage patterns, metal deck conditions visible during removals, rooftop penetrations, equipment connections, and skylight perimeter conditions by measurements, photographs, and video.

B. Discrepancies: Notify Architect of discrepancies between existing conditions and Drawings before proceeding with removal and dismantling work.

C. Owner's Preparations: Before beginning roof work, coordinate with Owner regarding access to spaces below roof demolition, protection of sensitive interior equipment, and planned rooftop equipment shutdowns or temporary relocations.

1. Protect or temporarily relocate sensitive furnishings and equipment below work areas where directed by Owner; do not assume that occupied spaces will be vacated.

PART 2 - PRODUCTS - (Not Used)

PART 3 - EXECUTION

3.1 PROTECTION

A. Protect persons, motor vehicles, surrounding surfaces of building, building site, plants, and surrounding buildings from harm resulting from alteration work.

1. Use only proven protection methods, appropriate to each area and surface being protected.
2. Provide temporary barricades, barriers, and directional signage to exclude the public from areas where alteration work is being performed.
3. Erect temporary barriers to form and maintain fire-egress routes.

4. Erect temporary protective covers and controlled exclusion zones at entrances, walkways, and vehicular routes exposed to overhead roofing operations, hoisting, or falling debris.
5. Contain roof demolition debris, dust, loose fasteners, and insulation fragments. Prevent migration into occupied spaces, roof drains, skylight openings, adjacent site areas, and nearby waterways.
6. Provide necessary temporary bracing, supports, and load distribution. Do not overload existing roof deck, structural members, skylight framing, or glazing.
7. Protect roof access routes, retained roof areas, existing metal deck, and adjacent site surfaces from damage, wear, and staining.
8. Coordinate noise- and vibration-producing roofing operations with Owner to limit disruption to occupied interior spaces.

B. Temporary Protection of Materials to Remain:

1. Protect existing metal roof deck, skylight glazing and framing, rooftop equipment, retained roofing, walls, and other materials to remain. Do not remove or alter existing components unless indicated on Drawings or authorized.
2. Do not fasten temporary protection to skylight glazing, unsupported framing, or retained roofing in a manner that damages existing construction.

C. Comply with each product manufacturer's written instructions for protections and precautions. Protect against adverse effects of products and procedures on people and adjacent materials, components, and vegetation.

D. Utility and Communications Services:

1. Notify Owner, Architect, authorities having jurisdiction, and entities owning or controlling wires, conduits, pipes, and other services affected by alteration work before commencing operations.
2. Disconnect, temporarily support, cap, or isolate rooftop piping, conduits, and equipment connections only as required for the Work and as coordinated with Owner and qualified trades.
3. Maintain existing services and roof drainage except during Owner-approved interruptions. Provide temporary measures as required and restore equipment and systems to operating condition after reconnection.

3.2 PROTECTION FROM FIRE

A. General: Follow fire-prevention plan and the following:

1. Comply with NFPA 241 requirements unless otherwise indicated.
2. Remove and keep area free of combustibles, including rubbish, paper, waste, and chemicals, unless necessary for the immediate work.

    a. If combustible material cannot be removed, provide fire blankets to cover such materials.

B. Heat-Generating Equipment and Combustible Materials: Comply with the following procedures while performing work with heat-generating equipment or combustible materials, including

welding, torch-cutting, soldering, brazing, removing paint with heat, or other operations where open flames or implements using high heat or combustible solvents and chemicals are anticipated:

1. Minimize heat-generating operations on the roof. Use cold-applied or mechanically fastened methods where specified; coordinate any permitted hot work with Owner and applicable fire-safety requirements.
2. Do not perform work with heat-generating equipment in or near rooms or in areas where flammable liquids or explosive vapors are present or thought to be present. Use a combustible gas indicator test to ensure that the area is safe.
3. Use noncombustible shields and other approved protection to prevent sparks, heat, or flame from reaching roof insulation, decking, skylight materials, concealed spaces, or adjacent combustible materials.
4. Prevent sparks, hot particles, and heat from passing through roof penetrations, deck openings, skylight interfaces, vents, or concealed spaces.
5. Fire Watch: Before working with heat-generating equipment or combustible materials, station personnel to serve as a fire watch at each location where such work is performed. Fire-watch personnel shall have the authority to enforce fire safety. Station fire watch according to NFPA 51B, NFPA 241, and as follows:

    a. Train each fire watch in the proper operation of fire-control equipment and alarms.
    b. Prohibit fire-watch personnel from other work that would be a distraction from fire-watch duties.
    c. Cease work with heat-generating equipment whenever fire-watch personnel are not present.
    d. Have fire-watch personnel perform final fire-safety inspection each day beginning no sooner than 30 minutes after conclusion of work in each area to detect hidden or smoldering fires and to ensure that proper fire prevention is maintained.
    e. Maintain fire-watch personnel at each area of Project site until two hours after conclusion of daily work.

C. Fire-Control Devices: Provide and maintain fire extinguishers, fire blankets, and rag buckets for disposal of rags with combustible liquids. Maintain each as suitable for the type of fire risk in each work area. Ensure that nearby personnel and the fire-watch personnel are trained in fire-extinguisher and blanket use.

3.3 GENERAL ALTERATION WORK

A. Have TPO roof installation, skylight sealant repairs, rooftop equipment disconnection/reconnection, and other specialty work performed by qualified personnel.

B. Ensure that supervisory personnel are present when work begins and during its progress.

C. Photograph existing roof and skylight conditions before removals, exposed deck and concealed conditions as work progresses, and completed roof and skylight repairs.

D. Inspect exposed deck, roof edges, drains, skylight interfaces, and retained construction as work progresses for unsafe or deteriorated conditions; notify Architect promptly.

E. Notify Architect of visible deterioration, corrosion, moisture damage, structural distress, damaged roof deck, compromised skylight components, or other concealed conditions differing from those indicated on Drawings.

1. Do not proceed with the work in question until directed by Architect.

END OF SECTION 01 35 16

SECTION 01 40 00 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspection services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
2. Requirements for Contractor to provide quality-assurance and quality-control services required by Architect, Owner, Commissioning Authority, Construction Manager, or authorities having jurisdiction are not limited by provisions of this Section.

1.2 DEFINITIONS

A. Experienced: When used with an entity or individual, "experienced" unless otherwise further described means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

B. Field Quality-Control Tests: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

C. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations.

1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).

D. Mockups: Full-size physical assemblies that are constructed on-site either as freestanding temporary built elements or as part of permanent construction. Mockups are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.

1. Laboratory Mockups: Full-size physical assemblies constructed and tested at testing facility to verify performance characteristics.

2. Integrated Exterior Mockups: Mockups of the exterior envelope constructed on-site as freestanding temporary built elements or as part of permanent construction, consisting of multiple products, assemblies, and subassemblies.
3. Room Mockups: Mockups of typical interior spaces complete with wall, floor, and ceiling finishes; doors; windows; millwork; casework; specialties; furnishings and equipment; and lighting.

E. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.

F. Product Tests: Tests and inspections that are performed by a nationally recognized testing laboratory (NRTL) according to 29 CFR 1910.7, by a testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program (NVLAP), or by a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

G. Source Quality-Control Tests: Tests and inspections that are performed at the source; for example, plant, mill, factory, or shop.

H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

I. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

J. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Contractor's quality-control services do not include contract administration activities performed by Architect or Construction Manager.

1.3 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1.4 CONFLICTING REQUIREMENTS

A. Conflicting Standards and Other Requirements: If compliance with two or more standards or requirements are specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for direction before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits.

To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.5 ACTION SUBMITTALS

A. Delegated-Design Services Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit a statement signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.

1.6 INFORMATIONAL SUBMITTALS

A. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility submitted to authorities having jurisdiction before starting work on the following systems:

1. Seismic-force-resisting system, designated seismic system, or component listed in the Statement of Special Inspections.
2. Main wind-force-resisting system or a wind-resisting component listed in the Statement of Special Inspections.

B. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

C. Permits, Licenses, and Certificates: For Owner's record, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents established for compliance with standards and regulations bearing on performance of the Work.

1.7 REPORTS AND DOCUMENTS

A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:

1. Date of issue.
2. Project title and number.
3. Name, address, telephone number, and email address of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.

10. Record of temperature and weather conditions at time of sample taking and testing and inspection.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:

1. Statement on condition of substrates and their acceptability for installation of product.
2. Statement that products at Project site comply with requirements.
3. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
4. Results of operational and other tests and a statement of whether observed performance complies with requirements.
5. Other required items indicated in individual Specification Sections.

C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:

1. Statement that equipment complies with requirements.
2. Results of operational and other tests and a statement of whether observed performance complies with requirements.
3. Other required items indicated in individual Specification Sections.

1.8 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units. As applicable, procure products from manufacturers able to meet qualification requirements, warranty requirements, and technical or factory-authorized service representative requirements.

C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Installer Qualifications: A firm or individual experienced in installing, erecting, applying, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed

for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.

F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.

1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.

G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspection indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.

H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

J. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:

1. Contractor responsibilities include the following:

a. Provide test specimens representative of proposed products and construction.
b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
c. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
d. When testing is complete, remove test specimens and test assemblies, and mockups, and laboratory mockups; do not reuse products on Project.

2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect and Commissioning Authority, through Construction Manager, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

K. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups of size indicated.

2. Build mockups in location indicated or, if not indicated, as directed by Architect or Construction Manager.
3. Notify Architect and Construction Manager seven days in advance of dates and times when mockups will be constructed.
4. Employ supervisory personnel who will oversee mockup construction. Employ workers that will be employed to perform same tasks during the construction at Project.
5. Demonstrate the proposed range of aesthetic effects and workmanship.
6. Obtain Architect's and Construction Manager's approval of mockups before starting corresponding work, fabrication, or construction.

    a. Allow seven days for initial review and each re-review of each mockup.

7. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
8. Demolish and remove mockups when directed unless otherwise indicated.

L. Laboratory Mockups: Comply with requirements of preconstruction testing and those specified in individual Specification Sections.

1.9 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspection they are engaged to perform.
2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.

B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities, whether specified or not, to verify and document that the Work complies with requirements.

1. Engage a qualified testing agency to perform quality-control services.

    a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.

2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspection will be performed.
3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
4. Testing and inspection requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

D. Testing Agency Responsibilities: Cooperate with Architect, Commissioning Authority, Construction Manager, and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Architect, Commissioning Authority, Construction Manager, and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Determine the locations from which test samples will be taken and in which in-situ tests are conducted.
3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
6. Do not perform duties of Contractor.

E. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 013300 "Submittal Procedures."

F. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

G. Associated Contractor Services: Cooperate with agencies and representatives performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspection. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Preliminary design mix proposed for use for material mixes that require control by testing agency.
6. Security and protection for samples and for testing and inspection equipment at Project site.

H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspection.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

1.10 SPECIAL TESTS AND INSPECTIONS

A. Special Tests and Inspections: Owner will engage a qualified testing agency and/or special inspector to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, and as follows:

1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
2. Notifying Architect, Commissioning Authority, Construction Manager, and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect and Commissioning Authority, through Construction Manager, with copy to Contractor and to authorities having jurisdiction.
4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
6. Retesting and reinspecting corrected work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.
2. Description of the Work tested or inspected.
3. Date test or inspection results were transmitted to Architect.
4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's, Commissioning Authority's and Construction Manager's reference during normal working hours.

1. Submit log at Project closeout as part of Project Record Documents.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspection, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01 40 00

SECTION 01 50 00 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

B. Section also includes temporary roof access, hoisting, rigging, fall protection, protection of existing skylights and rooftop equipment, and weather protection during roof replacement.

C. Work includes provision, maintenance, and removal of temporary facilities necessary to safely complete the following:

1. Removal of approximately 8,950 square feet of existing EPDM roof assembly and installation of a new TPO roof assembly.
2. Repairs and resealing of the existing grid-skylight system, including base-bid and authorized unit-price work.
3. Associated roof flashings, roof edges, drains, curbs, equipment interfaces, and related work indicated on Drawings.

D. Coordinate roof access, crane picks, staging, deliveries, temporary closures, and protection with Owner operations, adjacent occupied areas, and surrounding waterways.

E. Related Requirements:

1. Section 011000 "Summary" for work restrictions and limitations on utility interruptions.
2. Applicable selective demolition requirements and demolition drawings for roof system removals.

1.3 REFERENCES

A. Comply with applicable OSHA and local safety regulations.

B. Scaffolding: ANSI/ASSE A10.8.

C. Fall protection: OSHA 29 CFR 1926 Subpart M.

D. Environmental protection: Comply with Owner requirements and applicable regulations protecting adjacent waterways.

1.4 CONTRACTOR'S RESPONSIBILITIES

A. Contractor shall determine and provide all safe roof access and construction means and methods required for the Work, including:
   1. Approved roof access, lifts, ladders, temporary platforms, and scaffolding as needed.
   2. Crane picks, hoisting, material handling, and temporary equipment supports.
   3. Fall protection, perimeter safeguards, skylight protection, and rigging systems.
      a. Architect and Owner do not prescribe, direct, or assume responsibility for the Contractor's means, methods, or sequences of construction.
      b. Access and material handling shall not damage retained roofing, skylights, building surfaces, site improvements, or adjacent waterways.

1.5 USE CHARGES

A. General: Installation and removal of and cost or use charges for temporary facilities are not chargeable to Owner and shall be included in the Contract Sum. Allow other entities to use temporary services and facilities without cost, including, but not limited to, the following:
   1. Owner's Representative.
   2. Architect.
   3. Testing Agencies.
   4. Personnel of authorities having jurisdiction.
   5. Owner's vendor(s).

B. Water Service: Coordinate any use of existing exterior water sources with Owner; provide hoses, backflow protection, and temporary service as required.

C. Electric Power Service: Coordinate use of Owner electrical service in advance; do not interrupt building operations without written authorization.

D. Contractor(s) providing temporary services are responsible for all costs associated for providing temporary services as long as required, including but not limited to maintenance and relocation during construction.

1.6 INFORMATIONAL SUBMITTALS

A. Site Logistics Plan: Show temporary facilities, crane and lift locations, dumpster placement, designated staging and contractor parking, pedestrian protection, and delivery routes.

B. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.

C. Moisture-Protection Plan: Describe phased roof tear-off, temporary daily dry-in, protection of exposed deck and interior spaces, weather monitoring, and response to unexpected precipitation.
   1. Describe delivery, handling, and dry storage of TPO roofing materials, insulation, cover boards, sealants, and moisture-sensitive materials.
   2. Indicate procedures for preventing and responding to water infiltration, discarding wet materials, and restoring damaged work and interior finishes.

D. Roof Access and Protection Plan:

1. Before commencing roofing or skylight work, submit a coordinated plan indicating:
    a. Proposed roof access, lifts, hoisting, rigging, crane picks, and independently supported platforms required for skylight work.
    b. Temporary support, anchorage, load distribution, and protection of the existing metal roof deck and roof assembly.
    c. Protection of existing skylight glazing and framing, rooftop equipment, occupied spaces, site improvements, and waterways.
    d. Fall protection, perimeter safeguards, pedestrian exclusion zones, and safe material movement.
2. Provide signed and sealed engineering for temporary systems when required by applicable law, authorities having jurisdiction, or the system design.
3. Show sequencing and coordination with Owner operations, roof demolition, new TPO installation, and skylight repairs.

1.7 QUALITY ASSURANCE

A. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

B. Accessible Temporary Egress: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

C. Access systems shall be designed and installed under supervision of personnel qualified per OSHA 1926 requirements.

1. All rigging equipment shall bear current inspection tags and load ratings.
2. Provide qualified operators and current inspection documentation for cranes, lifts, hoists, and rigging.

1.8 PROTECTION

A. Protect existing roof areas to remain, grid-skylight glazing and framing, roof deck, equipment, occupied interiors, and adjacent waterways from damage and contamination.

B. Restore areas affected by access systems, staging, demolition, or construction operations to preconstruction condition.

C. Before removing existing EPDM roofing, provide a phased roof protection and temporary dry-in system to prevent moisture intrusion into the occupied building.

D. Temporary roof and skylight protection shall:

1. Maintain continuous watertight protection at exposed roof deck, roof openings, skylight interfaces, and transitions to roof areas remaining in service.
2. Resist anticipated wind and weather and remain secured without damaging existing roof deck, skylight framing, or retained construction.
3. Maintain safe building occupancy, required egress, and building systems throughout the work.
4. Provide controlled access for construction and inspection while excluding unauthorized personnel from hazardous work zones.

5. Remain maintained until permanent TPO membrane, flashings, and associated weatherproofing are complete.

E. Use compatible temporary membranes, reinforced coverings, secure edge restraints, temporary flashings, and other materials suitable for the duration and conditions of exposure.

F. Temporary roof protection shall be installed to:

1. Prevent water entry during roof removal, rain events, and overnight shutdowns.
2. Protect occupied interiors from dust, debris, insects, and contaminants at openings and penetrations.
3. Resist wind uplift and avoid damage to skylight glazing, framing, and roof-edge components.
4. Protect rooftop mechanical, electrical, and ventilation systems and maintain required operations.
5. Protect interior ceilings, finishes, furnishings, and equipment below work areas.

G. Submit a Temporary Roof Protection and Dry-In Plan before roof demolition, including:

1. Methods for phased tear-off, deck protection, and transition to retained roof assemblies.
2. Materials, securement, temporary flashing, and drainage arrangements.
3. Procedures for watertight protection at drains, curbs, skylights, penetrations, and work limits.
4. Sequence for installation, inspection, maintenance, emergency response, and removal.

H. Contractor shall inspect and maintain temporary protection daily and after severe weather, and promptly correct any failure or water entry at no additional cost to Owner.

1.9 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Portable Chain-Link Fencing: Minimum 2-inch (50-mm), 0.148-inch- (3.8-mm-) thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet (1.8 m) high with galvanized-steel pipe posts; minimum 2-3/8-inch- (60-mm-) OD line posts and 2-7/8-inch- (73-mm-) OD corner and pull posts, with 1-5/8-inch- (42-mm-) OD top and bottom rails. Provide concrete bases for supporting posts.

B. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10-mil (0.25-mm) minimum thickness, with flame-spread rating of 15 or less per ASTM E 84 and passing NFPA 701 Test Method 2.

C. Dust-Control Adhesive-Surface Walk-off Mats: Provide mats minimum 36 by 60 inches (914 by 1624 mm).

D. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

E. Provide temporary sanitary facilities for Contractor personnel; Owner toilet facilities shall not be used.

2.2 TEMPORARY FACILITIES

A. Contractor MUST provide sanitary facilities for their employees and maintain said facilities. Said facilities are not permitted to be located on any roof areas.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

1. Facilities are not permitted to be located on any roof.
2. Final location on site to be approved by Owner.

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

A. Heating and Cooling: Provide temporary environmental controls only where necessary to protect occupied interiors and support roofing material installation in accordance with manufacturer requirements.

B. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, odors, and debris from entering occupied areas through roof openings, air intakes, or other pathways.

1. Protect or temporarily isolate affected air intakes and openings in coordination with Owner; provide localized dust containment when interior access is required.
2. Perform daily cleanup and use HEPA-filtered equipment for interior dust-producing operations.

C. Moisture Control:

1. Provide temporary drying or dehumidification where required following exposure or moisture intrusion; do not conceal wet materials in completed roof assemblies.

3.3 SUPPORT FACILITIES INSTALLATION

A. Existing Roads, Sidewalks, Curbs, Inlets and other Paved Areas: Contractor is to document, through video and photographs, the condition of existing roads, sidewalks, inlets, and other paved areas. Items which are damaged, in any way during construction are to be replaced as follows:

1. Cracked or damaged sidewalk: Entire sections of sidewalk from joint to joint (control or expansion) are to be removed and replaced in kind.
2. Damaged Curb: Replace minimum 10-foot section.
3. Damaged Inlet: Remove and replace in its entirety – in kind.
4. Damaged Paved Areas: Replace sections in minimum 100 square foot areas.
5. Condition of adjacent Lawn Areas: New top soil, seed, stabilize and water (regularly for minimum of 1 month) damaged areas.

B. Traffic Controls: Comply with requirements of authorities having jurisdiction.

1. Protect existing site improvements to remain including curbs, pavement, and utilities.
2. Maintain access for fire-fighting equipment and access to fire hydrants.

C. Parking: See drawings for proposed contractor parking locations.

D. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Section 017300 "Execution."

E. Provide, maintain, and remove roof access systems, lifts, cranes, and hoisting equipment in a safe and orderly manner.

1. Coordinate with Owner to maintain building operations and public safety.
2. Remove access equipment promptly upon completion of Work.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.

B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

1. Comply with work restrictions specified in Section 011000 "Summary."

C. Pest Control: Prevent accumulation of construction waste, food, and standing water that may attract pests; address pest conditions caused by construction activities.

D. Insect Control: Protect temporary roof openings, skylight interfaces, and penetrations from insect entry into occupied building spaces, particularly during seasonal periods of heavy insect activity.

E. Staging Area Enclosure Fence: Before construction operations begin furnish and install staging enclosure fence in a manner that will prevent people and animals from easily entering staging area except by entrance gates.

F. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

G. Temporary Enclosures: Provide secure weather-resistant covers and barriers at exposed roof deck, penetrations, skylight interfaces, and other openings until permanent construction is watertight.

1. Where temporary roof openings expose conditioned spaces, provide thermal and air barriers as needed to maintain building operations.

2. See Section 1.8 for temporary roof dry-in and skylight protection requirements.

H. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.

1. Prohibit smoking ANYWHERE on site.
2. Control welding, cutting, hot work, temporary heating, and ignition sources; provide permits and fire watch where required. Coordinate roofing operations with Owner fire-safety procedures.
3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

END OF SECTION 01 50 00

SECTION 01 73 00 - EXECUTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes general administrative and procedural requirements governing execution of the Work, including, but not limited to, the following:

1. Installation.
2. Cutting and patching.
3. Progress cleaning.
4. Protection of installed construction.
5. Correction of the Work.

B. Related Requirements:

1. "Selective Demolition" for removal of existing EPDM roofing, insulation, cover boards, flashings, and associated roof components, where included in the Project Manual.

1.2 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of subsequent work.

B. Patching: Fitting and repair work required to restore construction to original conditions after installation of subsequent work.

1.3 PREINSTALLATION MEETINGS

A. Cutting and Patching Conference: Conduct conference at Project site.

1. Prior to commencing work requiring cutting and patching, review extent of cutting and patching anticipated and examine procedures for ensuring satisfactory result from cutting and patching work. Inform Architect of scheduled meeting. Require representatives of each entity directly concerned with cutting and patching to attend, including the following:

a. Contractor's superintendent.
b. Trade supervisor responsible for cutting operations.
c. Trade supervisor(s) responsible for patching of each type of substrate.

2. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.4 INFORMATIONAL SUBMITTALS

A. Cutting and Patching Plan: Submit plan at least 7 calendar days before cutting or patching existing roof decking, curbs, walls, or other construction. Identify work locations, methods, temporary protection, and anticipated interruptions.

1. Extent: Describe reason for and extent of each occurrence of cutting and patching.
2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building appearance and other significant visual elements.
3. Products: List products to be used for patching and firms or entities that will perform patching work.
4. Dates: Indicate when cutting and patching will be performed.

1.5 QUALITY ASSURANCE

A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.

1. Structural Elements: When cutting and patching structural elements, or when encountering the need for cutting and patching of elements whose structural function is not known, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.

2. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.

B. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of specified products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Comply with requirements specified in other Sections.

B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials. Use materials that are not considered hazardous.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Examine existing metal roof decking, roof drains, perimeter conditions, curbs, skylight interfaces, and adjacent construction for suitable conditions where new TPO roofing and associated work are to be installed.
2. Verify suitability and dryness of existing substrates and compatibility of new roof components, primers, adhesives, sealants, and flashings with adjacent materials and retained construction.

B. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

1. Description of the Work, including Specification Section number and paragraph, and Drawing sheet number and detail, where applicable.
2. List of detrimental conditions, including substrates.
3. List of unacceptable installation tolerances.
4. Recommended corrections.

C. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

D. Where roof tear-off exposes concealed deterioration, wet or unsound substrate, damaged metal decking, or unexpected conditions, document the condition and notify Architect before covering or proceeding with affected work.

3.2 PREPARATION

A. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

B. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

C. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect in accordance with requirements in Section 013100 "Project Management and Coordination."

3.3 INSTALLATION

A. Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Install roof components to required elevations, slopes, and drainage patterns; maintain positive drainage to roof drains and avoid ponding resulting from the Work.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure satisfactory results as judged by Architect. Maintain conditions required for product performance until Substantial Completion.

D. Do not install TPO roofing, insulation, adhesives, or sealants over wet or unsuitable substrates or under weather conditions prohibited by the roofing-system manufacturer. Protect open work from precipitation and wind.

E. Conduct construction operations without overloading existing metal roof decking or supporting framing. Distribute and secure roofing materials, equipment, and debris; verify permissible concentrated and temporary construction loads before staging.

F. Sequence roof tear-off, substrate examination, installation of insulation and cover boards, and TPO membrane application so exposed roof areas can be made watertight before the end of each workday or impending inclement weather.

G. Tools and Equipment: Select tools or equipment that minimize production of excessive noise levels.

H. Templates: Obtain and distribute to the parties involved templates for Work specified to be factory prepared and field installed. Check Shop Drawings of other portions of the Work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

I. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions with manufacturer.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
2. Allow for building movement, including thermal expansion and contraction.
3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

J. Joints: Form uniform, properly prepared joints at roof edges, flashings, curbs, and skylight interfaces. Provide movement accommodation and compatible sealants or membrane details in accordance with the Drawings and roofing-system manufacturer.

3.4 CUTTING AND PATCHING

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.

C. Temporary Support: Provide temporary support of Work to be cut.

D. Protection: Protect retained roof decking, roof drains, adjacent roofing, existing grid-skylight glazing and framing, rooftop equipment, and occupied interiors. Provide temporary weathertight protection during cutting, patching, and roof removals.

E. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching in accordance with requirements in Section 011000 "Summary."

F. Existing Utility Services and Mechanical/Electrical Systems: Identify roof-mounted conduits, piping, and equipment before removal. Coordinate authorized temporary disconnections, support, relocation, reconnection, and testing with Owner; maintain services to occupied areas except during approved shutdowns.

G. Cutting: Use methods least likely to damage existing metal roof decking, retained skylight components, and adjoining construction. Do not cut structural deck, joists, or framing without prior written direction from Architect.

1. Use hand or small power tools suited to controlled roofing removals. Do not hammer or chop the existing metal deck. Remove existing fasteners and projections as necessary to provide a suitable substrate for the new roof assembly.
2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. Metal Roof Deck: Do not cut, modify, or replace existing metal roof decking unless specifically indicated or separately authorized. Notify Architect of corrosion, deterioration, deflection, or concealed damage encountered during tear-off.
4. Proceed with patching after construction operations requiring cutting are complete.

H. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as practicable, as judged by Architect. Provide materials and comply with installation requirements specified in other Sections, where applicable.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.

2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

3. Interior Finishes: Where affected by authorized roof work, repair or replace damaged ceilings and finishes to match adjacent construction, including damage caused by construction-related water infiltration.

4. Exterior Building Enclosure: Restore roof penetrations, perimeter edges, wall intersections, skylight curbs, and flashings to a continuous weathertight condition compatible with the new TPO roof assembly.

5. At grid-skylight repair areas, preserve sound acrylic pyramids, framing, gaskets, and drainage paths. Perform joint sealant replacement and authorized pyramid replacement only as indicated on Drawings; coordinate adjacent TPO membrane-to-curb detailing without relying solely on silicone sealant.

I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.5 PROGRESS CLEANING

A. Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
2. Do not permit removed EPDM membrane, insulation, cover board, or other roof debris to accumulate on the roof. Lower debris promptly to approved containers; remove waste from the site regularly and in accordance with Section 01 74 19.
3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, in accordance with regulations.

    a. Use containers intended for holding waste materials of type to be stored.

4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.

B. Site: Maintain roof surfaces, staging areas, walkways, drainage inlets, and adjacent grounds free of waste, loose fasteners, and debris. Prevent material from entering roof drains or nearby waterways.

C. Work Areas: Clean areas where Work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills, roofing adhesives, primers, and sealants promptly using manufacturer-approved methods; prevent discharge to roof drains, stormwater systems, and waterways.
2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces in accordance with written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 017419 "Construction Waste Management and Disposal."

H. Protect roof drains with removable debris guards during construction; inspect and clear drains daily and before anticipated storms. Remove temporary guards upon completion and verify unobstructed drainage.

I. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

J. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

K. Limiting Exposures: Supervise construction operations to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.6 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Protect completed TPO roofing from construction traffic with manufacturer-approved temporary walkways or protection boards. Do not drag equipment or materials across new membrane; repair damage using roofing-system-approved procedures.

C. Protection of Existing Items: Protect retained roof deck, rooftop mechanical equipment and utilities, roof drains, adjacent building surfaces, and the existing grid-skylight system. Do not walk on, load, or place equipment on acrylic skylight glazing or unsupported skylight framing.

D. Comply with manufacturer's written instructions for temperature and relative humidity.

3.7 CORRECTION OF THE WORK

A. Repair or remove and replace damaged, defective, or nonconforming Work. Restore damaged substrates and finishes.

1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Repair Work previously completed and subsequently damaged during construction period. Repair to like-new condition.

C. Restore permanent facilities used during construction to their specified condition.

D. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

E. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

F. Remove and replace cracked, scratched, or broken skylight glazing or other existing components damaged by construction operations, subject to Architect review and matching requirements.

END OF SECTION 01 73 00

SECTION 01 74 19 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for handling, separating, removing, recycling, and legally disposing of nonhazardous waste generated by the partial roof replacement and grid-skylight repair work.

1. Waste includes existing EPDM membrane, roof insulation and cover boards, removed flashings, metal copings and trim, deteriorated blocking, roofing accessories, sealants, fasteners, packaging, and other materials removed as indicated on Drawings.

B. Related Requirements:

1. "Selective Demolition" for removal and disposition of existing roofing materials and related construction, where included in the Project Manual.

1.3 DEFINITIONS

A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

C. 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.

D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

PART 2 - EXECUTION

2.1 GENERAL

A. Site Access and Temporary Controls: Conduct waste management operations with minimum interference to the occupied Administration Building, site roads, pedestrian routes, emergency access, adjacent roof areas, and surrounding waterways. Coordinate dumpster locations, material lowering, hauling routes, and removal schedules with Owner.

1. Comply with Section 01 50 00 "Temporary Facilities and Controls" for site protection, dust and debris containment, noise control, staging, and environmental protection.

2.2 DISPOSAL OF WASTE

A. General: Except for materials expressly designated to be salvaged, reinstalled, or recycled, promptly remove roof demolition and construction waste from the Project site and legally dispose of it at facilities authorized to accept the particular waste stream. Separate recyclable metals and other materials where practicable and accepted by receiving facilities.

1. Do not stockpile removed EPDM, insulation, cover boards, debris, or discarded materials on the roof. Remove waste promptly as work progresses; do not overload the existing roof deck or obstruct drains, access routes, or required exits.
2. Lower and transport debris in covered, secured containers, chutes, or other controlled means that prevent windblown materials, spillage, dust, and debris from reaching occupied areas, adjacent roofing, site improvements, or waterways. Do not throw debris from the roof.

B. Burning: Do not burn waste materials.

C. Disposal: Remove waste materials from Owner's property and legally dispose of them off-site. Do not use Owner's dumpsters. Protect and clean designated staging areas, paved surfaces, roof drains, and adjacent grounds daily; promptly collect loose fasteners and other debris. Restore any areas damaged by waste handling or hauling.

D. Existing skylight glazing, framing, and other components indicated to remain shall be protected from demolition debris and waste-handling operations. Materials designated for salvage or reinstallation shall be identified, carefully removed, and stored in a secure, protected location.

E. Keep roofing debris, sealants, adhesives, solvents, wash water, and other construction waste out of roof drains, storm drainage systems, landscaped areas, and adjacent waterways. Collect and dispose of liquid and chemical waste in accordance with applicable regulations and manufacturer instructions.

F. Where suspect hazardous or regulated materials are encountered, stop disturbance of the affected materials, secure the area, and notify Architect and Owner for direction. Do not handle or dispose of such materials as ordinary nonhazardous construction waste.

END OF SECTION 01 74 19

SECTION 01 78 23 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for preparing operation and maintenance documentation for the completed TPO roofing system, associated roof components, and grid-skylight repairs, including the following:

1. Operation and maintenance documentation directory.
2. Emergency manuals.
3. Maintenance and inspection instructions for roofing, roof drainage, flashings, and repaired skylight components.
4. Product maintenance manuals, manufacturer warranty documentation, and approved repair procedures.
5. Systems and equipment maintenance manuals for rooftop equipment affected by the Work, where applicable.
6. Roofing and skylight closeout documentation shall include manufacturer-approved maintenance instructions, warranty requirements, as-built information, and identification of materials actually installed.

1.2 CLOSEOUT SUBMITTALS

A. Manual Content: Operations and maintenance manual content is specified in individual Specification Sections to be reviewed at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.

1. Architect will comment on whether content of operations and maintenance submittals are acceptable.
2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.

B. Format: Submit operations and maintenance manuals in the following format:

1. PDF electronic file. Assemble each manual into a composite electronically indexed file. Submit on digital media acceptable to Architect.

a. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically linked operation and maintenance directory.
b. Enable inserted reviewer comments on draft submittals.

2. Two paper copies. Include a complete operation and maintenance directory. Enclose title pages and directories in clear plastic sleeves.

C. Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least fifteen days before any required demonstration or training. Include

roofing manufacturer inspection reports, warranty documentation, and maintenance instructions available at that time.

1. Correct or revise each manual to comply with Architect's comments. Submit copies of each corrected manual within fifteen days of receipt of Architect's comments and prior to commencing demonstration and training.

PART 2 - PRODUCTS

2.1 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

A. Directory: Prepare a single, comprehensive directory of operation, emergency, and maintenance data for the new TPO roofing assembly, roof drains, flashings, accessories, skylight repairs, and affected rooftop equipment, listing each item and the location of its documentation.

B. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:

1. Title page.
2. Table of contents.
3. Manual contents.

C. Title Page: Include the following information:

1. Subject matter included in manual.
2. Name and address of Project.
3. Name and address of Owner.
4. Date of submittal.
5. Name and contact information for Contractor.
6. Name and contact information for Construction Manager, if retained by Owner.
7. Name and contact information for Architect.
8. Name and contact information for Commissioning Authority, if applicable.
9. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
10. Cross-reference to related systems in other operation and maintenance manuals.

D. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.

E. Manual Contents: Organize into manageable sections for TPO roofing, insulation and cover boards, flashings and edge metal, roof drains and accessories, grid-skylight sealant repairs and replacement units (where performed), and affected rooftop equipment.

F. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.

1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
2. File Names and Bookmarks: Enable bookmarking of individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

G. Manuals, Paper Copy: Submit manuals in the form of hard copy, bound and labeled volumes.

1. Binders: Heavy-duty, three-ring, vinyl-covered, binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch (215-by-280-mm) paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.

    a. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents[, and indicate Specification Section number on bottom of spine. Indicate volume number for multiple-volume sets.

2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment.
4. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.

    a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
    b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.2 EMERGENCY MANUALS

A. Content: Organize emergency procedures relevant to roof leakage, storm damage, blocked drains, wind damage, and affected rooftop equipment into readily accessible sections.

1. Type of emergency.
2. Emergency instructions.
3. Emergency procedures.

B. Type of Emergency: Where applicable to the installed roofing system, skylight repairs, roof drainage, and affected rooftop equipment, include instructions for the following:

1. Fire.
2. Severe storms, high winds, and roof damage.
3. Roof leaks and interior water intrusion.
4. Roof-drain blockage or overflow.
5. Electrical or mechanical failure of rooftop equipment affected by the Work.
6. Loss of roof drainage or other service affecting the roof.
7. Failure or displacement of roof flashings, skylight components, or rooftop equipment supports.
8. Spills or chemical exposure that could damage the roof membrane.

C. Emergency Instructions: Identify procedures for locating and containing leaks, safely responding to storm damage, protecting occupied spaces, and contacting the roofing installer and manufacturer. State actions that may void roofing or skylight warranties.

D. Emergency Procedures: Include the following, as applicable:

1. Instructions on stopping.
2. Shutdown instructions for each type of emergency.
3. Operating instructions for conditions outside normal operating limits.
4. Required sequences for electric or electronic systems.
5. Special operating instructions and procedures.

2.3 OPERATION MANUALS

A. Content: Include operation data required in individual Specification Sections for roof drainage components and rooftop equipment disconnected, modified, or reinstalled as part of the Work. Omit information for systems not affected by the Project.

1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
2. Performance and design criteria if Contractor is delegated design responsibility.
3. Operating standards.
4. Operating procedures.
5. Operating logs.
6. Wiring diagrams.
7. Control diagrams.
8. Piped system diagrams.
9. Precautions against improper use.
10. License requirements including inspection and renewal dates.

B. Descriptions: Include the following:

1. Product name and model number. Use designations for products indicated on Contract Documents.
2. Manufacturer's name.
3. Equipment identification with serial number of each component.
4. Equipment function.
5. Operating characteristics.
6. Limiting conditions.
7. Performance curves.

8. Engineering data and tests.
9. Complete nomenclature and number of replacement parts.

C. Operating Procedures: Include the following, as applicable:

1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
6. Normal shutdown instructions.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.4 PRODUCT MAINTENANCE MANUALS

A. Content: Organize a separate maintenance section for each roofing and skylight product installed, including TPO membrane, insulation, cover boards, adhesives, fasteners, flashings, edge metal, sealants, roof drains, and replacement acrylic pyramid skylight units where provided. Include source information, product data, inspection and maintenance procedures, repair materials and sources, and warranties.

B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Product Information: Include the following, as applicable:

1. Product name and model number.
2. Manufacturer's name.
3. Color, pattern, and texture.
4. Material and chemical composition.
5. Reordering information for specially manufactured products.

D. Maintenance Procedures: Include manufacturer's written recommendations for the installed TPO roof and skylight materials, including the following:

1. Inspection procedures and recommended frequency, including inspections after severe weather and work by other trades.
2. Approved cleaning agents and cleaning methods for TPO membrane, metal components, and acrylic skylights.

3. Prohibited cleaners, solvents, footwear, equipment, and maintenance practices that could damage roofing or skylights.
4. Routine inspection and maintenance schedule for membrane seams, flashings, roof edges, drains, sealants, and skylight assemblies.
5. Manufacturer-approved leak investigation, temporary emergency response, permanent repairs, and procedures for work by subsequent trades.
6. Provide roof access and traffic precautions, including prohibition against walking on or placing loads or ladders directly on acrylic skylight units.
7. Provide procedures for keeping drains and strainers clear of debris without damaging the roofing system or allowing debris to enter the stormwater system.

E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

F. Warranties and Bonds: Include executed roofing manufacturer and installer warranties, applicable skylight and sealant warranties, start and expiration dates, covered components, exclusions, required inspection and maintenance obligations, and procedures and contacts for filing claims.

2.5 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

A. Content: For roof drains and rooftop mechanical or electrical equipment affected by removal, temporary relocation, reconnection, or testing, include source information, manufacturer instructions, applicable maintenance procedures, service contacts, and warranties. Do not require unrelated building systems documentation.

B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:

1. Standard maintenance instructions and bulletins.
2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
3. Identification and nomenclature of parts and components.
4. List of items recommended to be stocked as spare parts.

D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:

1. Test and inspection instructions.
2. Troubleshooting guide.
3. Precautions against improper maintenance.
4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
5. Aligning, adjusting, and checking instructions.
6. Demonstration and training video recording, if available.

E. Maintenance and Service Schedules: Include applicable inspection, cleaning, and service intervals for roof drains and affected rooftop equipment, together with any requirements necessary to preserve warranties.

F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

A. Emergency Manual: Assemble procedures for roof leaks, storm damage, blocked drains, damage to skylights, and other emergencies involving components included in the Work.

B. Product Maintenance Manual: Assemble a complete set of manufacturer instructions for care, inspection, cleaning, repair, and maintenance of each roofing and skylight material incorporated into the Work.

C. Operation and Maintenance Manuals: Assemble complete operation and maintenance data for roof drainage components and rooftop equipment affected by the Work, where applicable.

D. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.

E. Drawings: Provide supplemental drawings or annotated roof plans identifying the completed roof assembly, roof drains, flashings, penetrations, rooftop equipment, and locations of skylight sealant repairs and replacement acrylic pyramid units, if performed. Coordinate with record Drawings.

1. Do not use original project record documents as part of operation and maintenance manuals.

2. Include the roofing manufacturer’s final inspection or acceptance documentation, where required by the specified warranty, and the executed warranties as part of the closeout package.

3. Identify the roofing installer and manufacturer service contacts, including procedures for reporting leaks and obtaining authorization for repairs during the warranty period.

F. Comply with Section 01 77 00 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 01 78 23

SECTION 02 41 19 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Selective demolition and removal of the existing EPDM roofing system, insulation, cover boards, flashings, edge materials, and associated components within the limits indicated on the Drawings.
2. Selective removal of existing roof accessories, blocking, and related materials required to accommodate the new TPO roof assembly and skylight repairs.
3. Careful removal, temporary storage, and reinstallation of rooftop components indicated to remain or be reused.

B. Related Requirements:

1. Section 011000 "Summary" for restrictions on use of the premises, Owner-occupancy requirements, and phasing requirements.
2. Section 015000 “Temporary Facilities and Controls” for temporary protection of interior spaces and building access.
3. Section 017300 "Execution" for cutting and patching procedures.
4. Section 013516 "Alteration Project Procedures" for general protection and work procedures for alteration projects.

1.2 DEFINITIONS

A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged or reinstalled.

B. Remove and Salvage: Detach items from existing construction, in a manner to prevent damage, and deliver to Owner ready for reuse.

C. Remove and Reinstall: Detach items from existing construction, in a manner to prevent damage, prepare for reuse, and reinstall where indicated.

D. Existing to Remain: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.

E. Dismantle: To remove by disassembling or detaching an item from a surface, using gentle methods and equipment to prevent damage to the item and surfaces; disposing of items unless indicated to be salvaged or reinstalled.

1.3 PREINSTALLATION MEETINGS

A. Predemolition Conference: Conduct conference at Project site.

1. Inspect existing roof assembly, roof drains, metal deck, roof edges, penetrations, rooftop equipment, and existing grid-skylight system; review protection requirements.

2. Review structural load limitations of existing structure.
3. Review daily roof removal and replacement sequence; verify that roofing materials, installers, equipment, and temporary weather protection are available before demolition begins.
4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
5. Review areas where existing construction is to remain and requires protection.
6. Review enclosed debris chutes, covered dumpsters, windborne debris controls, site staging, and measures to prevent debris from entering adjacent waterways.

1.4 INFORMATIONAL SUBMITTALS

A. Proposed Protection Measures: Submit a roof demolition and protection plan showing temporary weather protection, roof access, fall protection, protection of existing skylights and equipment, covered debris conveyance, wind screens or equivalent containment, and safeguards for the adjacent waterways.

B. Schedule of Selective Demolition Activities: Indicate the following:

1. Detailed daily sequence and limits of roof removal, with corresponding installation and watertight completion of the replacement roof assembly on the same workday; identify work areas and start and finish dates.
2. Interruption of utility services. Indicate how long utility services will be interrupted.
3. Coordination for shutoff, capping, and continuation of utility services.
4. Roof access, hoisting, debris handling, and protected routes for building occupants and construction personnel.
5. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.

C. Predemolition Photographs or Video: Document existing roof, skylights, drains, roof edges, rooftop equipment, adjacent facades, site improvements, and other construction to remain.

1.5 FIELD CONDITIONS

A. Owner will occupy the building throughout roof demolition and replacement. Conduct work to maintain building operations, safe access, and uninterrupted protection from water infiltration.

B. Conditions existing at time of mandatory pre-bid conference, for bidding purpose, will be maintained by Owner as far as practical.

C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.

1. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.

E. Storage or sale of removed items or materials on-site is not permitted.

F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

1. Maintain fire-protection facilities in service during selective demolition operations.

1.6 COORDINATION

A. Arrange selective demolition schedule so as not to interfere with Owner's operations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Standards: Comply with ANSI/ASSP A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that affected rooftop equipment, piping, conduits, and other services have been protected or properly disconnected as required before beginning demolition. Maintain all services indicated to remain.

B. Review Project Record Documents of existing construction or other existing condition and hazardous material information provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.

C. Verify actual roof assembly, roof deck, perimeter, flashing, drainage, and penetration conditions as demolition proceeds. Promptly report concealed deterioration or conditions differing from the Drawings before covering or altering affected construction.

D. Survey of Existing Conditions: Record existing conditions by use of measured drawings, preconstruction photographs and / or video.

1. Inventory and record the condition of items to be removed and salvaged.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.

1. Arrange to shut off utilities with utility companies where necessary to accommodate demolition and new work.
2. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
3. Disconnect, temporarily support, relocate, and reinstall rooftop mechanical, plumbing, and electrical components only where indicated or necessary for roof replacement, in coordination with Owner and affected trades.

a. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.

3.3 PROTECTION

A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
2. Maintain continuous watertight protection of the occupied building. Remove only the quantity of roofing that can be replaced with the specified new roof assembly, including required flashings and watertight terminations, before the end of the same workday. Do not leave exposed deck or incomplete roof assemblies overnight.
3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
4. Provide fully enclosed debris chutes, sealed or covered containers, and controlled hoisting or lowering methods. Do not throw or drop materials from the roof. Secure light materials against wind and prevent debris from escaping onto the site or into adjacent waterways.
5. Protect existing grid-skylight acrylic units and framing, roof drains, rooftop equipment, exterior walls, entrances, furnishings, and interior finishes from falling debris, dust, moisture, and construction loads. Do not walk on or place equipment on skylight glazing.
6. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 015000 "Temporary Facilities and Controls."

B. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

1. Strengthen or add new supports when required during progress of selective demolition.

C. Remove temporary barricades and protections where hazards no longer exist.

D. Access: Provide suitable roof access, hoisting, fall protection, and equipment support without damaging existing construction. Coordinate staging and access with Owner. Protect the adjacent waterways from debris and runoff; no materials, equipment, or temporary supports may be placed in the water without required approvals. Contractor remains responsible for means, methods, and safety.

3.4 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Proceed in manageable roof areas, coordinated with immediate installation of the replacement TPO roof assembly. At no time remove more roofing than can be replaced, flashed, and rendered permanently watertight during that same workday.
2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
5. Maintain fire watch during and for at least eight hours after flame-cutting operations.
6. Maintain adequate ventilation when using cutting torches.
7. Promptly remove wet, deteriorated, or unsuitable materials designated for demolition. Notify Architect of suspected deterioration of the existing metal deck or other concealed conditions before proceeding with affected replacement work.
8. Do not cut, remove, or alter existing metal roof decking or structural members unless specifically indicated or authorized. Protect the deck from impact and concentrated loading.
9. Position equipment, materials, and demolition debris so that existing metal roof deck and supporting structure are not overloaded. Do not stockpile demolition debris on the roof.
10. Coordinate hoists, cranes, enclosed chutes, and covered dumpsters with Owner. Secure loads against wind; protect building, landscaping, pavement, storm drains, and adjacent waterways. Restore any damaged areas.
11. Remove demolition waste continuously and at least daily. Do not allow loose insulation, membrane scraps, fasteners, packaging, or other debris to accumulate or become windborne. Comply with Section 017419 "Construction Waste Management and Disposal."

B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Daily Roof Exposure and Weather Monitoring: Contractor shall review short-range forecasts before each shift, monitor current conditions throughout the workday, and review extended forecasts regularly to plan roof demolition and replacement. Do not begin or continue removal when rain, high winds, storms, or other adverse weather could prevent same-day installation and permanent watertight completion. Maintain sufficient materials, labor, and readily deployable emergency coverings on-site to protect the building if conditions change unexpectedly. Temporary coverings are emergency protection only and do not relieve the Contractor of the requirement to complete each opened roof area with permanent watertight roofing before leaving the site each day. Contractor is fully responsible for maintaining the occupied building dry throughout the Work.

C. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended reuse.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.

3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. Existing Roof Assembly: Remove existing EPDM membrane, associated insulation, cover boards, flashings, and related roof materials within the limits indicated. Use methods that protect existing metal decking, skylights, drains, equipment, and adjoining construction to remain.

1. Daily Work Limits and Protection:

a. Limit each day's removal to an area that can be fully replaced with the specified TPO roofing assembly and made permanently watertight, including roof edges, penetrations, and temporary-to-existing tie-ins, before the end of that workday. Coordinate demolition and installation crews accordingly.

b. Protect existing grid-skylight units, framing, and perimeter seals throughout roofing operations. Perform only the skylight sealant removal or individual unit replacement indicated on the Drawings or authorized under unit-price work. Do not use acrylic skylights as walking or working surfaces.

B. Debris Containment and Waterway Protection: Provide and maintain positive containment at roof edges, work areas, and debris transfer points to prevent windborne roofing debris from reaching the ground, occupied areas, storm drains, or adjacent waterways.

1. Containment and Disposal:

a. Use enclosed chutes or controlled hoisting into covered containers; secure lightweight insulation, membrane, packaging, fasteners, and fragments immediately upon removal. Do not sweep, blow, throw, or discharge debris from the roof or into roof drains. Suspend debris-generating operations whenever wind conditions make containment ineffective.

b. Inspect roof edges, ground-level staging, storm-drain inlets, and waterway-facing elevations throughout each workday and at shift end. Immediately retrieve escaped debris where safely accessible, notify Owner of any release to a waterway, and undertake required cleanup and reporting in accordance with applicable regulations.

C. Remove demolition waste materials from the Project site promptly and dispose of them at legally authorized construction and demolition waste facilities acceptable to authorities having jurisdiction.

1. Do not allow loose or uncovered demolition materials to accumulate on the roof or site.
2. Transport and contain debris to prevent wind dispersal, spillage, and contamination of site improvements, storm drainage, and adjacent waterways.

3. Lower debris by enclosed chute, hoist, or other controlled means directly into covered containers; never free-drop debris from the roof.
4. Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."

D. Burning: Do not burn demolished materials.

3.6 CLEANING

A. Clean the roof, roof drains, building elevations, staging areas, adjacent grounds, and other affected improvements daily. Remove all demolition debris and restore affected areas to their preconstruction condition.

END OF SECTION 02 41 19

SECTION 06 10 53 - MISCELLANEOUS ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Rooftop equipment bases and support curbs.
2. Wood blocking cants**,** and nailers.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product.

B. Sustainable Design Submittals:

1.3 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: For the following, from ICC-ES:

1. Fire-retardant-treated wood.
2. Power-driven fasteners.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. Dress lumber, S4S, unless otherwise indicated.

B. Maximum Moisture Content of Lumber: 19 percent

2.2 FIRE-RETARDANT-TREATED MATERIALS

A. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame

front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.

1. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated lumber and plywood by pressure process after being subjected to accelerated weathering according to ASTM D 2898. Use for exterior locations and where indicated.
2. Design Value Adjustment Factors: Treated lumber shall be tested according to ASTM D 5664, and design value adjustment factors shall be calculated according to ASTM D 6841.

B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent.

C. Identify fire-retardant-treated wood with appropriate classification marking of qualified testing agency.

D. Application: Treat all miscellaneous carpentry unless otherwise indicated.

2.3 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

1. Where carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.

B. Power-Driven Fasteners: NES NER-272.

C. Lumber or plywood to concrete or masonry: Tapcon or Gripcon anchors, minimum 1-1/4" diameter with 1" penetration, minimum 300# per anchor installed withdrawn resistance. Other corrosion resistant drilled-in type masonry anchors may be used if equivalent in pull-out strength.

D. Fasteners shall be spiral threaded nails or exterior screws. All fasteners penetrating treated wood shall be stainless steel or hot dip galvanized G185.

2.4 MISCELLANEOUS MATERIALS

A. Flexible Flashing: Self-adhesive butyl rubber or rubberized-asphalt compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.025 inch (0.6 mm).

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry to other construction; scribe and cope as needed for accurate fit.

B. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.

C. Do not splice structural members between supports unless otherwise indicated.

D. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.

E. Securely attach carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.
2. Table R602.3(1), "Fastener Schedule for Structural Members," and Table R602.3(2), "Alternate Attachments," in ICC's International Residential Code for One- and Two-Family Dwellings.

F. Install in straight lines, level planes and at a proper elevation.

G. Do not use warped wood members.

H. Heads shall be flush with wood surface and nail shall penetrate adjoining piece minimum 1-1/4”.

I. Blocking and nailers under metal edges and fascia shall conform to F.M. Loss Prevention Data Bulletin 1-49 Zone 1 (FM1-60).

3.2 PROTECTION

A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 06 10 53

SECTION 07 54 23 - TPO THERMOPLASTIC SINGLE-PLY ROOFING

1.GENERAL

1.1. SECTION INCLUDES

A. TPO Thermoplastic Single-Ply Roofing.

B. Membrane Flashings.

C. Metal Flashings.

D. Roof Insulation.

1.2. RELATED SECTIONS

A. Section 05 31 23 - Steel Roof Decking.

B. Section 06 10 00 – Wood Deck & Rough Carpentry.

C. Section 07 62 00 - Sheet Metal Flashing and Trim.

D. Section 07 70 00 - Roof and Wall Specialties and Accessories.

E. Section 22 30 00 - Plumbing Equipment.

1.3. REFERENCES

A. American Society of Civil Engineers (ASCE) - ASCE 7 - Minimum Design Loads for Buildings and Other Structures, Current Revision.

B. ANSI/SPRI WD-1 "Wind Design Standard for Roofing Assemblies".

C. ASTM International (ASTM):
1. ASTM C 1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
2. ASTM D 226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
3. ASTM D 412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension.
4. ASTM D 6878 - Standard Specification for Thermoplastic Polyolefin Based Sheet Roofing.
5. ASTM E 96 - Standard Test Methods for Water Vapor Transmission of Materials.

D. Factory Mutual (FM Global):
1. Approval Guide.
   a. Factory Mutual Standard 4470 - Approval Standard for Class 1 Roof Covers.
   b. Loss Prevention Data Sheets 1-28, 1-29.

E. International Code Council (ICC):
1. International Building Code (IBC).

F. National Roofing Contractors Association (NRCA) - Low Slope Roofing and Waterproofing Manual, Current Edition.

G. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA) - Architectural Sheet Metal Manual.

H. Underwriters Laboratories (UL):
   1. TGFU R1306 - "Roofing Systems and Materials Guide".
   2. UL-790 - Standard Test Method for Fire Tests of Roof Coverings.

I. ANSI/ASHRAE/IESNA Standard 9.1 (2007): Energy Standard for Buildings Except Low-Rise Residential Buildings.

1.4. DESIGN CRITERIA

A. Wind Uplift Performance:

   1. Roof system is designed to withstand wind uplift forces as calculated using ASCE- 7-16.
   2. Roof system is designed to achieve a FM 1-90 wind uplift rating.

B. Fire Resistance Performance:

   1. Roof system will achieve a UL Class A rating when tested in accordance with UL-790.

C. Thermal Performance: Roof system will achieve a minimum R value not less than 30.

D. Drainage: Provide a roof system with positive drainage where all standing water dissipates within 48 hours after precipitation ends.

E. Building Codes:
   1. Roof system will meet the requirements of all federal, state and local code bodies having jurisdiction.

F. FM Global Listing: Reference RoofNav # 404100-0-0

1.5. SUBMITTALS

A. Submit under 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 methods.

C. Detail Drawings:

   1. Submit approved plan, section, elevation or isometric drawings which detail the appropriate methods for all flashing conditions found on the project.
   2. Coordinate approved drawings with locations found on the Contract Drawings.

D. Selection Samples: For each finish product specified, two complete sets of chips

representing manufacturer's full range of available colors, membranes, and thicknesses.

E. Verification Samples: For each finish product specified, two samples, minimum size 4 inches (100 mm) square representing actual product, color, and patterns.

1.6. QUALITY ASSURANCE

A. Manufacturer Qualifications: All primary products specified in this section will be supplied by a single manufacturer with a minimum of twenty (20) years experience.

B. Installer Qualifications:

1. All products listed in this section are to be installed by a single installer with a minimum of five (5) years demonstrated experience in installing products of the same type and scope as specified.
2. Installer must be capable of extending the Manufacturer's Labor and Materials guarantee.
3. Installer must be capable of extending the Manufacturer's No Dollar Limit guarantee.

1.7. DELIVERY, STORAGE, AND HANDLING

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

B. Store and dispose of hazardous materials, and materials contaminated by hazardous materials, in accordance with requirements of local authorities having jurisdiction.

C. Safety Data Sheets (SDS) must be on location at all times during the transportation, storage and application of materials.

D. When loading materials onto the roof, the Authorized Roofing Applicator must comply with the requirements of the building owner to prevent overloading and possible disturbance to the building structure.

1.8. PROJECT CONDITIONS

A. Proceed with roofing work only when weather conditions are in compliance with the manufacturer's recommended limitations, and when conditions will permit the work to proceed in accordance with the manufacturer's requirements and recommendations.

B. Proceed with work so new roofing materials are not subject to construction traffic. When necessary, new roof sections shall be protected and inspected upon completion for possible damage.

C. Provide protection, such as 3/4 inch thick plywood, for all roof areas exposed to traffic during construction. Plywood must be smooth and free of fasteners and splinters.

D. The surface on which the insulation or roofing membrane is to be applied shall be clean, smooth, dry, and free of projections or contaminants that would prevent proper application of or be incompatible with the new installation, such as fins, sharp edges, foreign materials, oil and grease.

E. New roofing shall be complete and weather tight at the end of the work day.

F. Contaminants such as grease, fats and oils shall not be allowed to come in direct contact with the roofing membrane.

G. When positioning membrane sheets, exercise care to locate all field splices away from low spots and out of drain sumps. All field splices should be shingled to prevent bucking of water.

1.9. WARRANTY

A. At project closeout, provide to Owner or Owners Representative an executed copy of the manufacturer's Total System warranty, outlining its terms, conditions, and exclusions from coverage.

1. Duration: 25 Years.
2. Include Peak Wind gusts of up to 72 MPH when measured at 10 meters above ground level.
3. Pre-fabricated edge metal to be included the manufacturer’s Total System Roof Warranty.

2.PRODUCTS

2.1. MANUFACTURERS

A. Basis of Deign: Carlisle SynTec Systems, which is located at: P. O. Box 7000; Carlisle, PA 17013; ASD Toll Free Tel: 800-4-SYNTEC; Tel: 717-245-7000; Fax: 717-245-7053; Email:request info (info@carlislesyntec.com); Web:https://www.carlislesyntec.com.

B. Or Equals:

1. Firestone
2. JM

2.2. SCOPE / APPLICATION

A. Roof System: Provide a waterproof roof system, capable of withstanding uplift forces as specified in the Design Criteria article of this section.

1. Membrane Attachment: Fully Adhered.

B. Base Flashing: Provide a waterproof, fully adhered base flashing system at all penetrations, plane transitions and terminations.

C. Insulation: Provide a roof insulation system beneath the finish membrane.

2.3. AIR / VAPOR BARRIER

A. Air/Vapor Barrier - a 40-mil composite consisting of 35-mils of self-adhering rubberized asphalt laminated to a 5-mil woven polypropylene film.

2.4. INSULATION

A. Polyiso: Rigid board with coated glass fiber mat facers (CGF) on both sides, meeting or exceeding the requirements of ASTM C 1289, Type II, Class 2.

1. Compressive Strength: Grade 2, 20 psi (138 kPa).
2. Density: 2 lb per cubic foot (24 kg/cu m) minimum.

B. BASE Layer “Tapered” Polyiso: Rigid board with coated glass fiber mat facers (CGF) on

both sides, meeting or exceeding the requirements of ASTM C 1289, Type II, Class 2.

1. Compressive Strength: Grade 2, 20 psi (138 kPa).
2. Density: 2 lb per cubic foot (24 kg/cu m) minimum.

C. Top Layer Composite Board: Composite insulation panel comprised of 1/2 inch (13 mm) high-density Polyiso board laminated during the manufacturing process to rigid Polyiso roof insulation meeting ASTM C1289.

1. Top Layer of Lamination: ASTM C1289 Type II, Class 4, Grade 1. Compressive strength 80 psi min (551 kPa).
2. Bottom Layer of Lamination: ASTM C1289 Type II, Class 2. Compressive strength 20 psi (138 kPa).

D. Gypsum Substrate Board: Moisture, mold and impact-resistant, non-structural fiber-reinforced gypsum panel made from 95 percent recycled materials.

1. 4 x 8 Board Thickness: 1/2 inch (13 mm).

Fastening Requirements:

- Field – 16 Fasteners and Plates
- Perimeter– 24 Fasteners and Plates
- Corners – 32 Fasteners and Plates

E. HD Polyiso Cover board on Tapered Crickets: Rigid board with coated glass fiber mat facers (CGF) on both sides, meeting or exceeding the requirements of ASTM C 1289, Type II, Class 4, Grade 1.

1. Compressive Strength: 80 psi min. (551 kPa).
2. Board Thickness: 1/2 inch (13 mm).

2.5. INSULATION ADHESIVE

A. Low Rise Urethane Adhesive: A spray or extruded applied, two-component polyurethane, low-rise expanding foam adhesive used for attaching approved insulations to compatible substrates (concrete, cellular lightweight insulating concrete, gypsum, cementitious wood fiber, wood or steel) or existing smooth or gravel surfaced BUR, modified bitumen or cap sheets.

2.6. THERMOPLASTIC POLYOLEFIN (TPO) MEMBRANE

A. TPO Membrane:

1. Color: White.
2. Membrane Thickness: 60 mil nominal.
    a. Thickness over Scrim: 0.020 inches (0.508 mm).
    b. Breaking Strength (ASTM D 751): 250 lbf/in (1.1 kN/m) minimum.
    c. Tear Resistance (ASTM D 751): 55 lbf/in (245 N/m) minimum.
    d. Elongation (ASTM D 751): 25 percent.
3. Field Sheet Dimensions:
    a. Width: 16 feet

b. Length: 100 feet

2.7. FLASHING ACCESSORIES

A. Inside Corners: Pre-molded corner flashing for inside corners. 60 mil thickness. Color to match membrane. Special colors require custom fabrication process.

B. Outside Corners: Injection molded corner used for flashing outside corners. 60 mil thickness. Color to match membrane. Special colors require custom fabrication process.

C. TPO T-Joint Covers: Injection molded 60 mil thick TPO formed into a 4.5 inch (114 mm) diameter circle used to seal step-offs at splice intersections. Color to match membrane. Special colors require custom fabrication process.

D. TPO Universal Corners: A pre-molded flashing for use in a variety of corner details, including inside and outside corners. Available in white, gray and tan and are 60-mil thick.

E. Molded Pipe Seals: A pre-molded flashing and clamping ring used for pipe penetrations. Available for 0.75 inch to 8 inch (19 - 203.2 mm) diameter pipes. Color to match membrane. Special colors not available.

F. TPO Split Pipe Seals: Pre-fabricated flashing consisting of 60 mil thick reinforced Detail Membrane for pipes 1 inch to 6 inch (25.4 - 152.4 mm) in diameter. A split (cut) and overlapped tab is incorporated to allow the pipe seal to be opened and wrapped around the pipe when it is not possible to pull a standard pipe flashing over a round penetration. Gray, tan and special colors require custom order fabrication. Custom sizes available on a special order basis.

G. TPO Split Square Tubing Wraps: Pre-fabricated flashings made of 60 mil thick reinforced Detail membrane for square tubing. A split (cut) and overlap tab are incorporated into these parts to allow the seals to be opened and wrapped around a square tubing penetration with an obstruction. Stock sizes include 3- inch, 4-inch, 5-inch and 6 inch (76, 102, 127, 152 mm) diameter square tubing. Gray, tan and special colors require custom order fabrication. Custom sizes available on a special order basis.

H. TPO Molded Sealant Pockets:

1. A two-piece, interlocking injection molded, flexible pocket with a rigid polypropylene vertical wall and pre-formed deck flanges. Color to match membrane. Special colors not available.
2. Used with Thermoplastic One-Part Pourable Sealer as specified in this section for waterproofing pipe clusters or other odd shaped penetrations. The removable built-in extension legs allow the oval pocket to adjust from 7.5 inches to 11.5 inches (191mm - 292 mm) in length while maintaining a 6-inch width (152 mm).

I. Pre-Fabricated Sealant Pockets: A two-piece, pre-fabricated, custom sized, sealant pocket that utilizes reinforced TPO membrane and coated metal to form a rigid, oversized sealant pocket with a weldable horizontal deck flange. Color - White. Gray, tan and special colors require custom order fabrication.

J. Sealant Pocket Extension Legs: Designed for use with the TPO Molded Sealant Pocket and the Pre-Fabricated Sealant Pocket to extend the length in increments of 10 inches (254 mm). Fabricated from 45 mil thick reinforced TPO membrane and TPO coated metal. Can be used full length, cut to size for customized lengths or welded to each other for extra long

applications. Color - White. Gray, tan and special colors require custom order fabrication.

K. Pressure-Sensitive Cover Strip: A nominal 6 inch (152 mm) wide by 40 mil thick non-reinforced TPO membrane laminated to nominal 35-mil thick cured synthetic rubber pressure-sensitive adhesive. Used in conjunction with TPO Primer to strip in flat metal flanges (i.e., drip edges or rows of fasteners and plates). Color to match membrane. Special colors not available.

L. Heat Weldable Walkway Rolls: Superior tear, puncture and weather resistance and designed to protect TPO membrane in those areas exposed to repetitive foot traffic or other hazards. Walkway material may be heat welded to TPO membrane using an automated heat welder or hand held heat welder. Walkway Rolls are 34 inches (864 mm) wide by 50 feet (15.2 m) long and are nominal 180 mils thick. Color - White, gray and tan.

M. Non-Reinforced Flashing: Non-reinforced TPO flashing is a 60-mil thick non-reinforced TPO based membrane used for detail work where the use of pre-molded or pre-fabricated accessories are not feasible. Color - White, gray and tan. Special colors require lead time and 5,000 square foot minimum.

2.8. CLEANERS, PRIMERS, ADHESIVES AND SEALANTS

A. Low VOC Bonding Adhesive: A high strength, solvent-based contact adhesive that allows bonding of TPO membrane to various porous and non-porous substrates.

1. Base: Synthetic Rubber.
2. Color: Yellow.
3. VOC: 250 grams/liter.

B. Low Rise Urethane Adhesive: A spray or extruded applied, two-component, polyurethane, low-rise expanding foam adhesive used to securely bond fabric-backed membranes to a variety of substrates.

C. Low-VOC Aerosol Contact Adhesive/Primer: A low-VOC, methylene chloride-free adhesive that can be used for a variety of applications including: Bonding TPO membrane to various surfaces, priming unexposed asphalt prior to applying Low Rise Urethane Adhesive, adhering TPO membrane, horizontally, for the field of the roof, and for adhering fabric backed and TPO membrane to vertical walls. Coverage rate is approximately 2,000-2,500 sq. ft. per 40 lb cylinder and 4,000-5,000 sq. ft. per 85 lb cylinder as a primer, in a single-sided application; 750 sq. ft. per 40 lb cylinder and 1,500 sq. ft. per 85 lb cylinder as an adhesive for vertical walls, in a double-sided application; 1,000 sq. ft. per 40 lb cylinder and 2,000 sq. ft. per 85 lb cylinder as an adhesive, horizontally, for the field of the roof, in a double-sided application.

D. Cut Edge Sealant: A medium solids content, free flowing polymeric material designed for sealing cut edges (exposed fabric) of TPO reinforced membrane.

E. Water Cut-Off Mastic: A one-component, low viscosity, self wetting, Butyl blend mastic used as a compression sealing agent between membrane and applicable substrates.

F. Low VOC Primer: Manufacturer's recommended low VOC primer.

G. Universal Single-Ply Sealant: A 100 percent solids, solvent free, VOC free, one-part polyether sealant that provides a weather tight seal to a variety of building materials. It is used for general caulking such as above termination bars and metal counter flashings and at

scupper details.. Available in white only.

H. Thermoplastic One-Part Sealant: Single component, moisture curing, elastomeric polyether sealant that is compatible with roof manufacturer's Thermoplastic membranes. Provides a flexible, durable and long lasting seal around hard-to-flash penetrations in Thermoplastic Roofing Systems.

I. Weathered Membrane Cleaner: Clear, solvent-based cleaner used to loosen and remove contaminants from the surface of exposed membrane.

2.9. LIQUID FLASHING MATERIALS

A. Liquid Flashing is a two-component, polyurethane based system which created a reinforced, cold applied liquid flashing that is compatible with EPDM, TPO, and PVC membranes and is designed for use with oddly shaped penetrations and tying together dissimilar materials.

B. Liquid Flashing consists of the following materials:

1. Resin: Two-component polyurethane based resin when mixed will be white or gray in color. Available in .56 gal (2.1 liter) sachets and 1.03 gallon (3.9 liter) pails.

2. Fleece: 50-mil thick, white, non woven, needle punched polyester fabric reinforcement. Available in rolls of 13.8" (350 mm) and 27" (685 mm) widths by 164' (50 m) length.

3. Metal Primer: A solvent-free, high solids, two-part, cold-applied, polyurethane resin. Used to prime metal, EPDM, and other non-porous surfaces. Available on .25 gal (0.9 liter) sachets.

4. Concrete & Masonry Primer: A solvent-free, two-part, cold-applied liquid resin. Used with surfacing sand to prime concrete, masonry, and other porous surfaces. Available on .25 gal (0.9 liter) sachets, and 1.1 gallon (4.2 liter) pails.

5. Surfacing Sand: Kiln Dried #00 - #35 graded sand suitable for broadcasting into liquid flashing & masonry primer for use in suitable substrate preparation. Packaged in 50# bags.

2.10. FASTENING COMPONENTS

A. #14 Fastener: Threaded, coated (E-Coat) fastener for use with steel, wood plank or oriented strand board (OSB).

B. Insulation Fastening Plates: A nominal 3 inch (76 mm) diameter metal plate used for insulation attachment in conjunction with the appropriate fastener.

2.11. EDGINGS AND TERMINATIONS

A. Snap-On Canted Fascia: A snap-on pre-fabricated fascia system consisting of a 24 gauge galvanized metal water dam. Finish and gauge as noted on the Architect's Roof Drawings.

B. Pre-fabricated Drip Edge: A 22 gauge pre-punched 90-degree angle cleat and 12 foot (3658 mm) long fascia sections. Finish and gauge as noted on the Architect's Roof Drawings.

C. Snap-On Coping: A prefabricated anchor cleat with pre-slotted holes, a concealed joint

cover, and 12 foot sections of pre-fabricated coping cap. Finish and gauge as noted on the Architect's Roof Drawings.

D. Aluminum Termination Bar: 1 inch (13 mm) wide, .098 inch (2.5 mm) thick extruded aluminum bar pre-punched 6 inches (152 mm) on center with sealant ledge to support Lap Sealant.

3.EXECUTION

3.1. EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2. PREPARATION

A. Clean surfaces thoroughly prior to installation.

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

C. Do not commence work until all other work trades have completed jobs that require them to traverse the deck on foot or with equipment.

3.3. INSULATION - SYSTEM DESIGN

A. Base Layer:

1. Type: Coated Glass Facer Poly ISO Insulation.
2. Thickness: 2.6 inches.
3. Attachment Method: Fully Adhered with Low Rise Urethane Adhesive 4" Beads.

B. Top Layer:

1. Type: "HD Composite" Coated Glass Facer Poly ISO Insulation with Cover Board attached.
2. Thickness: 2.5 inches.
3. Attachment Method: Fully Adhered with Low Rise Urethane Adhesive 4" Beads

C. Tapered System:

1. Type: Coated Glass Facer Tapered Poly ISO.
2. Field Slope: 1/4 inch per foot.
3. Sump Slope: 1/2 inch per foot.
4. Cricket Slope: 1/2 inch per foot.
5. Attachment Method: Fully Adhered with Low Rise Urethane Adhesive 4" Beads.

3.4. INSULATION PLACEMENT

A. Install insulation or membrane underlayment in multiple layers over the substrate with boards butted tightly together with no joints or gaps greater than 1/4 inch (6 mm). Stagger joints both horizontally and vertically if multiple layers are provided.

B. Secure insulation to the substrate with the required mechanical fasteners or insulation

adhesive in accordance with the manufacturer's current application guidelines.

C. Do not install wet, damaged or warped insulation boards.

D. Stagger joints in one direction unless joints are to be taped. Install insulation boards snug. Gaps between board joints shall not exceed 1/4 inch (6 mm). Fill all gaps in excess of 1/4 inch (6 mm) with same insulation material.

E. Wood nailers must be at least 3 1/2 inches (89 mm) wide or 1 inch (25 mm) wider than adjacent metal flange. Thickness must equal that of insulation but not less than 1 inch (25 mm) thickness.

F. Miter and fill the edges of the insulation boards at ridges, valleys and other changes in plane to prevent open joints or irregular surfaces. Avoid breaking or crushing of the insulation at the corners.

G. Do not install any more insulation than will be completely waterproofed each day.

3.5. INSULATION ATTACHMENT

A. Install insulation layers, maximum 4 feet by 4 feet (1220 mm by 1220 mm), applied with Low Rise Urethane adhesive, or a maximum 4 feet by 8 feet (1220 mm by 2438 mm), applied with Low Rise Urethane Adhesive, coverage rate as necessary to achieve the specified attachment and uplift rating. Press each board firmly into place after adhesive develops strings when touched, typically 1-1/2 to 2 minutes after adhesive was applied, and roll with a weighted roller. Add temporary weight and use relief cuts to ensure boards are well adhered. Stagger the joints of additional layers by a minimum of 6 inches (152 mm).

3.6. MEMBRANE PLACEMENT AND ATTACHMENT (TPO Fully Adhered)

A. Position TPO membrane over the acceptable substrate. Fold membrane sheet back lengthwise so half the underside of the membrane is exposed.

B. Apply approved Bonding Adhesive in accordance with the manufacturer's published instructions, to the exposed underside of the membrane and the corresponding substrate area. Do not apply Bonding Adhesive along the splice edge of the membrane to be hot air welded over the adjoining sheet. Allow the adhesive to dry until it is tacky but will not string or stick to a dry finger touch.

1. Roll the coated membrane into the coated substrate while avoiding wrinkles. Brush down the bonded section of the membrane sheet immediately after rolling the membrane into the adhesive with a soft bristle push broom to achieve maximum contact.
2. Fold back the unbonded half of the sheet lengthwise and repeat the bonding procedures.

C. Position adjoining sheets to allow a minimum overlap of 2 inches.

D. Hot-air weld the TPO membrane sheets using the Automatic Hot Air Welding Machine or Hot Air Hand Welder in accordance with the manufacturer's hot air welding procedures. The NRCA recommends a test weld sample be made from a piece of scrap TPO to eliminate the need to remove a section from a completed seam. At all splice intersections, roll the seam with a silicone roller to ensure a continuous hot air welded seam.

E. Continue to install adjoining membrane sheets in the same manner, overlapping edges a minimum of 2 inches and complete the bonding procedures as stated previously.

3.7. SEAM WELDING

A. Hot-air weld membrane using an Automatic Hot Air Welding Machine or Hot Air Hand Welder in accordance with the manufacturer's current guidelines. At all splice intersections, roll the seam with a silicone roller to ensure a continuous hot air welded seam.

B. When utilizing membrane greater than 45-mil thickness, overlay all splice intersections with TPO T-Joint Cover.

C. Probe all seams once the hot air welds have thoroughly cooled (approximately 30 minutes).

D. Repair all seam deficiencies the same day they are discovered.

E. Apply Cut Edge Sealant on all cut edges of reinforced membrane (where the scrim reinforcement is exposed) after seam probing is complete. Cut Edge Sealant is not required on vertical splices.

3.8. FLASHING

A. Flashing of parapets, curbs, expansion joints and other parts of the roof must be performed using TPO reinforced membrane or prefabricated accessories. TPO non-reinforced membrane may be used for flashing pipe penetrations, Sealant Pockets, and scuppers, as well as inside and outside corners, when the use of pre-molded or prefabricated accessories is not feasible.

B. Follow manufacturer's typical flashing procedures for all wall, curb, and penetration flashing including metal edging/coping and roof drain applications.

3.9. WALKWAYS

A. Install walkways at all traffic concentration points (such as roof hatches, access doors, rooftop ladders, etc.) and all locations as identified on the Contract Drawings.

B. Hot-air weld walkway pads to the membrane in accordance with the manufacturer's current application guidelines.

3.10. DAILY SEALS

A. On phased roofing, when the completion of flashings and terminations is not achieved by the end of the work day, a daily seal must be performed to temporarily close the membrane to prevent water infiltration.

B. Complete an acceptable membrane seal in accordance with the manufacturer's requirements.

3.11. CLEAN UP

A. Perform daily clean-up to collect all wrappings, empty containers, paper, and other debris from the project site. Upon completion, all debris must be disposed of in a legally acceptable manner.

B. Prior to the manufacturer's inspection for warranty, the applicator must perform a pre-

inspection to review all work and to verify all flashing has been completed as well as the application of all caulking.

3.12. PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 07 62 00 - SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Formed roof-drainage sheet metal fabrications.
2. Formed low-slope roof sheet metal fabrications.
3. Formed wall sheet metal fabrications.

B. Related Requirements

1. See specification section 07 54 23; TPO Thermoplastic Single-Ply Roofing for roof flashings not included in this section.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For sheet metal flashing and trim.

1. Include plans, elevations, sections, and attachment details.
2. Distinguish between shop- and field-assembled work.
3. Include identification of finish for each item.
4. Include pattern of seams and details of termination points, expansion joints and expansion-joint covers, direction of expansion, roof-penetration flashing, and connections to adjoining work.

1.3 INFORMATIONAL SUBMITTALS

A. Product certificates.

B. Product test reports.

C. Sample warranty.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.5 QUALITY ASSURANCE

A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.

1. For copings and roof edge flashings that are SPRI ES-1 tested, shop shall be listed as able to fabricate required details as tested and approved.

1.6 WARRANTY

A. Special Warranty on Finishes: 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. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General: Sheet metal flashing and trim assemblies shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.

B. Sheet Metal Standard for Flashing and Trim: Comply with NRCA's "The NRCA Roofing Manual" and SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.

C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

2.2 SHEET METALS

A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.

B. Aluminum Sheet: ASTM B 209 (ASTM B 209M), alloy as standard with manufacturer for finish required, with temper as required to suit forming operations and performance required.

1. Exposed Coil-Coated Finish:

a. Two-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply

coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

2. Color: As selected by Architect from manufacturer's full range.

C. Stainless-Steel Sheet: ASTM A 240/A 240M, Type 304, dead soft, fully annealed; 2D (dull, cold rolled) finish.

2.3 UNDERLAYMENT MATERIALS

A. Felt: ASTM D 226/D 226M, Type II (No. 30), asphalt-saturated organic felt; nonperforated.

B. Self-Adhering, High-Temperature Sheet: Minimum 30 mils (0.76 mm) thick, consisting of a slip-resistant polyethylene- or polypropylene-film top surface laminated to a layer of butyl- or SBS-modified asphalt adhesive, with release-paper backing; specifically designed to withstand high metal temperatures beneath metal roofing. Provide primer according to written recommendations of underlayment manufacturer.

1. Thermal Stability: ASTM D 1970; stable after testing at 240 deg F (116 deg C) or higher.
2. Low-Temperature Flexibility: ASTM D 1970; passes after testing at minus 20 deg F (29 deg C) or lower.

C. Slip Sheet: Rosin-sized building paper, 3 lb/100 sq. ft. (0.16 kg/sq. m)minimum.

2.4 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, solder, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal or manufactured item unless otherwise indicated.

B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal or manufactured item.

1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.
    a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.
    b. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.
    c. Spikes and Ferrules: Same material as gutter; with spike with ferrule matching internal gutter width.
2. Fasteners for Aluminum Sheet: Aluminum or Series 300 stainless steel.
3. Fasteners for Stainless-Steel Sheet: Series 300 stainless steel.

C. Solder:

1. For Stainless Steel: ASTM B 32, Grade Sn60, with acid flux of type recommended by stainless-steel sheet manufacturer.

D. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.

E. Elastomeric Sealant: ASTM C 920, elastomeric polyurethane polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

F. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.

G. Epoxy Seam Sealer: Two-part, noncorrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior nonmoving joints, including riveted joints.

H. Bituminous Coating: Cold-applied asphalt emulsion according to ASTM D 1187.

I. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required for application.

2.5 FABRICATION, GENERAL

A. General: Custom fabricate sheet metal flashing and trim to comply with details shown and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required. Fabricate sheet metal flashing and trim in shop to greatest extent possible.

1. Obtain field measurements for accurate fit before shop fabrication.
2. Form sheet metal flashing and trim to fit substrates without excessive oil canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
3. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.

B. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.

1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with butyl sealant concealed within joints.
2. Use lapped expansion joints only where indicated on Drawings.

C. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal to provide for proper installation of elastomeric sealant according to cited sheet metal standard.

D. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.

E. Fabricate cleats and attachment devices of sizes as recommended by cited sheet metal standard for application, but not less than thickness of metal being secured.

F. Seams: Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder.

G. Seams: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use.

H. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints where necessary for strength.

2.6 ROOF-DRAINAGE SHEET METAL FABRICATIONS

A. Parapet Scuppers: Fabricate scuppers to dimensions required, with closure flange trim to exterior, 4-inch- (100-mm-) wide wall flanges to interior, and base extending 4 inches (100 mm) beyond cant or tapered strip into field of roof. Fabricate from the following materials:

1. Aluminum: 0.040 inch thick.

2.7 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

A. Counterflashing and Flashing Receivers: Fabricate from the following materials:

1. Aluminum: 0.032 inch (0.81 mm) thick.

B. Roof-Penetration Flashing: Fabricate from the following materials:

1. Stainless Steel: 0.019 inch (0.48 mm) thick.

C. Roof-Drain Flashing: Fabricate from the following materials:

1. Stainless Steel: 0.016 inch (0.40 mm) thick.

2.8 MISCELLANEOUS WALL SHEET METAL FABRICATIONS

A. Termination Bar: Type ‘T1’ – Stainless Steel (Type 304)

B. Drip Plate: FTSA (Type 304 Stainless Steel, 26 Ga. Standard) Drip Plate extension with flash-adhere adhesive strip (as manufactured by Hohmann & Barnard, Inc.) Installed beneath Through-Wall Flashing.

C. End Dam Flashing: FTSA (Type 304 Stainless Steel, 26 Ga. Standard) Installed under new Through-Wall Flashing. All joints to be soldered.

PART 3 - EXECUTION

3.1 UNDERLAYMENT INSTALLATION

A. Felt Underlayment: Install felt underlayment, wrinkle free, using adhesive to minimize use of mechanical fasteners under sheet metal flashing and trim. Apply in shingle fashion to shed water, with lapped joints of not less than 2 inches (50 mm).

B. Synthetic Underlayment: Install synthetic underlayment, wrinkle free, according to manufacturers' written instructions, and using adhesive where possible to minimize use of mechanical fasteners under sheet metal.

C. Self-Adhering Sheet Underlayment: Install self-adhering sheet underlayment, wrinkle free. Prime substrate if recommended by underlayment manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation; use primer for installing underlayment at low temperatures. Apply in shingle fashion to shed water, with end laps of not less than 6 inches (150 mm) staggered 24 inches (600 mm) between courses. Overlap side edges not less than 3-1/2 inches (90 mm). Roll laps and edges with roller. Cover underlayment within 14 days.

3.2 INSTALLATION, GENERAL

A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.

1. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
3. Space cleats not more than 12 inches (300 mm) apart. Attach each cleat with at least two fasteners. Bend tabs over fasteners.
4. Install exposed sheet metal flashing and trim with limited oil canning, and free of buckling and tool marks.
5. Torch cutting of sheet metal flashing and trim is not permitted.

B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.

1. Coat concealed side of uncoated-aluminum sheet metal flashing and trim with bituminous coating where flashing and trim contact wood, ferrous metal, or cementitious construction.
2. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover with slip sheet.

C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at maximum of 10 feet (3 m) with no joints within 24 inches (600 mm) of corner or intersection.

1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with sealant concealed within joints.
2. Use lapped expansion joints only where indicated on Drawings.

D. Fasteners: Use fastener sizes that penetrate wood blocking or sheathing not less than 1-1/4 inches (32 mm) for nails and not less than 3/4 inch (19 mm) for wood screws substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.

E. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.

F. Seal joints as required for watertight construction. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."

G. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets with solder to width of 1-1/2 inches (38 mm); however, reduce pre-tinning where pre-tinned surface would show in completed Work.

1. Do not solder aluminum sheet.
2. Do not use torches for soldering.
3. Heat surfaces to receive solder, and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.
4. Stainless-Steel Soldering: Tin edges of uncoated sheets, using solder for stainless steel and acid flux. Promptly remove acid flux residue from metal after tinning and soldering. Comply with solder manufacturer's recommended methods for cleaning and neutralization.

H. Rivets: Rivet joints in uncoated aluminum where necessary for strength.

3.3 ROOF-DRAINAGE SYSTEM INSTALLATION

A. General: Install sheet metal roof-drainage items to produce complete roof-drainage system according to cited sheet metal standard unless otherwise indicated. Coordinate installation of roof perimeter flashing with installation of roof-drainage system.

B. Splash Pans: Install where downspouts discharge on low-slope roofs. Set in asphalt roofing cement or elastomeric sealant compatible with the substrate.

C. Parapet Scuppers: Continuously support scupper, set to correct elevation, and seal flanges to interior wall face, over cants or tapered edge strips, and under roofing membrane.

D. Expansion-Joint Covers: Install expansion-joint covers at locations and of configuration indicated. Lap joints minimum of 4 inches (100 mm) in direction of water flow.

3.4 ROOF FLASHING INSTALLATION

A. General: Install sheet metal flashing and trim to comply with performance requirements and cited sheet metal standard. Provide concealed fasteners where possible, and set units true to line, levels, and slopes. Install work with laps, joints, and seams that are permanently watertight and weather resistant.

B. Pipe or Post Counterflashing: Install counterflashing umbrella with close-fitting collar with top edge flared for elastomeric sealant, extending minimum of 4 inches (100 mm) over base flashing. Install stainless-steel draw band and tighten.

C. Counterflashing: Coordinate installation of counterflashing with installation of base flashing. Insert counterflashing in reglets or receivers and fit tightly to base flashing. Extend counterflashing 4 inches (100 mm) over base flashing. Lap counterflashing joints minimum of 4 inches (100 mm).

D. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Seal with elastomeric sealant and clamp flashing to pipes that penetrate roof.

3.5 WALL FLASHING INSTALLATION

A. General: Install sheet metal wall flashing to intercept and exclude penetrating moisture according to cited sheet metal standard unless otherwise indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.

3.6 CLEANING AND PROTECTION

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

B. Clean and neutralize flux materials. Clean off excess solder.

C. Clean off excess sealants.

D. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions.

END OF SECTION 07 62 00

SECTION 07 72 00 - ROOF ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Roof curbs.
2. Equipment supports.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of roof accessory.

B. Shop Drawings: For roof accessories.

C. Samples: For each exposed product and for each color and texture specified.

1.3 INFORMATIONAL SUBMITTALS

A. Sample warranties.

1.4 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

1.5 WARRANTY

A. Special Warranty on Painted Finishes: Manufacturer's standard form in which manufacturer agrees to repair finishes or replace roof accessories that show evidence of deterioration of factory-applied finishes within 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 ROOF CURBS

A. Roof Curbs: Internally reinforced roof-curb units capable of supporting superimposed live and dead loads, including equipment loads and other construction indicated on Drawings, bearing continuously on roof structure, and capable of meeting performance requirements; with welded or mechanically fastened and sealed corner joints, stepped integral metal cant raised the thickness of roof insulation, and integrally formed deck-mounting flange at perimeter bottom.

B. Size: Coordinate dimensions with roughing-in information or Shop Drawings of equipment to be supported.

C. Material: Zinc-coated (galvanized) steel sheet, 0.079 inch (2.01 mm) thick.

1. Finish: Baked enamel or powder coat.
2. Color: As selected by Architect from manufacturer's full range.

D. Construction:

1. Curb Profile: Manufacturer's standard compatible with roofing system.
2. On ribbed or fluted metal roofs, form deck-mounting flange at perimeter bottom to conform to roof profile.
3. Fabricate curbs to minimum height of 18 inches above roofing surface at condensing units and 12 inches above roofing surface for all other roof-mounted equipment.
4. Top Surface: Level top of curb, with roof slope accommodated by sloping deck-mounting flange or by use of leveler frame.
5. Insulation: Factory insulated with 1-1/2-inch- (38-mm-) thick glass-fiber board insulation.
6. Liner: Same material as curb, of manufacturer's standard thickness and finish.
7. Nailer: Factory-installed wood nailer along top flange of curb, continuous around curb perimeter.
8. Wind Restraint Straps and Base Flange Attachment: Provide wind restraint straps, welded strap connectors, and base flange attachment to roof structure at perimeter of curb, of size and spacing required to meet wind uplift requirements.
9. Platform Cap: Where portion of roof curb is not covered by equipment, provide weathertight platform cap formed from 3/4-inch (19-mm) thick plywood covered with metal sheet of same type, thickness, and finish as required for curb.
10. Metal Counterflashing: Manufacturer's standard, removable, fabricated of same metal and finish as curb.

2.2 EQUIPMENT SUPPORTS

A. Equipment Supports: Internally reinforced perimeter metal equipment supports capable of supporting superimposed live and dead loads between structural supports, including equipment loads and other construction indicated on Drawings, spanning between structural supports; capable of meeting performance requirements; with welded corner joints, stepped integral metal cant raised the thickness of roof insulation, and integrally formed structure-mounting flange at bottom.

B. Size: Coordinate dimensions with roughing-in information or Shop Drawings of equipment to be supported.

C. Material: Zinc-coated (galvanized) 0.079 inch (2.01 mm) thick.

1. Finish: Baked enamel or powder coat.
2. Color: As selected by Architect from manufacturer's full range.

D. Construction:

1. Curb Profile: Manufacturer's standard compatible with roofing system.
2. Insulation: Factory insulated with 1-1/2-inch- (38-mm-) thick glass-fiber board insulation.
3. Liner: Same material as equipment support, of manufacturer's standard thickness and finish.
4. Nailer: Factory-installed continuous wood nailers 5-1/2 inches (140 mm) wide under top flange on side of curb, continuous around support perimeter.
5. Wind Restraint Straps and Base Flange Attachment: Provide wind restraint straps, welded strap connectors, and base flange attachment to roof structure at perimeter of curb of size and spacing required to meet wind uplift requirements.
6. Platform Cap: Where portion of equipment support is not covered by equipment, provide weathertight platform cap formed from 3/4-inch (19-mm) thick plywood covered with metal sheet of same type, thickness, and finish as required for curb.
7. Metal Counterflashing: Manufacturer's standard, removable, fabricated of same metal and finish as equipment support.
8. On ribbed or fluted metal roofs, form deck-mounting flange at perimeter bottom to conform to roof profile.
9. Fabricate equipment supports to minimum height of 12 inches (305 mm) above roofing surface unless otherwise indicated.

2.3 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items required by manufacturer for a complete installation.

B. Glass-Fiber Board Insulation: ASTM C 726, nominal density of 3 lb/cu. ft. (48 kg/cu. m), thermal resistivity of 4.3 deg F x h x sq. ft./Btu x in. at 75 deg F (29.8 K x m/W at 24 deg C), thickness as indicated.

C. Wood Nailers: Softwood lumber, pressure treated with waterborne preservatives for aboveground use, acceptable to authorities having jurisdiction, containing no arsenic or chromium, and complying with AWPA C2; not less than 1-1/2 inches (38 mm) thick.

D. Underlayment:
1. When recommended by underlayment manufacturer.
2. Fasteners: Roof accessory manufacturer's recommended fasteners suitable for application and metals being fastened. Match finish of exposed fasteners with finish of material being fastened. Provide nonremovable fastener heads to exterior exposed fasteners. Furnish the following unless otherwise indicated:

E. Gaskets: Manufacturer's standard tubular or fingered design of neoprene, EPDM, PVC, or silicone or a flat design of foam rubber, sponge neoprene, or cork.

F. Elastomeric Sealant: ASTM C 920, elastomeric polymer sealant as recommended by roof accessory manufacturer for installation indicated; low modulus; of type, grade, class, and use classifications required to seal joints and remain watertight.

G. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for expansion joints with limited movement.

H. Asphalt Roofing Cement: ASTM D 4586/D 4586M, asbestos free, of consistency required for application.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Verify dimensions of roof openings for roof accessories. Install roof accessories according to manufacturer's written instructions.

1. Install roof accessories level; plumb; true to line and elevation; and without warping, jogs in alignment, buckling, or tool marks.
2. Anchor roof accessories securely in place so they are capable of resisting indicated loads.
3. Use fasteners, separators, sealants, and other miscellaneous items as required to complete installation of roof accessories and fit them to substrates.
4. Install roof accessories to resist exposure to weather without failing, rattling, leaking, or loosening of fasteners and seals.

B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.

1. Coat concealed side of **uncoated aluminum** and **stainless-steel** roof accessories with bituminous coating where in contact with wood, ferrous metal, or cementitious construction.
2. Underlayment: Where installing roof accessories directly on cementitious or wood substrates, install a course of underlayment and cover with manufacturer's recommended slip sheet.

C. Security Grilles: Weld bar intersections and using tamper-resistant bolts, attach the ends of bars to structural frame or primary curb walls.

D. Seal joints with [**elastomeric**] [**or**] [**butyl**] sealant as required by roof accessory manufacturer.

3.2 REPAIR AND CLEANING

A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing according to ASTM A 780/A 780M.

B. Touch up factory-primed surfaces with compatible primer ready for field painting according to Section 099113 "Exterior Painting."

C. Clean exposed surfaces according to manufacturer's written instructions.

D. Replace roof accessories that have been damaged or that cannot be successfully repaired by finish touchup or similar minor repair procedures.

END OF SECTION 077200

SECTION 07 92 00 - JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Sealants and joint backing.

1.2 SUBMITTALS

A. Products Data:

1. Submit data for sealant materials, performance, and substrate applications and preparation for substrates.
2. Indicate available colors for each sealant type for selection.
3. Submit schedule indicating assemblies to be sealed – exterior and interior application locations.

B. Samples:

1. Submit two sets of samples, 3 inches long illustrating sealant colors for selection.

C. Manufacturer's Installation Instructions:

1. Submit special procedures, substrate or assembly applications, surface preparation, and perimeter conditions requiring special attention.

1.3 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

B. Applicator: Company specializing in performing Work of this section with minimum three years documented experience.

1.4 MOCK-UP

A. Provide mock-up of sealant joints in conjunction with window mockups specified in other sections.

B. Construct mock-up with specified sealant types and with other components noted.

1. Determine preparation and priming requirements based on manufacturers recommendations; take action necessary for correction of failure of sealant tests on mock-up.
2. Verify sealants, primers, and other components do not stain adjacent materials.

C. Locate where directed.

D. Accepted mockup may remain as part of the Work.

1.5 ENVIRONMENTAL REQUIREMENTS

A. Maintain temperature and humidity recommended by sealant manufacturer during and after

installation.

1.6 COORDINATION

A. Coordinate Work with sections referencing this section.

1.7 WARRANTY

A. Provide five year manufacturer's warranty for installed sealants and accessories which fail to achieve airtight seal or watertight seal, exhibit loss of adhesion or cohesion, and sealants which do not cure.

PART 2 - PRODUCTS

2.1 JOINT SEALERS

A. Silicone Sealant Manufacturers: Provide one of the following:

1. Pecora Corporation .
2. General Electric Silicones.
3. Dow Corning.
4. Tremco Inc.

B. Other Sealant Manufacturers: Provide one of the following:

1. Pecora Corporation.
2. Sonneborn Building Products.
3. Tremco Inc.

C. Type A - Silicone Exterior Joints : ASTM C920, Type S, Grade NS , Class 25; NT, M, G, A and O: single component, neutral curing, nonstaining, nonbleeding, capable of continuous water immersion, color as selected.

1. General Electric; Silpruf.
2. Dow Corning; 790 for EIFS joints or 795 for other joints.
3. Pecora; 890 Silicone for EIFS joints; 864 Silicone for other joints.
4. Tremco; Spectrum 1 for EIFS joints; Spectrum 2 for other joints.
5. Applications: Use for exterior non-traffic bearing joints , including EIFS joints.

    a. Joints between metal frames and other materials.
    b. Other exterior non -traffic bearing joints for which no other sealant is indicated.

D. Type B - Polyurethane Traffic Joints: ASTM C920, Type M, Grade P, Class 25; self leveling, two component, chemical curing, nonstaining, nonbleeding, capable of continuous water immersion, horizontal traffic grade, color as selected.

1. Dayton Superior Perma 230 SL
2. DCP Quickmast Joint Sealant
3. Sonneborn Sonolastic NP-1

H. Type C - Exterior Metal Lap Joint Sealant: ASTM C1311, butyl or polyisobutylene, nondrying, non-skinning, non-curing.

2.2 ACCESSORIES

A. Primer:

1. Non-staining type, recommended by sealant manufacturer to suit application.

B. Joint Cleaner:

1. Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

C. Joint Backing:

1. Closed cell round foam rod compatible with sealant; oversized 30 to 50 percent larger than joint width; to install in compression, recommended by sealant manufacturer to suit application

D. Bond Breaker:

1. Pressure sensitive tape recommended by sealant manufacturer to suit application.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify substrate surfaces and joint openings are ready to receive work.

B. Verify joint backing and release tapes are compatible with sealant.

3.2 PREPARATION

A. Remove loose materials and foreign matter which might impair adhesion of sealant.

B. Clean and prime joints.

C. Perform preparation in accordance with ASTM C1193.

D. Protect elements surrounding the Work of this section from damage or disfiguration.

3.3 INSTALLATION

A. Perform installation in accordance with ASTM C1193.

B. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.

C. Install bond breaker where joint backing is not used.

D. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

E. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

F. Install double sealant bead joints at exterior joints locations indicated on Drawings. Provide weeps to direct moisture penetrating first sealant bead to exterior.

G. Tool joints concave.

H. Precompressed Foam Sealant: Do not stretch; avoid joints except at corners, ends, and intersections; install with face 1/8 to 1/4 inch below adjoining surface.

I. Compression Gaskets: Avoid joints except at ends , corners, and intersections; seal all joints with adhesive; install with face 1/8 to 1/4 inchbelow adjoining surface.

3.4 CLEANING

A. Clean adjacent soiled surfaces.

3.5 PROTECTION OF INSTALLED CONSTRUCTION

A. Protect sealants until cured.

END OF SECTION 07 92 00

SECTION 09 96 00 - HIGH-PERFORMANCE COATINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes surface preparation and the application of high-performance coating systems.

1. Exterior Substrates:
   a. Gas Piping

1.2 DEFINITIONS

A. MPI Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.

B. MPI Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.

C. MPI Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.

1. Include printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.

B. Samples: For each type of coating system and in each color and gloss of topcoat indicated.

1.4 QUALITY ASSURANCE

A. Mockups: Apply mockups of each coating system indicated to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Architect will select one surface to represent surfaces and conditions for application of each coating system.
   a. Other Items: Architect will designate items or areas required.

2. Final approval of color selections will be based on mockups.

   a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: Subject to compliance with requirements with Sherwin-Williams or as equal.

2.2 HIGH-PERFORMANCE COATINGS, GENERAL

A. MPI Standards: Products shall comply with MPI standards indicated and shall be listed in its "MPI Approved Products Lists."

B. Material Compatibility:

1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.
3. Products shall be of same manufacturer for each coat in a coating system.

C. Colors: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

C. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and coating systems indicated.

B. Remove all loose paint and rust with SP3 Powertool Cleaning Method.

C. Clean substrates of substances that could impair bond of coatings, including dust, dirt, oil, grease, rust, tar and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce coating systems indicated.

3.3 APPLICATION

A. Apply high-performance coatings according to manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual."

B. Apply coatings to produce surface films without cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections. Produce sharp glass lines and color breaks.

3.4 HIGH-PERFORMANCE COATING SCHEDULE

A. Gas Piping:

1. Polyurethane over Epoxy Primer System:

a. Prime Coat: Primer, epoxy, anti-corrosive, for metal

1) 1 Coat Macropoxy 646 Fastcure

b. Finish Coat: Polyurethane

1) 2 Coats Acrolon 28 HS Polyurethane

END OF SECTION 09 96 00