Lightbox

BLUEFIN
Improving Facility Performance

BLUEFIN, LLC is a division of Mantis Innovation

Prepared for

DEPARTMENT OF GENERAL SERVICES
DYRS YOUTH SERVICES CENTER
1000 MT. OLIVET RD NE
WASHINGTON, DC 20002

Services Include

ROOF REPLACEMENT AND RESTORATIONS

Date prepared

11/30/2022

Prepared by

LIGHTBOX/BLUEFIN, LLC
1701 Rhode Island Ave., NW, Washington, DC 20036

About Mantis Innovation

Mantis Innovation is the premier provider of smart solutions that deliver better building performance through managed facility services and turnkey program management. Mantis leverages expertise from a vast array of professional disciplines in engineering, comprehensive data collection and analysis, technology-enabled solutions, and a network of trusted partners. The Mantis Innovation managed solutions include energy procurement, demand management, solar, roofing, building envelope, pavement, LED lighting, HVAC/mechanical, building automation systems, and data center optimization. Mantis is headquartered in Houston, Texas, with office locations across the United States from Massachusetts to Washington.

SECTION 00 0101
PROJECT TITLE PAGE

PROJECT MANUAL

FOR

DGS - DYRS - YOUTH SERVICES CENTER - ROOF REPLACEMENT & RESTORATIONS

OWNER'S PROJECT NUMBER: 3242

THE DEPARTMENT OF GENERAL SERVICES

1000 MT. OLIVET RD. NE
WASHINGTON , DISTRICT OF COLUMBIA 20002

DATE: NOVEMBER 30, 2022

PREPARED BY:

END OF SECTION

SECTION 00 0102
PROJECT INFORMATION

PART 1 GENERAL

1.01 PROJECT IDENTIFICATION

A. Project Name: DGS - DYRS - Youth Services Center - Roof Replacement & Restorations

B. Owner's Project Number: 3242

Project location:

1000 Mt. Olivet Rd. NE

Washington, District of Columbia 20002

C. The Owner, hereinafter referred to as Owner: The Department of General Services

D. Owner's Roof Management Consultant: Lightbox- L EFI Partners Consultant

E. Owner's L L EFI

Address:	6312 South Fiddlers Green Circle, Ste 100E
City, State, Zip:	Greenwood Village, CO 80111
Project Manager:	Ahmad Tabana
Direct:	443-584-4014
Mobile:	201-696-5607
E-mail:	atabana@bluefinllc.com

1.02 NOTICE TO BIDDERS

A.

described below.

1.03 PROJECT DESCRIPTION

. The city of Washington D.C. hereby adopts and elects to enforce the provisions of the work to be performed in conformance with the latest adopted 2015 International Building Code (IBC), 2015 IECC; ASHRAE 90.1-2017 building codes, 2015 IBC for mechanical & plumbing codes, District of Columbia 2017 Amendments, local governing building codes, local ordinances and all referenced standards. These documents serve to depict the final configuration of improvements, not dictate all responsibilities the contractors have in achieving that end. The contractor is to report to the DG any conflict between bid documents, field conditions and/or code requirements prior to commencement of work. All products proposed for use shall be in accordance with applicable federal, state and local governing ordinances, codes and regulations. Notify the DG immediately of conflicts between the specified products and/or project work requirements and codes, ordinances and/or regulations.

. **Base Bid Roof Coating System:** The existing roof system at **Roof Area B** consists of a 2 ply modified bitumen roof system with a granulated cap sheet over an existing ¼" Dens Deck cover board, tapered polyisocyanurate foam insulation, vapor retarder and existing concrete deck. The existing roof systems at **Roof areas C, D and G** consist of a 2 ply modified bitumen roof system with a granulated cap sheet over an existing ¼" Dens Deck cover board, tapered polyisocyanurate foam insulation, vapor retarder, ½" gypsum thermal barrier and metal deck. Remove existing wet areas back to dry, sound roofing and replace to match the existing construction. Remove existing loose granules, clean and prepare existing roof per coating manufacturers requirements. Install a fully reinforced coating system per the drawings and specifications.

. **Base Bid Roof Replacement:** At **Roof Areas L and O**; Remove the existing roof system to the existing concrete deck. Prime the existing deck and install a new self-adhered vapor retarder. Adhere Min. R33, ¼" per foot tapered polyisocyanurate insulation over the vapor retarder. Adhere a ½" high density polyisocyanurate cover board over the insulation. Install a

fully adhered 60 mil PVC roof system per the drawings and specifications. Additional work includes the replacement of the existing (5) skylights.

D. **Base Bid Roof Recover System:** The existing roof system at **Roof Area M and N** consists of pavers and pedestals over extruded polystyrene, 2 ply modified bitumen roof membrane, and existing concrete deck. Remove the existing pavers and extruded polystyrene and set aside for reinstallation. Demo existing roof flashings and perimeter metals. Broom clean, prepare and prime the existing roof membrane for recover. Adhere ½" high density polyisocyanurate cover board over the existing prepared roof membrane. Install a 60 mil fully adhered PVC roof system. Reinstall the extruded polystyrene, new filter cloth and the existing pavers and pedestals.

E. The existing roof system at **Roof Area A, F, I and K** consists of a steel standing seam metal panel roof system over an existing bituminous underlayment over an existing 2" polyisocyanurate foam insulation fully adhered to the existing metal deck.

F. **Included in the Base bid are the roof upgrade measures listed in the summary of work and shown on the drawings.**

G. Coordinate all work with owner's rep and facility manager.

H. The building will be occupied and in use during construction.

I. The Contractor shall observe all applicable state and federal OSHA requirements.

J. Contractor to be properly licensed and an approved applicator for the manufacturers specified in the project documents, and must be able to provide a fully completed project including all required details, expressed or implied, to support the project's warranty requirements.

K. It shall be the responsibility of the contractor to locate all existing utilities whether shown herein or not, and to protect utilities from damage. The contractor shall bear all expenses of repair or replacement of utilities or other property damaged by operations in conjunction with the execution of the work.

L. Add Alternates

   i. Concrete Deck Repair - Approximately +/- 350 SF of partial depth repairs is to be performed as needed at any deteriorated concrete deck and documented with photographs and quantities. Patch concrete deck as needed at removed abandoned penetrations and document with photographs and quantities.
   ii. Metal Deck Repair - Approximately +/- 200 SF of partial replacement is to be performed as needed at any deteriorated metal deck and documented with photographs and quantities. Patch metal deck as needed at removed abandoned penetrations and document with photographs and quantities.
   iii. Wood Nailer Replacement - Approximately +/- 100 LF of partial replacement is to be performed as needed at any deteriorated perimeter edge wood nailers and documented with photographs and quantities.
   iv. Roof Drain Replacement - Approximately 9 locations of roof drain and pipe replacement is to be performed as needed and documented with photographs and quantities. Water test all drains prior to work and notify DGS Project Manager immediately of any drains or ground leaders found to be clogged.

1.04 PROJECT CONSULTANTS

A. Owner's Consultant: L L EFI

Address:	6312 Fiddlers Green Cir., STE 100 E
City, State, Zip:	Greenwood Village, CO 80111 (201)
Phone/Fax:	696-5607
E-mail:	atabana@bluefinllc.com

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

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SUMMARY OF WORK

PROJECT: ROOF REPLACEMENT

1.01 REFERENCED SECTIONS

A. Section 01 1001 - Project Information

1.02 SITE IDENTIFICATION

1000 Mt. Olivet Rd. NE

Washington, .District of Columbia 20002

1.03 SCOPE OF WORK:

. The information given herein and on the plans is as exact as could be secured for bidding purposes. Accuracy is to be field verified. Contractors must examine the job conditions and verify all measurements, distances, elevations, clearances, etc. And base their bids and work on verified conditions.

. **Summary Project Description:** This project includes specified roof upgrades throughout the multiple roof areas and coating on the existing modified bitumen roof systems on roof areas B, C, D, L, and the IRMA paver assemblies over a modified bitumen roof system on roof areas M and N.

. Refer to project specifications for additional information.

D. The city of Washington D.C. hereby adopts and elects to enforce the provisions of the work to be performed in conformance with the latest adopted 2015 International Building Code (IBC), 2015 IECC; ASHRAE 90.1-2017 building codes, 2015 IBC for mechanical & plumbing codes, local governing building codes, District of Columbia 2017 amendments local ordinances and all referenced standards. These documents serve to depict the final configuration of improvements, not dictate all responsibilities the contractors have in achieving that end. The contractor is to report to the DG any conflict between bid documents, field conditions and/or code requirements prior to commencement of work. All products proposed for use shall be in accordance with applicable federal, state and local governing ordinances, codes and regulations. Notify the DG immediately of conflicts between the specified products and/or project work requirements and codes, ordinances and/or regulations.

E. **Base Bid Roof Coating System:** The existing roof system at **Roof Area B** consists of a 2 ply modified bitumen roof system with a granulated cap sheet over an existing ¼" Dens Deck cover board, tapered polyisocyanurate foam insulation, vapor retarder and existing concrete deck. The existing roof systems at **Roof areas C, D and G** consist of a 2 ply modified bitumen roof system with a granulated cap sheet over an existing ¼" Dens Deck cover board, tapered polyisocyanurate foam insulation, vapor retarder, ½" gypsum thermal barrier and metal deck. Remove existing wet areas back to dry, sound roofing and replace to match the existing construction. Remove existing loose granules, clean and prepare existing roof per coating manufacturers requirements. Install a fully reinforced coating system per the drawings and specifications.

F. **Base Bid Roof Replacement:** At **Roof Areas L and O**; Remove the existing roof system to the existing concrete deck. Prime the existing deck and install a new self-adhered vapor retarder. Adhere Min. R33, ¼" per foot tapered polyisocyanurate insulation over the vapor retarder. Adhere a ½" high density polyisocyanurate cover board over the insulation. Install a fully adhered 60 mil PVC roof system per the drawings and specifications. Additional work includes the replacement of the existing (5) skylights.

G. **Base Bid Roof Recover System:** The existing roof system at **Roof Area M and N** consists of pavers and pedestals over extruded polystyrene, 2 ply modified bitumen roof membrane, and existing concrete deck. Remove the existing pavers and extruded polystyrene and set aside for reinstallation. Demo existing roof flashings and perimeter metals. Broom clean, prepare and

prime the existing roof membrane for recover. Adhere ½" high density polyisocyanurate cover board over the existing prepared roof membrane. Install a 60 mil fully adhered PVC roof system. Reinstall the extruded polystyrene, new filter cloth and the existing pavers and pedestals.

H. The existing roof system at **Roof Area A, F, I and K** consists of a steel standing seam metal panel roof system over an existing bituminous underlayment over an existing 2" polyisocyanurate foam insulation fully adhered to the existing metal deck.

I. **Included in this project are the following restoration measures for Roof Areas A, B, F, I, K, M, N and O:**

J. **Sheet R1.1**

DEFECT #	DEFECT DESCRIPTION	QTY
1	Step cracking and deteriorated joints in masonry - Rake and clean existing crack and mortar joints for tuckpointing. Tuckpoint with mortar to match existing. (Quantity is anticipated total across R1.1, R1.2, and R1.3)	10LF
2	Pipe boot deterioration - Remove old boot and install new Dektite pipe boot set in sealant. (Quantity is anticipated total across R1.1, R1.2, and R1.3)	26 EA
3	Loose Parapet Cladding: Remove existing coping and metal parapet cladded. Reinstall metal parapet cladding engaged on a new securement cleat and refasten at top. Reinstall metal coping	76 LF
4	Deleted	
5	Deteriorated sealant at head closure condition: Remove deteriorated sealant and re-caulk zee closure to existing panel and seams with high grade silicone sealant.	440 LF
6	Hole in metal roof panel - Patch roof panel with reinforced liquid flashing product and paint to closely match existing panel.	1 EA
7	Deteriorated Sealant - Remove existing sealants, clean joint and properly install new backer rod and high-grade polyurethane sealant.	14 LF

K. **Sheet R1.2**

DEFECT #	DEFECT DESCRIPTION	QTY
1	Deteriorated neoprene closure - Replace deteriorated neoprene closure with new. (Quantity is anticipated total across R1.2 and R1.3)	329 LF
2	Step cracking and deteriorated joints in masonry - Rake and clean existing crack and mortar joints for tuckpointing. Tuckpoint with mortar to match existing. (Quantity is anticipated total across R1.1, R1.2, and R1.3)	10LF
3	Pipe boot deterioration - Remove old boot and install new Dektite pipe boot set in sealant. (Quantity is anticipated total across R1.1, R1.2, and R1.3)	26 EA
4	Missing coping end cap. Replace with new coping end cap fabricated to match existing and properly secure.	1 EA

5	Lightning protection system damage - Remove damaged lightning protection system and replace with new on S-5 clamps attached to the panel seams.	1000 LF
6	Deteriorated rivets - Replace deteriorated rivets with new stainless steel rivets. (include allowance of 1,000 ea.) (Quantity is anticipated total across (R1.1, R1.2, and R1.3)	1 EA

L. **Sheet R1.3**

DEFECT #	DEFECT DESCRIPTION	QTY
1	Deteriorated neoprene closure - Replace deteriorated neoprene closure with new. (Quantity is anticipated total across R1.2 and R1.3)	329 LF
2	Deteriorated sealant joint in composite wall panels - Remove existing sealant, clean joint, and reseal with new high performance silicone sealant.	10 LF
3	Deteriorated mortar joint at perimeter of windows - Remove existing deteriorated mortar from the perimeter of the window frames, clean and install new backer rod and high-grade polyurethane sealant.	8 windows 160LF
4	Step cracking and deteriorated joints in masonry - Rake and clean existing crack and mortar joints for tuckpointing. Tuckpoint with mortar to match existing. (Quantity is anticipated total across R1.1, R1.2, and R1.3)	10 LF
5	Pipe boot deterioration - Remove old boot and install new Dektite pipe boot set in sealant. (Quantity is anticipated total across R1.1, R1.2, and R1.3)	1000 LF
6	Deteriorated rivets - Replace deteriorated rivets with new stainless steel rivets. (include allowance of 1,000 ea.) (Quantity is anticipated total across (R1.1, R1.2, and R1.3)	1000 EA
7	Deteriorated sealant - Remove deteriorated sealant, clean joint and re-caulk.	15 LF
8	Gutter damage: Remove damaged section of existing gutter. Fabricate and install new box type gutter from matching materials and profiles in both color and thickness. Gutter to be properly sloped to existing downspouts and installed with the back leg behind the existing fascia / drip edge. Gutter supports to be 3/16"x1" 300 series stainless bar fabricated to match the profile of the gutter. Spacing to be 24" O.C. Gutter straps to be spaced evenly in between the hangers at 24" O.C. Gutter straps to be fabricated using .025" series 302/304 stainless steel, double hemmed, and spaced at each rib and fastened with grommeted fasteners.	100 LF
9	Lightning protection system damage - Remove damaged lightning protection system and replace with new on S-5 clamps attached to the panel seams.	1000 LF
10	Gutter clogged with debris. Clean gutter of debris	66 LF

11	Exposed Fastener Defects. Remove loose / missing / corroded fasteners and install new proper sized grommeted fasteners.	87 LF
12	Deteriorated rivets and buckling panels at seams - Remove deteriorated rivets and reinstall new rivets to secure panel. Install reinforced liquid flashing repair over seam and paint to closely match existing panel.	6 LF
13	Missing counter flashing - Fabricate and install sheet metal counter flashing to complete installation and seal against wall.	2 LF

M. Coordinate all work with owner's rep and facility manager.

N. Coded notes are not intended to be strictly limited to the areas identified and shall apply elsewhere as applicable.

O. Reference architectural symbols and abbreviations, see legend.

P. It shall be the responsibility of the contractor to locate all existing utilities whether shown herein or not, and to protect utilities from damage. The contractor shall bear all expenses of repair or replacement of utilities or other property damaged by operations in conjunction with the execution of the work

Q. It is the responsibility of the contractor to protect building occupants and passers-by from falling debris or equipment. Do not throw materials from the roof.

R. Contractor is responsible for verifying all dimensions and conditions of the project, including verification of existing roof system construction and materials.

S. Contractor staging and storage areas shall be as directed by the owner's representative at the pre-construction meeting. Contractor shall assume a reasonable amount of storage and staging space will be made available.

T. Contractor is responsible for knowing the roof deck loading capacity of the existing building for storage of materials on the existing structure.

U. Contractor shall be responsible for protecting building surfaces, finishes, and systems from damage, discoloration, etc. during the course of all construction activities.

V. Personal fall protection devices are not, nor will be, provided by the owner on any roof area designated to receive work. Personal fall protection is the responsibility of the contractor.

W. Existing materials and construction are noted on the drawings as existing. All other notations indicate new materials, products, and construction unless otherwise stated or indicated.

X. The base roof design system will provide a 20 year (or more) NDL warranty, 10 year extension on material (30 year) and 5 year contractors workmanship guarantee. The new roof system will incorporate low-no-odor adhesives in the application in accordance with current OSHA regulations.

Y. The new roof system is to incorporate insulation attachment to incorporate wind pressure enhancements at the perimeter, corners and mid roof sections in accordance with ASCE 7-16 as defined by local codes. Premanufactured tapered insulation units are to be used at roof sumps, crickets and saddles to promote positive water flow to the roof drains and scuppers. Field fabricated tapered units may be used if approved during the submittal process. This system will be installed in accordance with the manufacturers specifications and 20 year (or more) NDL warranty, 10 year extension on material (30 year) and 5 year contractors workmanship guarantee

Z. Tapered insulation layout plan: the contractor is responsible for providing a tapered insulation system layout that eliminates ponding, and moves water to roof drains, scuppers, gutters, or other drainage accessories accounting for existing rooftop obstructions. The contractor shall provide a tapered insulation layout plan in accordance with the specifications and local doe

energy requirements, reviewed and designed by the insulation manufacturer, for approval by the owner / designer. Existing flashing height conditions may require modifications to the minimum and maximum design for each roof section. Contractor is to take all precautions to maintain a minimum flashing height to achieve the full coverage of the special project manufacturer's warranty.

AA. The roofing contractor is to place evenly distributed manufacturers recommended weights across the newly adhered insulation sheets to promote adhesion.

BB. New no-hub roof Z-100 drains or equal will be designed to replace the existing aged roof drains. The current adopted IBC is 2015 which exempts overflow scuppers from being required for new roof installations.

CC. See construction plans and specifications for insulation type, R-value, and number of layers. Add new wood nailers, as required, to match new insulation thickness as designed by the insulation manufacturer for tapered applications at existing perimeters, penetrations, and rising wall conditions as designed. All roof curbs greater than 24" wide and set perpendicular to the roof slope shall be required to receive a tapered saddle to promote positive water flow. New wood nailers must be a set 1/4" below the finished roof surface at all gutter edges and primary scupper escutcheons.

DD. All lumber to be pressure treated except for plywood, U.O.N.

EE. The wood blocking shown in the details and sections are graphic representations only. Solid continuous blocking shall be provided to match roof insulation at the thickest point and maintain the same elevation for the entire perimeter of the roof unless otherwise indicated.

FF. Do not install wood nailers ahead of new roofing work. Only install nailers that can be covered the same day.

GG. Counter sink all fasteners for wood blocking.

HH. All existing wood blocking to remain is to be fastened with additional screws as per FM 1-49 placement. Pre-drill and set new securement using epoxy shields in masonry units and TEK fasteners in steel as required for positive attachment. Consult with professional fastener companies like Hilti, Triangle fasteners, etc. For additional guidance.

II. Secure top edge or termination of all membrane flashing using an aluminum termination bar secured 12-inches o.c., max. (detail shown on the project plans), and within 2-inches of each end. Prior to termination bar installation, install manufacturers recommended compression sealant behind flashing where termination bar will be placed. Apply manufacturers' approved sealant to the top edge of flashing and termination bar after proper mechanical attachment.

JJ. All roof membrane details are to follow roof manufacturer's details for a 30-year warranty whether or not a 30-year warranty is required.

KK. Install manufacturers pre-fabricated inside and outside flashing corners following the recommendations and requirements of the roofing membrane manufacturer. Provide "t-joint covers" at the base of all vertical flashing / field seam intersections.

LL. The use of "penetration pans" or penetration pockets is not permitted unless the geometry of multiple penetrations is not sufficient for field wrapping and without prior owner approval.

MM. Extend all new membrane flashing up and over perimeter parapet wall under metal edge cleat to cover beyond the exterior of the wood nailer / parapet transition by 1 ½" minimum.

NN. Extend all new membrane flashing under roof metal edge to cover beyond the exterior of the wood nailer / parapet transition by 1 ½" minimum.

OO. Provide walkpads at the base and top of ladders, stairs, at roof access doors, at other roof access points, and at all serviceable mechanical unit doors or access panels.

PP. All roof deck penetrations and perimeter edges of the roof section will be required to receive a reinforced fire-stop sealant to prevent air and moisture drive into the new roof system.

QQ. All wood supports for electrical conduit and gas line supports must be replaced with new Caddy, Miro, or equal premanufactured units to accommodate the new roof system.

RR. All new metal flashings for RTU counterflashing, cool stack base flashings, rain hoods, miscellaneous vertical wall flashing terminations, perimeter wall counterflashing, reglet metal, through wall and overflow wall scuppers are to be fabricated from 302 / 304 stainless unless indicated differently in the contract plans.

SS. All dissimilar metals to be separated by paint coat to avoid electrolytic reaction.

TT. All stainless and copper metal field fabricated seams are to be soldered unless seam is indicated to be an expansion joint. Pre-finished galvanized or aluminum metals are to be sealed using approved sealant joints. All metal fabrications are to be completed using the latest SMACNA or copper and common-sense methods to resemble the construction details. Hem all metal edges.

UU. All roof curbs are to meet the minimum flashing height requirements pre-approved by the new roof system manufacturer for the special project warranty. All required disconnections, reconnections and capping of mechanical, electrical, and plumbing equipment is to be completed in a safe working condition and shall be performed by a contractor licensed to perform the specified or indicated work.

VV. All mechanical, electrical and plumbing work to be performed by a licensed trade contractor within the jurisdiction of the contract facility's address.

WW. Temporarily remove all roof top equipment resting on roof surface or on existing equipment pads. Reinstall over walkpads, or raised to an alternative support curb, as shown in the contract plans when roofing work is complete.

XX. All security cameras must remain operational during the new roof installation.

YY. All lightning protection must remain intact during construction. Any dismantling of the cabling may require the contractor to re-certify the LP loop. Contractor is required to provide a photo catalogue of the existing conditions prior to commencement of work.

ZZ. All roof drains, wall drains, exterior ground leaders and scuppers must be water tested prior to commencement or mobilization for roof construction. The owner / consultant must be notified immediately of any drains or ground leaders found to be clogged. Contractor must document all testing and provide confirmation that all drains are clear prior to commencement of the new roof contract work.

AAA. Inspect all heater stacks (b-vents) and replace defective / rusted piping above the roof with new 302/304 stainless steel insulated units to fit existing extensions.

BBB. All roof top condenser units are to be secured to the existing or new roof curbs in accordance with new FM Global requirements for roof top wind securement.

CCC. All HVAC and RTU curbs, ductwork, electrical penetrations and gas supports shall be adjusted to accommodate the new roof insulation thickness. All roof curbs shall meet a min. 12" vertical height above finished roof, unless approved in writing by roofing manufacturer and design consultant.

A. PART 2 GENERAL

1.04 CONTRACT DESCRIPTION

A. Contract Type; A single Prime Contract based on a Stipulated Price as provided by successful contractor

1.05 OWNER OCCUPANCY

A. DGS - Roof Replacement Project intends to continue to occupy adjacent portions of the existing building during the entire construction period.

B. Cooperate with site manager and Regional Facility Manager (RFM) to minimize conflict and to facilitate - continuous operations.

C. Schedule the Work to accommodate facility personnel and patrons.

1.06 CONTRACTOR USE OF SITE AND PREMISES

A. Provide approved structurally sound protection of access to and from facility as required by law:
   1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
   2. Do not obstruct roadways, sidewalks, or other public ways without permit.

B. Time Restrictions:
   1. Limit heavy construction of especially noisy exterior work to hours before 8:00 AM.
   2. Limit lifting of materials and equipment to the roof to weekends limited to the hours of work approved by local ordinances.
   3. Limit conduct of exterior work to local ordinance requirements.
   4. Interior work must be completed during off hours.

C. Utility Outages and Shutdown:
   1. Do not disrupt or shut down life safety systems, including but not limited to fire sprinklers and fire alarm system, without 7 days' notice to DGS RFM and authorities having jurisdiction.
   2. Prevent accidental disruption of utility services to other facilities.

1.07 WORK SEQUENCE

A. Coordinate construction schedule and operations with Owner and Roof Consultant.

B. It is the intent of the Owner to have portions of the existing roof assembly removed and replaced in a completed, watertight condition on a daily basis.

C. Proper coordination of all aspects of the work by the Contractor and any sub-trades is critical to ensure proper installation and performance of the work. The Contractor's Construction Schedule shall clearly outline the coordination between job tasks of all involved disciplines. Subject to review and acceptance by the Owner, this Schedule will be strictly adhered to by the Contractor and sub-trades.

D. The Contractor's Construction Schedule shall clearly identify the on-site crew foreman and the size of the crew to be utilized. The crew size shall remain consistent and work shall be continuous throughout the project, from start-up to completion.

E. The Owner shall review the Contractor's Construction Schedule prior to the start of any work. After defining the location(s) of the work progress, the Owner shall arrange to control occupancy in the building to the greatest extent possible. It shall be the responsibility of the Contractor to supply the Owner with written notice, 72 hours in advance, if his work location(s) for a workday is different from the schedule. The Contractor shall update his Construction Schedule weekly and submit a copy to the Owner for review.

F. The Contractor shall schedule periodic site visits by the Membrane Manufacturer providing the warranty during the construction period. Announce the Manufacturer's site visit (inspection) to the Owner 72 hours prior to its occurrence. Visits by the Manufacturer's Representative shall be made prior to project start-up, one week into the start of construction, with inspections prior to the installation of the membrane surfacing, at project completion, and as requested by the Owner. The Contractor shall provide the Owner a copy of the Manufacturer's written report for each inspection, indicating Manufacturer's comments pertaining to installation of materials and any corrective recommendations. In addition, the Contractor is responsible to notify and obtain acceptance from the Membrane Manufacturer on detail changes that may affect the roof system warranty.

1.08 DIMENSIONS AND QUANTITIES

A. Verify dimensions and quantities in the field prior to bid submission. The Project Plans and Drawings have been compiled from various sources and may not reflect the actual field conditions at the time of construction.

B. The Contractor is solely responsible for means and methods of construction. Make necessary investigations to become familiar with the project conditions.

C. Additional compensation due to unfamiliarity with project conditions will not be considered.

D. In case of inconsistency between Drawings and Specifications or within either document, the better quality and/or greater quantity of work shall be provided, as determined by the Owner.

1.09 PRE-JOB DAMAGE SURVEY OF FACILITY

A. Perform a thorough pre-job survey of property and all affected and adjacent areas of the building with Owner prior to starting the work in order to document existing damage. Contractor shall document the survey on video tape and provide a copy to the Owner prior to commencing work. Damaged items identified during the survey will not be the responsibility of Contractor unless further damaged by Contractor during execution of project.

1.10 CORRECTION OF DAMAGE TO PROPERTY

A. Consider any damage to building or property not identified in the pre-job damage survey as having resulted from execution of this Contract and correct at no additional expense to Owner.

B. The Contractor will include in the Base Bid the cost to perform any roof related repair that is due to Contractor's faulty workmanship and/or materials.

C. Repair immediately any damages to facility or site that present a safety hazard or danger to the public.

1.11 PERMITS

A. Contractor shall obtain all necessary permits from the local City or County Licensing and Permits Department and pay all required permit fees and use tax. The fees shall be included in the base price.

B. Schedule and complete any required pre-construction inspections.

C. Schedule and conduct mid roof inspection, if required.

D. Hoisting equipment, dumpsters, and portable toilets shall be provided by the contractor and fees or same shall be included in the base price.

1.12 WORKERS COMPENSATION AND LABOR TAXES

A. Provide the Owner with a Certificate of Insurance coverage for all workers employed by the Contractor. The Owner shall be named as an additional insured.

B. Provide the Owner with a Certificate of Insurance coverage for all sub-contractors employed by the Contractor.

C. All work performed in relation to this project will be conducted by employees of the Contractor and/or its hired sub-contractors and all applicable taxes and insurance on labor shall be paid and disclosed.

1.13 ROOF INSTALLATION

A. All work shall comply with the local and state adopted building codes. See the Scope of Work above for more details on the building code.

B. Job Site Protection
   1. Each day, measures shall be taken to reasonably protect the building, landscaping, property and personnel at the job site.

C. Safety
   1. All work shall be performed in compliance with current OSHA and EPA standards.
   2. Provide Owner with a project Safety Plan, which shall be posted on the job site during the work.

1.14 SELECTIVE DEMOLITION

A. Each days work shall be completed in full, with night tie ins in place. Work shall not be staged, nor roof left incomplete.

B. All drains are to be flow tested prior to work commencing. If any non-functional drains are discovered, the contractor shall notify all parties and the affected drain shall be made functional prior to work commencing.

C. Contractor shall survey the job-site and surrounding area and note all conditions that will affect his work. Any pre-existing damage shall be documented using video and or photos. It is recommended documentation of all aspects of the site that may be impacted by construction prior to starting work be documented. This should include all sides of building, parking lot and interior of building and any other aspect that may be impacted by the roofing work.

1.15 PROJECT CONDITIONS

A. The building will be occupied and in use during construction. Take necessary precautions to create as little disturbance or disruption to the building and its occupants as possible during the work.

B. Supply, install, and maintain barriers, protection, warning lines, lighting, and personnel required to segregate the work area(s) from pedestrian or vehicular traffic, as well as to prevent damage to the building, its occupants, and the surrounding landscaped and paved areas. The Contractor shall observe all applicable OSHA requirements.

C. Schedule and execute work without exposing the building interior to the effects of inclement weather. Protect the building and its occupants against such risks and repair/replace work-related damage to the Owner’s satisfaction.

D. Supply labor, equipment, tools and appliances necessary for the proper completion of the work.

E. Do not install roofing systems or sealants during precipitation, including fog, or when air temperature is below 40° F (4° C) or is expected to go below 40° F (4° C) during application, or when there is ice, frost, moisture, or visible dampness on the roof

F. Phased or temporary construction will only be permitted as specified. Schedule, execute, and coordinate work on a daily basis so that components are installed completely and permanently as specified.

G. Schedule, coordinate, and execute work to avoid traffic on completed roof areas. Coordinate work to prevent this situation by working away from completed roof areas, toward roof edges and access ways.

H. Roofing that is removed shall be made 100% weathertight in the same day’s operations.

I. Roof construction and materials shall comply with these specifications and the latest editions of the following:
   1. Sheet Metal and Air Conditioning Contractors National Association (SMACNA)
   2. The National Roofing Contractors Association (NRCA) “Roofing and Waterproofing Manual”
   3. Underwriters Laboratories, Inc. “Roofing Materials and Systems Directory”
   4. Copper Development Association (CDA) publication "Copper in Architecture" Handbook.

J. All workmanship and materials shall be of the best construction practice. Should a conflict arise between the specification requirements and those of the referenced publications, the better quality or more stringent requirement will prevail. Specification requirements that exceed the minimum requirements of the manufacturer shall be complied with by the Contractor.

K. Coordinate the work in this Section with other Sections, including preparatory work, building protection, daily clean-up, and protection of building, and occupants.

L. Supply labor, vacuums, tools and appliances necessary to keep the interior and exterior building and site areas below and around the construction clean, with as little accumulation of dust and debris as possible on a daily basis.

A. PART 3 NEW ROOF

1.16 PREPARATION FOR NEW ROOFING

A. Auxiliary Roof Construction Materials:
   1. Lumber
      a. 2 x 6 minimum hem fir nailer anchored to the top of the parapet wall, fastened 36" o.c. max.
      b. 2 x 6 nailer at scupper locations, roof jacks, roof hatch and other details as needed to provide a nailing facility.
      c. 5/8" minimum Exterior Grade, Exposure 1 Plywood, CD Grade or better, one side sanded for smooth application of new roof flashing.
   2. Sheet Metal Flashing and Trim:
      a. Coping / Edge Metal Trim (gravelstops):
         1) 24 ga. pre-finished galvanized steel with 20 year Kynar finish
         2) .040" prefinished aluminum with 20 year Kynar finish
      b. Downspouts:
         1) 24 ga. pre-finished galvanized steel with 20 year Kynar finish
         2) .040" prefinished aluminum with 20 year Kynar finish
      c. Scupper Exterior Face Plates: 24 ga. galvanized steel with Kynar finish
         1) 24 ga. pre-finished galvanized steel with 20 year Kynar finish
         2) .040" prefinished aluminum with 20 year Kynar finish
      d. Counter - Flashing:
         1) .018" 302/304 stainless
         2) 24 ga. pre-finished galvanized steel with 20 year Kynar finish
         3) .040" prefinished aluminum with 20 year Kynar finish
      e. Roof Jacks / B-Vent Cool Pipe / Heater Stack Flashing:
         1) 26 ga. G-90 galvanized steel with mil finish with soldered seams
         2) .018" 302/304 stainless with soldered seams
      f. Plumbing Vent Flashing:
         1) 2 lb. desilverized pig lead with soldered joints(BUR / Modified Bitumen roof systems only)
         2) PMMA reinforced liquid flashing (approved by roof system manufacturer)
      g. Penetration Sealer Pans:
         1) 26 ga. G-90 galvanized steel with mil finish with soldered seams
         2) .018" 302/304 stainless with soldered seams
      h. Scupper Sleeve:
         1) .018" 302/304 stainless with soldered seams
   3. Drainage Requirements
      a. Tapered insulation may be required on this site. Contractor is responsible for determining if tapered polyisocyanurate is needed to meet 1/4" minimum slope as required by code. Project size may make the use of Type II, Grade 2 CGF faced insulation impracticable. If your bid does not include Type II, Grade 2 CGF faced product you must indicate so on the bid form.

1.17 DESCRIPTION OF SUPPLEMENTAL ALTERATION WORK

A. Scope of alterations work is described within the specifications and shown on drawings.

B. Roof Drain Plumbing: Alter existing system and add new construction, keeping existing in operation.

1.18 WARRANTY

A. The new roofing/waterproofing shall be installed to comply with the requirements for the manufacturer’s standard 20 year (or more) NDL warranty, 10 year extension on material (30

year) and 5 year contractors workmanship guaranteed. Provides 16 hours per year puncture protection.

B. Upon completion of the work, contractor shall provide a manufacturer’s 20 year NDL watertight warranty to the owner.

C. Contractor is also to supply a 5 year standard Labor warranty as defined by the WSRCA.

D. Final Inspection
   1. Conduct final inspection with the owner’s representative, roofing consultant and manufacturer’s representative and correct any noted deficiencies.

E. Project Close-out and Payment
   1. Applications for payments shall be made using AIA payment application forms including a schedule of values.
   2. The first payment application may be submitted upon delivery of materials to the job site. Payment applications shall be submitted monthly or at the completion of the job.
   3. All payment applications shall accompany a "Conditional Lien Release" and an "Unconditional Lien Release" for the amounts previously received.

END OF SECTION 01 1001

SECTION 01 2200
UNIT PRICES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. List of unit prices, for use in preparing Bids.

B. Measurement and payment criteria applicable to Work performed under a unit price payment method.

C. Upgrades assessment and non-payment for rejected work.

1.02 RELATED REQUIREMENTS

A. Section 00 0102 – Project Information

B. Section 01 1001 – Summary

C. Concrete Deck Repair: Section 03 0100 – Maintenance of Concrete

D. Metal Deck Repair: Section 05 3150 – Steel Deck Repair/Replacement

E. Wood Nailer Replacement: Section 06 1000 – Rough Carpentry

F. Roof Drain Replacement: Section 22 0010 – Roof Drain and Storm Water Piping

1.03 UNIT QUANTITIES SPECIFIED

A. Quantities indicated in the Bid Form are for bidding and contract purposes only. Quantities and measurements of actual Work will determine the payment amount.

1.04 MEASUREMENT OF QUANTITIES

A. Measurement methods delineated in the individual specification sections complement the criteria of this section. In the event of conflict, the requirements of the individual specification section govern.

B. Take all measurements and compute quantities. Measurements and quantities will be verified by the DGS Project Manager.

C. Contractor will take all measurements, document with photos, and compute quantities accordingly to be included in the required Daily Production Reports

D. Assist by providing necessary equipment, workers, and survey personnel as required.

E. Measurement by Area: Measured by square dimension using mean length and width or radius.

F. Linear Measurement: Measured by linear dimension, at the item centerline or mean chord.

G. Stipulated Price Measurement: Items measured by weight, volume, area, or linear means or combination, as appropriate, as a completed item or unit of the Work.

H. Perform surveys required to determine quantities, including control surveys to establish measurement reference lines. Notify the DGS Project Manager at least 1 day in advance of taking measurements.

1.05 UPGRADE ASSESSMENT

A. Replace Work, or portions of the Work, not complying with specified requirements.

B. If, in the opinion of the DGS Project Manager, it is not practical to remove and replace the Work, the DGS Project Manager will direct one of the following remedies:
   1. The defective Work may remain, but the unit price will be adjusted to a new unit price at the discretion of the DGS Project Manager.
   2. The defective Work will be partially repaired to the instructions of the DGS Project Manager, and the unit price will be adjusted to a new unit price at the discretion of the DGS Project Manager.

C. The individual specification sections may modify these options or may identify a specific formula or percentage price reduction.

D. The authority of the DGS Project Manager to assess the defect and identify payment adjustment is final.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 EXECUTION

A. Payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities of Work that is incorporated in or made necessary by the Work and accepted by the DGS Project Manager, multiplied by the unit price.

B. Payment will not be made for any of the following:
   1. Products wasted or disposed of in a manner that is not acceptable.
   2. Products determined as unacceptable before or after placement.
   3. Products remaining on hand after completion of the Work.
   4. Loading, hauling, and disposing of rejected Products.

END OF SECTION 01 2200

SECTION 01 3000
PROJECT ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Electronic document submittal service.

B. Preconstruction meeting.

C. Progress meetings.

D. Contractor's daily reports.

E. Progress photographs.

F. Coordination drawings.

G. Submittals for review, information, and project closeout.

H. Number of copies of submittals.

I. Requests for Interpretation (RFI) procedures.

J. Submittal procedures.

1.02 RELATED REQUIREMENTS

A. Section 01 6000 - Product Requirements: General product requirements.

B. Section 01 7000 - Execution and Closeout Requirements: Additional coordination requirements.

C. Section 01 7800 - Closeout Submittals: Project record documents; operation and maintenance data; warranties and bonds.

1.03 REFERENCE STANDARDS

A. CSI/CSC Form 12.1A - Submittal Transmittal Current Edition.

B. CSI/CSC Form 13.2A - Request for Information Current Edition.

1.04 GENERAL ADMINISTRATIVE REQUIREMENTS

A. Comply with requirements of Section 01 7000 - Execution and Closeout Requirements for coordination of execution of administrative tasks with timing of construction activities.

B. Contractor is responsible for the following types of submittals to the DGS Project Manager and Designer:

1. Requests for Interpretation (RFI).
2. Requests for substitution.
3. Shop drawings, product data, and samples.
4. Test and inspection reports including fastener pull-out reports for perimeter nailer installation, peel test for 32 mil SBS vapor barrier applied to the concrete deck, and up-lift test for insulation attachment to the SBS vapor barrier. .
5. Manufacturer's instructions and field reports.
6. Applications for payment and change order requests.
7. Progress schedules.
8. Coordination drawings.
9. Correction of all Interim Project Punch Lists and the Final Combined Manufacturer's and Designers' Punch List. for Substantial Completion.
10. Closeout submittals.
11. As-built drawings with all project change order and RFI clarification updates
12. All Special Project Warranties.

1.05 PROJECT COORDINATOR

A. Project Coordinator: DGS Appointed Construction Manager.

B. During construction, coordinate use of site and facilities through the Project Coordinator.

C. Comply with Project Coordinator's procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.

D. Comply with instructions of the Project Coordinator for use of temporary utilities and construction facilities. Responsibility for providing temporary utilities and construction facilities is identified in Section 01 1000 - Summary.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 ELECTRONIC DOCUMENT SUBMITTAL SERVICE

. All documents transmitted for purposes of administration of the contract are to be in electronic (PDF, MS Word, or MS Excel) format, as appropriate to the document, and transmitted via an Internet-based submittal service that receives, logs and stores documents, provides electronic stamping and signatures, and notifies addressees via email. The DGS Project Manager may, at his or her discretion, request redundancy of submission via email or hard copies.
  . This procedure applies to Requests for Interpretation (RFIs), progress documentation, contract modification documents (e.g. supplementary instructions, change proposals, change orders), applications for payment, field reports and meeting minutes, Contractor's correction punchlist, and any other document any participant wishes to make part of the project record. Contractor must provide personnel to be trained on the program being utilized by DGS at the time of this contract.
  . It is Contractor's responsibility to submit documents in allowable format.
  . All other specified submittal and document transmission procedures apply, except that electronic document requirements do not apply to samples or color selection charts.

. Submittal Service: The selected service is:

. Training: In person or web-based training session will be arranged for all participants. It is the Contractors responsibility to coordinate the training with DGS before the project starts.

3.02 PRECONSTRUCTION MEETING

A. DGS Project Manager will Schedule meeting after Notice of Award, or after the Contractor receives the Contract for the bid. The appointed DGS Project Manager will coordinate this meeting to be at the site of the project.

B. Attendance Required:
  1. Owner's Representative, or DGS Project Manager
  2. Designer.
  3. Contractor.
  4. Contractor's Safety Manager
  5. Major Subcontractors
  6. DCPS Agency Representative.
  7. DGS Procurement.

C. Agenda:
  1. Submission of list of subcontractors, list of products, schedule of values, and progress schedule.
  2. Submission of initial Submittal schedule.
  3. Designation of personnel representing the parties to Contract, Owner's Representative, Agency Representative, Contractor, Contractor's Project Manager, Contractor's Site Superintendent, Contractor's Safety Manager, Contractor's Major Subcontractor(s), Contractor's Major Supplier,.
  4. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
  5. Scheduling.

D. Contractor is required to record minutes and distribute copies within two days after meeting to participants, with two copies to Designer, Owner, participants, and those affected by decisions made.

3.03 PROGRESS MEETINGS

A. Project Coordinator will make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.

B. Attendance Required:
   1. Contractor.
   2. Owner's Representative.
   3. Agency Representative.
   4. Designer / Quality Assurance Observer.
   5. Contractor's Superintendent.
   6. Contractor's Project Manager
   7. Major subcontractor(s) representative.

C. Agenda:
   1. Review minutes of previous meetings.
   2. Review of work progress.
   3. Field observations, problems, and decisions.
   4. Identification of problems that impede, or will impede, planned progress.
   5. Review of RFIs log and status of responses.
   6. Maintenance of progress schedule.
   7. Corrective measures to regain projected schedules.
   8. Planned progress during succeeding work period.
   9. Maintenance of quality and work standards.
   10. Effect of proposed changes on progress schedule and coordination.
   11. Other business relating to work.

D. Contractor is required to record minutes and distribute copies within two days after meeting to participants, with two copies to Designer, Owner, participants, and those affected by decisions made.

3.04 DAILY CONSTRUCTION REPORTS

A. Contractor is to include only factual information. Do not include personal remarks or opinions regarding operations and/or personnel. Submit sample for approval and comment prior to the start of the project.

B. In addition to transmitting electronically a copy to Owner and Designer, submit two printed copies at approved intervals.
   1. Submit in format acceptable to Owner.

C. Prepare a daily construction report recording the following information concerning events at Project site and project progress:
   1. Date.
   2. High and low temperatures, and general weather conditions.
   3. Approximate count of personnel at Project site.
   4. Safety, environmental, or industrial relations incidents.
   5. Stoppages, delays, shortages, and losses. Include comparison between scheduled work activities (in Contractor's most recently updated and published schedule) and actual activities. Explain differences, if any. Note days or periods when no work was in progress and explain the reasons why.
   6. Signature of Contractor's authorized representative.

3.05 PROGRESS PHOTOGRAPHS

A. Photography Type: Digital; electronic files.

B. Provide photographs of site and construction throughout progress of work produced by an experienced photographer, acceptable to Designer.

1. The absence of Pre-Construction photos / video will not be cause for dismissal of any damages to the facility, walkways, paving, grounds, or shrubs. The Owner will have the right to assess values to repair or correct any damage or deficiencies observed to be the result of the project construction, in the absence of the Contractor's pre-construction facility condition photos.

C. Digital Photographs: 24 bit color, minimum resolution of 1024 by 768, in JPG format; provide files unaltered by photo editing software.
   1. Delivery Medium: Via email.
   2. File Naming: Include project identification, date and time of view, and view identification.
   3. PDF File: Assemble all photos into printable pages in PDF format, with 2 to 3 photos per page, each photo labeled with file name; one PDF file per submittal.

3.06 COORDINATION DRAWINGS

A. Review submittal drawings prior to submission to Designer and Project Coordinator.

3.07 REQUESTS FOR INTERPRETATION (RFI)

A. Definition: A request seeking one of the following:
   1. A resolution to an issue which has arisen due to field conditions and affects design intent.

B. Whenever possible, request clarifications at the next appropriate project progress meeting, with response entered into meeting minutes, rendering unnecessary the issuance of a formal RFI.

C. Preparation: Prepare an RFI immediately upon discovery of a need for interpretation of Contract Documents. Failure to submit a RFI in a timely manner is not a legitimate cause for claiming additional costs or delays in execution of the work.
   1. Prepare a separate RFI for each specific item.
   2. Prepare using software provided by the Electronic Document Submittal Service.
   3. Combine RFI and its attachments into a single electronic file. PDF format is preferred.

D. Content: Include identifiers necessary for tracking the status of each RFI, and information necessary to provide an actionable response.
   1. Official Project name and number, and any additional required identifiers established in Contract Documents.
   2. Contractor's suggested resolution: A written and/or a graphic solution, to scale, is preferred in cases where clarification of coordination issues is involved, for example; routing, clearances, and/or specific locations of work shown diagrammatically in Contract Documents. If applicable, state the likely impact of the suggested resolution on Contract Time or the Contract Sum.

E. Attachments: Include sketches, coordination drawings, descriptions, photos, submittals, and other information necessary to substantiate the reason for the request.

F. RFI Log: Prepare and maintain a tabular log of RFIs for the duration of the project.
   1. Indicate current status of every RFI. Update log promptly and on a regular basis.
   2. Note dates of when each request is made, and when a response is received.

G. Review Time: Designer will respond and return RFIs to Contractor within three calendar days of receipt. For the purpose of establishing the start of the mandated response period, RFIs received after 12:00 noon will be considered as having been received on the following regular working day.
   1. Response period may be shortened or lengthened for specific items, subject to mutual agreement, and recorded in a timely manner in progress meeting minutes.

H. Responses: Content of answered RFIs will not constitute in any manner a directive or authorization to perform extra work or delay the project. If in Contractor's belief it is likely to lead to a change to Contract Sum or Contract Time, promptly issue a notice to this effect, and follow up with an appropriate Change Order request to Owner.

1. Upon receipt of a response, promptly review and distribute it to all affected parties, and update the RFI Log.
2. Notify Designer within 2 calendar days if an additional or corrected response is required by submitting an amended version of the original RFI, identified as specified above.

3.08 SUBMITTAL SCHEDULE

A. Submit to Designer for review a schedule for submittals in tabular format.
   1. Submit at the same time as the preliminary schedule.

3.09 SUBMITTALS FOR PROJECT CLOSEOUT

A. Submit Completed and signed Interim Correction Punch Lists for Substantial Completion.

B. Submit Final Correction Punch List for Substantial Completion.

C. When the following are specified in individual sections, submit them at project closeout in compliance with requirements of Section 01 7800 - Closeout Submittals:
   1. All Project record documents.
   2. Contractor's Project daily reports with progress photos
   3. Operation and maintenance data.
   4. All Special Project Warranties.
   5. Other types as indicated.

D. Submit for Owner's benefit during and after project completion.

3.10 NUMBER OF COPIES OF SUBMITTALS

A. Electronic Documents: Submit one electronic copy in PDF format; an electronically-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.

END OF SECTION

SECTION 01 4000
QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Submittals.

B. Regulatory Requirements

C. References and standards.

D. Testing and inspection agencies and services.

E. Control of installation.

F. Mock-ups.

G. Tolerances.

H. Manufacturers' field services.

I. Defect Assessment.

1.02 RELATED REQUIREMENTS

A. Section 01 3000 - Project Administrative Requirements: Submittal procedures.

B. Section 01 6000 - Product Requirements: Requirements for material and product quality.

1.03 REGULATORY REQUIREMENTS

A. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Designer, in quantities specified for Product Data.
   1. Indicate material or product complies with or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
   2. Certificates may be recent or previous test results on material or product, but must be acceptable to Designer.

B. Comply with all applicable Federal, State and local codes and ordinances in force at the project site.

C. Apply, obtain and pay for required local and regional building permits and fees to legally execute the Work of this Contract.

D. Airborne asbestos fibers, lead and PCB compounds, if encountered, have been determined to be hazardous to one's health. Compliance with all possible Federal, State and Local regulations as they relate to handling these materials is the Contractor's responsibility.

E. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Consultant, in quantities specified for Product Data.
   1. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

F. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.04 REFERENCES AND STANDARDS

A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Comply with reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.

C. Obtain copies of standards where required by product specification sections.

D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.

E. Should specified reference standards conflict with Contract Documents, request clarification from Designer before proceeding.

F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Designer shall be altered from Contract Documents by mention or inference otherwise in any reference document.

1.05 INSTALLERS QUALITY ASSURANCE

A. Contractor shall take complete charge of the work under this contract and coordinate the work of all trades on the project.

B. Contractor shall identify a minimum of (1) one employee designated as the Quality Control Monitor over suppliers, manufacturers, products, services, site conditions and workmanship to produce Work of specified quality.

C. Should manufacturer's instructions conflict with Contract Documents, request and receive clarification from the Consultant before proceeding.

D. Manufacturer shall be required to provide copies of any and all project initial notification documents, field reports, or any communication with the installer as it relates to this project and the performance of the installation directed to the issuance of the final special project warranty.

E. Perform Work by persons certified to install the contracted roof system and to produce the required and specified quality installation.

F. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes or specified requirements indicate a higher standards or more precise workmanship.

G. Contractor shall obtain thorough data at the site and inspect surfaces that are to receive the Work before proceeding with fabricating, assembling, fitting or erecting of the work. The Contractor shall be solely responsible for the accuracy of measurements and laying out of the work and shall make good any errors, defects due to faulty measurements taken, information obtained, layout, or failure to report discrepancies.

H. The Contractor shall notify the Consultant in writing in case of discrepancies between existing work and drawings, and defects in such surfaces that are to receive the work. The Consultant will evaluate the notice, confer with the Project Coordinator and direct what remedial action will be taken.

I. Contractor shall apply, install, connect, erect, use, clean and condition manufactured articles, materials, and equipment as recommended by the manufacturer, unless specified to the contrary.

J. Testing and Inspection Agencies and Services

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.

B. Comply with manufacturers' instructions, including each step in sequence.

C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Designer before proceeding.

D. Comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Have work performed by persons qualified to produce required and specified quality.

F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

H. All applications will adhere to the manufacturers' specifications to meet or exceed the specified warranty term. Any and all "upgraded" scope of work requirements by the manufacturer to meet the warranty terms will be made part of this specification, expressed or implied at no cost to the Owner.

3.02 MOCK-UPS

A. Before installing portions of the Work where mock-ups are required, construct mock-ups in location and size indicated for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work. The purpose of mock-up is to demonstrate the proposed range of aesthetic effects and workmanship.

B. Notify Designer seven (7) working days in advance of dates and times when mock-ups will be constructed.

C. Tests shall be performed under provisions identified in this section and identified in the respective product specification sections.

D. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.

E. Accepted mock-ups shall be a comparison standard for the remaining Work.

F. Where mock-up has been accepted by Designer and is specified in product specification sections to be removed, remove mock-up and clear area when directed to do so by Designer.

3.03 TOLERANCES

A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.

B. Comply with manufacturer’s and industry standard tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Designer before proceeding.

C. Adjust products to appropriate dimensions; position before securing products in place.

3.04 TESTING AND INSPECTION

A. Testing Agency Duties:
   1. Provide qualified personnel at site. Cooperate with Designer and Contractor in performance of services.
   2. Perform specified sampling and testing of products in accordance with specified standards.
   3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
   4. Promptly notify Designer and Contractor of observed irregularities or non-compliance of Work or products.
   5. Perform additional tests and inspections required by Designer.
   6. Submit reports of all tests/inspections specified.

B. Limits on Testing/Inspection Agency Authority:
   1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
   2. Agency may not approve or accept any portion of the Work.

3. Agency may not assume any duties of Contractor.
4. Agency has no authority to stop the Work.

C. Contractor Responsibilities:
1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
3. Provide incidental labor and facilities:
a. To provide access to Work to be tested/inspected.
b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
c. To facilitate tests/inspections.
d. To provide storage and curing of test samples.
4. Notify Designer and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
6. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.

D. Re-testing required because of non-compliance with specified requirements shall be performed by the same agency on instructions by Designer.

E. Re-testing required because of non-compliance with specified requirements shall be paid for by Contractor.

3.05 MANUFACTURERS' FIELD SERVICES

A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, as applicable, and to initiate instructions when necessary. Manufacturer shall be responsible for physical site visits at the beginning of the project, and at the closing of the project to provide a final punchlist. The manufacturers field technician shall also be required to visit the site every 2 weeks, scheduled with the Designer and Contractor. All reports generated from the information gathered at the site visits will be required to be copied to the Designer.

B. Contractor to submit qualifications of manufacturer's inspector to Designer 10 days in advance of required observations.
1. Manufacturer's inspector subject to approval of Designer.

C. Recorded observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to the specifications or manufacturers' written instructions must be submitted to the Designer for review and approval before implementation.

3.06 DEFECT ASSESSMENT

A. Replace Work or portions of the Work not complying with specified requirements.

B. The Owner may request testing of materials and/or installation to determine compliance with the specification. The Contractor shall pay for all costs associated.

C. Testing shall be accomplished by a testing firm designated by the Owner. Tests shall be conducted using recognized standards. The Consultant shall evaluate and issue a report to the Owner and Contractor regarding the results and provide recommendation for resolution.

D. If any test results indicate non-compliance with the specification the Contractor shall pay for all testing and associated reporting costs.

E. Replace Work or portions of the Work not conforming to specified requirements.

F. If, in the opinion of Designer, it is not practical to remove and replace the Work, Designer will direct an appropriate remedy or suggest to the Project Coordinator an adjusted payment option.

END OF SECTION

SECTION 01 5010
TEMPORARY FACILITIES

THIS SECTION INCLUDES REQUIREMENTS FOR THE PROVISION AND UTILIZATION OF TEMPORARY FACILITIES TO PROTECT THE OWNER'S PROPERTY, THE SITE, AND CONSTRUCTION MATERIALS, AND FOR DAILY MAINTENANCE AND CLEANUP OF THE SITE DURING THE PROJECT.

1.01 CONTRACTOR'S USE OF EXISTING FACILITIES

A. Limit use of the premises to the work indicated, so as to allow for the Owner's uninterrupted occupancy and use. Confine operations to the areas indicated under the Contract. Conformance to the regulations set forth by the Owner regarding use of existing facilities is mandatory.
   1. Sanitary facilities shall be provided by the Contractor. Use of the building's sanitary facilities is not permitted.
      a. Owner will assist in controlling occupancy. Contractor shall provide and place portable barricades, as coordinated with the Owner, under work areas inside the building.
      b. Clean interior and exterior areas affected by the construction on a daily basis. Do not allow construction debris, waste materials, tools, excess packaging materials or other construction related materials to accumulate on the roof, in the facility, or on the exterior grounds and pavements.
      c. See Division 01 Section "Product Delivery Requirements" for product storage facilities and requirements.

1.02 UTILITIES

A. Electrical service will be provided to the Contractor free of charge by the Owner through exterior electrical outlets if available and operable. Use shall be limited to construction hours. The Owner reserves the right to charge the Contractor for excessive electrical service usage (i.e., wasteful usage). Should charges be considered, the Owner will notify the Contractor in writing of his intent,
   1. 48 hours in advance.

B. Water for construction purposes will be provided to the Contractor free of charge by the Owner through exterior water spigots if operable. The Owner reserves the right to charge the Contractor for excessive or wasteful use. Should charges be considered, the Owner will notify the Contractor in writing of his intent, 48 hours in advance. Drinking water shall be provided by the Contractor.

C. All other utilities required will be provided by the Contractor.

D. Plumbing, heating, and electrical work, including reinstallation of equipment and other work to be performed by the Contractor, shall be carried out without interference to the building's normal operation. Where work requires interruption of service, the Contractor shall make advance arrangements with the Owner for dealing with such interruption.

E. Ensure proper and safe operation and maintenance of utility systems within the construction limits, whether these are supplied by the Owner's distribution system or otherwise, until the work is accepted by the Owner. Maintain and operate appurtenances within the construction area that serve the distribution system, subject to periodic inspection by the Owner's operating personnel. Inspection by any representative or personnel of the Owner shall not relieve the Contractor of his responsibilities in connection with operation and maintenance of these facilities and equipment.

1.03 ACCESS

A. Provide ladders, scaffolding and staging as required to access the project area(s) in accordance with OSHA guidelines. Should damage to the building occur, restore damaged

areas to their original condition, clean up debris, and provide other access to the roof for the duration of the project.

B. Do not interfere with normal building operations. Coordinate activities with the Owner an d building occupants.

1.04 BARRIERS

A. Install temporary fencing, warning lines, barriers and guards, as required, to segregate t he construction areas from adjacent operational facilities, occupants and the public. In the event that access cannot be interrupted in the construction area, provide protection above doorways and walks in the construction area. Provide guard lights on barriers and lighting as necessary to prevent vandalism of work and storage areas. The Owner is not responsible for Contractor's losses due to damage or theft by vandals.

B. Install protective coverings at paving and building walls adjacent to hoist prior to starting work.
   1. Lap protective coverings at least 1 foot, secure against wind, and vent to prevent condensation of moisture on covered surfaces. Maintain the protective coverings in place for the duration of the project. Cover windows adjacent to Contractor operation areas with plywood.

1.05 TEMPORARY PROTECTION

A. Provide suitable Owner approved temporary protection to prevent the entrance of debris and obstructions into the building. Provide warning signs to reroute personnel around areas of dangerous work. Place warning barriers at roof perimeters and at deck openings. Clearly label temporary covers over deck openings. Do not permit openings to remain unprotected overnight. Schedule operations to allow for completion of new roofing over a predetermined area of roof within a day's work. Use special care to avoid damaging roofing and flashing when working on the roof of the building.

B. Provide temporary tie-ins between existing and new roof systems as specified and detailed. Tie-in construction shall completely prevent interior leaks, migration of moisture from existing to new
   1. construction and damage of any type to the facility. Provide necessary quality control at tie-ins on a daily basis to prevent leaks.

C. Avoid traffic on completed roof areas. Coordinate work to prevent this situation. Should temporary access be required, provide temporary substrate protection for trafficked areas.

D. Protect drainage systems from debris accumulation during construction. Ensure roof drains and leader pipes are not restricted when Contractor is not on site.

E. Protect materials scheduled to be reused from damage by placing them in labeled containers or wrappings stored in a weathertight trailer.

F. Provide temporary protection such as plywood and tarps for streets, drives, curbs, sidewalks, landscaping and existing exterior improvements during all phases of the project.

1.06 ROOFTOP PROTECTION

A. Provide plywood walkways, with 1/2-inch thick rubber walkway pad or 1-inch thick high density insulation protection beneath, for protection of new or existing roof areas which must be trafficked, and for roof membrane protection below demolition work which occurs above new or existing roof areas.

1.07 DEBRIS REMOVAL

A. The Owner shall designate crane and refuse container locations. These areas shall be sectioned off with proper warning lines.

B. Removed materials shall not be thrown freely from the roof but shall be lowered to the ground by crane in suitable containers or in an enclosed chute, in order to reduce the spread of dust and other debris.

C. Supply adequate covered receptacles for waste, debris and rubbish. One receptacle will be allowed on site at a time, and must be immediately removed from the site when full. Clean the project area daily and prior to moving the receptacle to another location on the site. Locations shall be as permitted by the Owner. Disposal shall be off-site in a legal dump authorized to accept construction demolition solid wastes.

1.08 WEATHER PROTECTION

A. Weather protection includes temporary protection of components adversely affected by moisture, wind, heat and cold by covering, patching, sealing, enclosing, ventilating, cooling and/or heating. Provide protection for locations within the project area as necessary, to protect the building and its contents, trafficked adjacent areas, new construction materials and accessories. The cost of heat, fuel and power necessary for proper weather protection shall be the responsibility of the Contractor. Installed weather protection shall comply with safety regulations, and provisions for adequate ventilation and fire protection.

1.09 VOLATILE MATERIALS

A. The Contractor is reminded that adhesives, solvents, bitumens, etc., are highly volatile a nd flammable materials. These materials, along with tools and applicators and rags, shall not be stored on or within the building. No overnight storage on the roof will be allowed. Do not transport materials through the building. Take precautions and closely follow the Specification requirements for fire protection on site during construction.

B. Locate and use flame-heated equipment so as not to endanger the structure, other materials on site, or adjacent property. Do not place flame-heated equipment on the roof. Locate and use flame-
heated equipment in specific areas approved by the Owner. Do not relocate flame-heated equipment without prior approval from the Owner.

C. The use of flame-heated equipment or torches on the roof is prohibited unless specifically approved in writing by the Owner.

1.10 FIRE PROTECTION

A. Provide necessary temporary fire protection for the building, its contents and materials during construction. Do not store combustibles inside the building or on the roof. Store adhesives, caulks and cleaning solvents away from the building using a method approved by local fire officials. Should cutting, burning or welding be necessary, provide a fire watch during operations and for four hours minimum after completion of the operations.

B. Do not use open flames near adhesives, caulks or cleaning solvents as they will readily ignite. Rags soaked with cleaning solvent shall not be discarded in the dumpsters, but shall be stored in a separate metal receptacle and removed from the site daily.

C. Comply with local fire codes and obtain permits necessary from the local fire department. Provide a copy to the Owner. Provide recently tested, fully charged fire extinguishers around the storage area, rubbish receptacle and two fire extinguishers on the roof within 50 feet of the Work.

1.11 INTERIOR PROTECTION AND RESTORATION

A. Protect and cover fixed items, furniture, equipment, appliances, fixtures, bookcases, etc. within the building below the work areas.

B. At the Owner's direction, remove portable furniture, equipment, appliances, fixtures, materials, stock, etc. within the building below the work area to an adjacent area for protection.

C. Remove, temporarily support, suspend and protect existing items requiring removal during the installation of the new work and properly replace these items to their original condition and to the Owner's satisfaction. These items include but are not limited to suspended ceilings, lighting fixtures, heating and air handling ductwork, electrical conduit, etc.

1.12 CLEAN-UP

A. Clean and restore interior building spaces beneath the work areas to original condition prior to the construction.

B. Debris, dust and dirt shall be swept completely clean at the joists, beams, overhead accessories and similar items. Those items soiled or stained from the work shall be cleaned and refinished.

C. Electrical fixtures damaged by the construction shall be replaced with an equal in shape, color, manufacturer, and capacity at no added expense to the Owner.

D. Interior ceiling finishes which are damaged by the construction shall be repaired or replaced with a system equal in color, texture, and finish at no added expense to the Owner.

E. Heavily soiled, stained or damaged floor areas will be cleaned, repaired and/or replaced by the Contractor at no additional cost to the Owner. All interior areas where interior work was performed will also be swept and vacuumed completely clean of dust, dirt and debris. The Owner will wash and rewax floors, but only as part of a normal or routine maintenance procedure.

F. Open ducts, grills, thermostats, electric boxes or similar fixtures and items which may have been soiled or affected by the work or which might conduct dust to other areas shall be masked, protected and cleaned by the Contractor.

G. Windows, blinds, curtains, shelving, edges, lighting, etc. shall be cleaned to their original condition prior to the start of the roof renovation, and to the satisfaction of the Owner.

H. Remove completely temporary protection materials and facilities from the site upon completion of the work and demobilization of the project.

I. Restore streets, drives, curbs, sidewalks, landscaping and existing improvements disturbed by the construction operations to their condition at the start of the work.

1.13 NOTIFICATION

A. Notify the Owner's Representative at least 72 hours in advance of the desire to extend, connect, disconnect, turn on or off HVAC, steam, electric, water or other service from the Owner's supply systems. The actual operation shall be witnessed by authorized representatives of the Owner. Plumbing, heating and electrical work, including installation of equipment and any other work to be performed by the Contractor, shall be carried out without interference with the Owner's normal operation. Where work requires interruption of a service, make advance arrangements with the Owner for dealing with such interruption.

1.14 VEHICLES

A. Acceptable areas for the locations of the Contractor's vehicles shall be as designated by the Owner.
   1. No other areas may be utilized without the Owner's permission.

1.15 WALKWAY COVERING

A. The Contractor will be required to provide walkway coverings when construction traffic or access crosses a normal path from the building to exterior activities or access to the building by students or staff. The walkway coverings must protect a clear path for access and egress above entrances which must remain accessible. The framework supporting the walkway covering shall be free-standing and well braced. The roof covering and support framing shall be designed to support a minimum live load of 150 psf, or as stated in the current local code, whichever is greater. The roof coverings shall be of width sufficient to cover the entire walkway or sidewalk. A minimum height clearance of 6-feet, 8-inches, or as required to allow building doors to open, shall be maintained below coverings. Should coverings obscure the building’s address, a temporary address shall be installed so as to be visible from the street. Lettering shall be approved by the Owner. Protection shall be in accordance with all applicable OSHA standards.

PART 2 - PRODUCTS

2.01 2.1 MATERIALS

A. Portable Chain-Link (Site Enclosure) Fencing: Minimum 2-inch, 9-gage, galvanized steel, chain-link fabric fencing; minimum 8-feet high with galvanized steel pipe posts; minimum 2-
   1. 3/8-inch OD line posts and 2-7/8-inch OD corner and pull posts, with 1-5/8-inch OD top and bottom rails. Provide concrete bases for supporting posts.

B. Lumber and Plywood: Unless noted otherwise, comply with requirements in Division 06
   1. Section “Rough Carpentry.”

2.02 TEMPORARY FACILITIES

A. General: Maintain all temporary facilities and controls necessary for the performance of the Work. Comply with all applicable codes and regulations of authorities having jurisdiction; obtain permits as required. Locate and install all facilities and controls where acceptable to the local authorities having jurisdiction, utility, and Owner and remove same and terminate, in a manner suitable to the utility owner, at completion of the Work or when otherwise directed. Pay all costs associated with the provision and maintenance of temporary facilities and controls including power, water, and fuel (if any) consumed until Substantial Completion.

B. Storage and Staging Areas: The Contractor shall be responsible for coordination, protection, and safekeeping of products stored on site under this Contract including soil cut and fill. Refer to Contract Documents for any defined staging areas.
   1. Move stored products that interfere with construction of the Work, or operations of the
   2. Owner or separate contractors.
   3. Obtain any pay for use of additional storage or staging areas as needed for the Work.
   4. Provide storage areas sized to storage requirements for products of individual Sections, allowing for access and orderly maintenance and inspection of products.

2.03 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required b y locations and classes of fire exposures.

B. Heating Equipment: Unless Owner authorizes use of permanent heating system, provide UL Listed or FM approved vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
   1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
   2. Heating Units: Listed and labeled for type of fuel being consumed, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

2.04 PART 3 - EXECUTION (NOT USED)

END OF SECTION 015000

SECTION 01 6000
PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. General product requirements.

B. Transportation, handling, storage and protection.

C. Product option requirements.

D. Substitution limitations.

1.02 PRODUCT DELIVERY REQUIREMENTS

A. A. Contractor or the Contractor's authorized representative must be present to accept delivery of all equipment and material shipments. The Owner will not knowingly accept, unload or store anything delivered to the site for the Contractor's use. Inadvertent acceptance of delivered items by any representative or employee of the Owner shall not constitute acceptance or responsibility for any of the materials or equipment. It shall be the Contractor's responsibility to assume liability for equipment or material delivered to the job site.

1.03 PRODUCT STORAGE AND HANDLING REQUIREMENTS

A. Contractor shall confine equipment, apparatus, storage of materials and operations to limits indicated on the drawings or agreed to by the Owner at the pre-construction meeting. Contractor shall not bring material onto the site until they are needed for the progress of the work.

B. The storage of materials on the grounds shall be in strict accordance with the instructions stated within the technical sections. Storage of materials on the roof shall at no time exceed the design carrying capacity of the structural system.

C. All hazardous materials, including motor fuels, shall be properly handled and contained to prevent spills or other releases. The Contractor shall develop and maintain a contingency plan to provide emergency response, containment, and cleanup of spills of hazardous materials resulting from contract activities. All spills and releases shall be reported to the Owner.

1.04 RELATED REQUIREMENTS

A. Section 01 4000 - Quality Requirements: Product quality monitoring.

1.05 SUBMITTALS

A. Proposed Products List: Submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
   1. Submit within 15 days after date of Notice to Proceed.
   2. For products specified only by reference standards, list applicable reference standards.

B. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

C. Sheet metal fabrication submittals are to be submitted for review and comment prior to order submission and fabrication

PART 2 PRODUCTS

2.01 EXISTING PRODUCTS

A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by Contract Documents.

B. Existing materials and equipment indicated to be removed, but not to be re-used, relocated, reinstalled, delivered to the Owner, or otherwise indicated as to remain the property of the Owner, become the property of the Contractor; remove from site.

2.02 NEW PRODUCTS

A. Provide new products unless specifically required or permitted by Contract Documents.

B. Use of products having any of the following characteristics is not permitted:
   1. Made outside the United States, its territories, Canada, or Mexico.

C. Where other criteria are met, Contractor shall give preference to products that:
   1. Have longer documented life span under normal use.
   2. Are made of recyclable materials.

2.03 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.

B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.

C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

PART 3 EXECUTION

3.01 SUBSTITUTION LIMITATIONS

A. Instructions to Bidders specifies time restrictions for submitting requests for substitutions during the bidding period and the documents required.

B. Substitutions will be considered when a product, through no fault of the Contractor, becomes unavailable or unsuitable due to regulatory change.

C. A request for substitution constitutes a representation that the submitter:
   1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
   2. Agrees to provide the same warranty for the substitution as for the specified product.
   3. Agrees to coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner.
   4. Waives claims for additional costs or time extension that may subsequently become apparent.

D. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.

E. Substitution Submittal Procedure (after contract award):
   1. Designer will notify Contractor in writing of decision to accept or reject request.

3.02 TRANSPORTATION AND HANDLING

A. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.

B. Transport and handle products in accordance with manufacturer's instructions.

C. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.

D. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.

E. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.

F. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.03 STORAGE AND PROTECTION

A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication. See Section 01 7419.

B. Store and protect products in accordance with manufacturers' instructions.

C. Store with seals and labels intact and legible.

D. Store sensitive products in weathertight, climate-controlled enclosures in an environment favorable to product.

E. For exterior storage of fabricated products, place on sloped supports above ground.

F. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.

G. Comply with manufacturer's warranty conditions, if any.

H. Do not store products directly on the ground.

I. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

J. Prevent contact with material that may cause corrosion, discoloration, or staining.

K. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION

SECTION 01 7000
EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Examination, preparation, and general installation procedures.

B. Requirements for new roof system installation including OEM roof maintenance, scheduled roof cleanings, inspections, warranties and, certification of structural modifications or alterations. .

C. Pre-installation meetings.

D. Cutting and patching.

E. Post construction cleaning and protection.

F. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.

G. General requirements for maintenance service.

1.02 RELATED REQUIREMENTS

A. Section 01 3000 - Project Administrative Requirements: Submittals procedures, Electronic document submittal service.

B. Section 01 4000 - Quality Requirements: Testing and inspection procedures.

C. Section 01 7800 - Closeout Submittals: Project record documents, operation and maintenance data, warranties, and bonds.

1.03 SUBMITTALS

A. See Section 01 3000 - Project Administrative Requirements, for submittal procedures.

B. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
   1. Structural integrity of any element of Project.
   2. Integrity of weather exposed or moisture resistant element.
   3. Efficiency, maintenance, or safety of any operational element.
   4. Visual qualities of sight exposed elements.
   5. Work of Owner or separate Contractor.
   6. Include in request:
      a. Identification of Project.
      b. Location and description of affected work.
      c. Necessity for cutting or alteration.
      d. Description of proposed work and products to be used.
      e. Date and time work will be executed.

1.04 QUALIFICATIONS

A. For demolition work, employ a firm specializing in the type of work required.

1.05 PROJECT CONDITIONS

A. Ventilate enclosed or confined areas adjacent air intakes to assist cure of materials, and to prevent accumulation of dust, fumes, vapors, or gases.

B. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.

C. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.

1.06 COORDINATION

A. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

B. Coordinate completion and clean-up of work of separate sections.

C. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

1.07 CLOSEOUT SUBMITTALS

A. Upon "Substantial Completion" of project, the Contractor shall submit the below listed item to the Consultant for presentation to the Owner.
   1. Twenty (20) year Manufacturer's no dollar limit (NDL) system warranty, with a separate 30 year Material Only warranty.
   2. Twenty (20) year sheet metal Manufacturer's finish warranty.
   3. Two (5) year Contractor's material and labor warranty.
   4. Waste manifests (for ACM), if applicable.
   5. Contractor’s as-built drawings showing changes to the contract documents, if applicable.
   6. Signed Manufacturer's Warranty Inspection punch list, indicating completion of any outstanding items.
   7. Such other written guarantees or warranties, as required by the technical sections.
   8. Final Waivers of Lien.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

A. New Materials: As specified in product sections; match existing products and work for patching and extending work.

B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Contractor is responsible for documenting all existing conditions to capture any pre-construction damages that need to be acknowledged by DGS. Absence of said documentation will not absolve Contractor of responsibility for required repairs to items listed in the project punch list(s). Start of work means acceptance of existing conditions.

B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.

C. Examine and verify specific conditions described in individual specification sections.

D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.

E. Verify that utility services are available, of the correct characteristics, and in the correct locations.

F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.

B. Seal cracks or openings of substrate prior to applying next material or substance.

C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 PREINSTALLATION MEETINGS

A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.

B. Require attendance of parties directly affecting, or affected by, work of the specific section.

C. Notify Designer four days in advance of meeting date.

D. Prepare agenda and preside at meeting:
   1. Review conditions of examination, preparation and installation procedures.
   2. Review coordination with related work.

E. Contractor is to record minutes and distribute copies within two days after meeting to participants, with two copies to Designer, Owner, participants, and those affected by decisions made.

3.04 GENERAL INSTALLATION REQUIREMENTS

A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.

B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.

C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.

D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.

E. Make neat transitions between different surfaces, maintaining texture and appearance.

3.05 ALTERATIONS

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
   1. Verify that construction and utility arrangements are as indicated.
   2. Report discrepancies to Designer before disturbing existing installation.
   3. Beginning of alterations work constitutes acceptance of existing conditions.

B. Maintain a weatherproof roof on the exterior building enclosure.
   1. Where openings in exterior enclosure exist, provide construction to make exterior enclosure weatherproof.
   2. Insulate existing ducts or pipes that are exposed to outdoor ambient temperatures by alterations work.

C. Remove existing work as indicated and as required to accomplish new work.
   1. Remove rotted wood, corroded metals, and deteriorated masonry and concrete; replace with new construction specified.
   2. Remove no more roofing and weatherproofing than can be made watertight the same day.
   3. Remove items indicated on drawings or addendum sketches
   4. Relocate items indicated on drawings or addendum sketches.
   5. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new finish; remove existing finish if necessary for successful application of new finish.
   6. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.

D. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, Telecommunications, and lightning protection system): Remove, relocate, and extend existing systems to accommodate new construction.

1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components; if necessary, modify installation to allow access or provide access panel.
2. Where existing systems or equipment are not active and Contract Documents require reactivation, put back into operational condition; repair supply, distribution, and equipment as required.
3. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
    a. Disable existing systems only to make switchovers and connections; minimize duration of outages.
    b. Provide temporary connections as required to maintain existing systems in service.
4. Verify that abandoned services serve only abandoned facilities.
5. Remove abandoned pipe, ducts, conduits, and equipment , including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification; patch holes left by removal using materials specified for new construction.

E. Protect existing work to remain.
1. Prevent movement of structure; provide shoring and bracing if necessary.
2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
3. Repair adjacent construction and finishes damaged during removal work.

F. Adapt existing work to fit new work: Make as neat and smooth transition as possible.
1. Where a change of plane of 3/16" inch (4.75 mm) or more occurs in existing work, infill with manufacturers' approved insulation or "fill" materials to make transition acceptable for a warrantable installation.

G. Patching: Where the existing surface is not indicated to be refinished, patch to match the surface finish that existed prior to cutting. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.

H. Refinish existing surfaces as indicated:
1. Where interior spaces are indicated to be refinished due to alterations or modifications to work specified in other sections, refinish all visible existing surfaces to remain to the specified condition for each material, with a neat transition to adjacent finishes.
2. If mechanical or electrical work is exposed accidentally during the work, re-cover and refinish to match. All final alterations must be reviewed and approved by Consultant prior to commencement of closing or finishing the subject area(s)

I. Clean existing systems and equipment.

J. Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.

K. Do not begin new construction in alterations areas before demolition is complete.

L. Comply with all other applicable requirements of this section.

3.06 CUTTING AND PATCHING

A. Whenever possible, execute the work by methods that avoid cutting or patching.

B. See Alterations article above for additional requirements.

C. Perform whatever cutting and patching is necessary to:
1. Complete the work.
2. Fit products together to integrate with other work.
3. Provide openings for penetration of mechanical, electrical, and other services.
4. Match work that has been cut to adjacent work.
5. Repair areas adjacent to cuts to required condition.

6. Repair new work damaged by subsequent work.
7. Remove samples of installed work for testing when requested.
8. Remove and replace defective and non-complying work.

D. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.

E. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

F. Restore work with new products, equal or better than existing, in accordance with requirements of Contract Documents.

G. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces. Apply fire stop sealant to any roof deck penetration revealed upon demolition of the existing roof system,

H. Patching:
1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
2. Match color, texture, and appearance.
3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate, to an equal or better condition, prior to repairing finish.

3.07 PROGRESS CLEANING

A. Maintain all roof areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.08 PROTECTION OF INSTALLED WORK

A. Protect installed work from damage by construction operations.

B. Provide special protection where specified in individual specification sections.

C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

G. Prohibit traffic from landscaped areas, unless specifically approved by Owner, in writing.

H. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

3.09 ADJUSTING

A. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.10 FINAL CLEANING

A. Execute final cleaning prior to final project assessment.

B. Use cleaning materials that are nonhazardous.

C. If interior areas were affected by this scope of work or additional work contracted by adjustments to the contract, clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.

D. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.

E. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.

F. Clean debris from roofs, gutters, downspouts, scuppers, overflow drains, area drains, and drainage systems.

G. Clean site; sweep paved areas, rake clean landscaped surfaces.

H. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.11 CLOSEOUT PROCEDURES

A. Make submittals that are required by governing or other authorities.
   1. Provide copies to Designer and Owner.

B. Notify Designer when work is considered ready for Designer's Substantial Completion inspection.
   1. Submit written certification containing Contractor's Correction Punch List, that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Designer's Substantial Completion inspection.

C. Conduct Substantial Completion inspection and create Final Correction Punch List containing Designer's and Contractor's comprehensive list of items identified to be completed or corrected and submit to Designer.

D. Notify Designer when work is considered finally complete and ready for Designer's Substantial Completion final inspection.

E. Complete items of work determined by Designer listed in executed Certificate of Substantial Completion.

3.12 MAINTENANCE

A. Provide service and maintenance of components indicated in specification sections.

B. Maintenance Period: As indicated in specification sections or, if not indicated, not less than 5 years from the Date of Substantial Completion or the length of the specified warranty, whichever is longer.

C. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.

D. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.

E. Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of the Owner.

END OF SECTION

SECTION 01 7800
CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Project Record Documents.

B. Warranties and bonds.

1.02 RELATED REQUIREMENTS

A. Section 01 3000 - Project Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.

B. Section 01 7000 - Execution and Closeout Requirements: Contract closeout procedures.

C. Individual Product Sections: Specific requirements for operation and maintenance data.

D. Individual Product Sections: Warranties required for specific products or Work.

1.03 SUBMITTALS

A. Project Record Documents: Submit documents to Designer with claim for final Application for Payment.

B. Operation and Maintenance Data:
   1. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Designer comments. Revise content of all document sets as required prior to final submission.

C. Warranties and Bonds:
   1. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
   2. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of the following record documents; record actual revisions to the Work:
   1. Drawings.
   2. Specifications.
   3. Addenda.
   4. Change Orders and other modifications to the Contract.
   5. Reviewed shop drawings, product data, and samples.

B. Ensure entries are complete and accurate, enabling future reference by Owner.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress.

E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
   1. Manufacturer's name and product model and number.
   2. Product substitutions or alternates utilized.
   3. Changes made by Addenda and modifications.

F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:

1. As-built drawings to contain all field and design changes not limited to; the specified roof system, perimeter architectural metal system, pre-manufactured supports, MEP modifications or alterations, masonry and/or structural alterations or modifications.
2. Field changes of dimension .and detail.
3. Details not on original Contract drawings.

3.02 WARRANTIES AND BONDS

A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.

B. Verify that documents are in proper form, contain full information, and are notarized.

C. Co-execute submittals when required.

D. Retain warranties and bonds until time specified for submittal.

E. Include originals of each in operation and maintenance manuals, indexed separately on Table of Contents.

F. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of product or work item.

END OF SECTION

SECTION 02 4100
DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Selective demolition of building elements for alteration purposes.

B. Low Sloped Roof Replacement - This project includes specified roof upgrades, coating and replacement options to the existing modified bitumen roof systems on Roof Areas B, C, D, L, and O; The standing seam metal panel roof systems located on Roof Areas A, F, I and K; and the IRMA paver assemblies over a modified bitumen roof system on Roof Areas M and N.

1. Clean the existing roof drains including, but not limited to; drain basket, drain clamping ring and accessories and cast drain bowl.
2. Remove all discarded roof top equipment to be identified in the pre-bid site walk.
3. Inspect the existing concrete deck and wood nailers for repair and/or replacement. Contractor will be required to document all repair/ replacements in the submitted daily reports.
4. Disconnect and raise roof top units, duct work and supporting structures where indicated and/or as needed to provide the minimum vertical flashing height for a warranted installation.
5. All abandoned roof penetrations, equipment pads and curbs will be identified to be removed, decked-in or capped at the preference of The Hershey Co. Facility Designers.
6. Verify use of telecommunication antenna(s). Make all necessary arrangements for coordination of interruption on services.
7. Provide new counterflashing and raise at all locations where the finished roof flashing height is less than 8” (inches).
8. Provide new condensate and RTU support stands if shown on the drawings.
9. Provide new treated wood blocking at perimeter edges, expansion joints, walls and penetrations.
10. Provide tapered insulation, flat thermal insulation, thermal barriers and cover boards as specified.
11. Provide perimeter and penetration sheet metal flashings and counterflashings, and miscellaneous sheet metal fabrications.
12. Provide metal fan curbs, roof top unit curbs, conduit and duct supports as necessary.
13. Remove existing failed sealant and components at all building joints adjacent new roof installations. Provide new backer rod and sealant where indicated and as required at all building expansion joints above new roof installations.
14. Disconnect and reconnect existing mechanical/electrical components to restore proper operation to rooftop equipment following roof top unit modifications to accommodate the new roof installation.
15. Provide self-adhered vapor retarder. Contractor to perform peel / pull test as recommended by roof system manufacturer to fulfill wind uplift requirements. Installation of a new roof system including fire barrier and SA vapor barrier over all metal deck areas, new SA vapor barrier over poured in place concrete decks, new tapered and flat isocyanyurate roof insulation set in low rise foam to provide positive slope to the roof drains.
16. Provide tapered polyisocyanurate insulation system, adhered in cold process adhesive or low rise foam in accordance with manufacturers specifications to meet local wind up-lift codes.
17. Provide specified cover board insulation, adhere in low rise foam adhesive in accordance with manufacturers specifications to meet local wind up-lift codes.
18. All perimeter edge metal will be manufactured and supplied in compliance with the roofing manufacturers' special project warranty to incorporate a 30 year finish warranty with a limited 120 mph wind warranty.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

A. 29 CFR 1926 - U.S. Occupational Safety and Health Standards current edition.

1.04 SUBMITTALS

A. Site Plan: Showing:
   1. Areas for temporary construction and field offices.
   2. Scheduled demolition sections with dates and estimated area quantities.
   3. Roof access and egress locations.
   4. Predemolition Videotapes: Show existing conditions of adjoining construction and sit e improvements, including finish surfaces, that might be misconstrued as damage caused by selective demolition operations. Submit before Work begins.

B. Demolition Plan: Submit demolition plan as specified by OSHA and local authorities.
   1. Indicate extent of demolition, removal sequence, bracing and shoring, and location and construction of barricades and fences.
   2. Proposed locations of chutes, dumpsters, cranes, hoists, and other temporary equipment or facilities required for demolition work.
   3. Proposed methods for interior and exterior protection and clean-up during removal and re-roofing operations.
   4. Include a Site Specific JHA / AHA and summary of safety procedures.

C. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

1.05 QUALITY ASSURANCE

A. Demolition Firm Qualifications: Company specializing in the type of work required.
   1. MEP Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.
   2. Standards: Comply with ANSI A10.6 and NFPA 241; OSHA, 29 CFR 1926.1101; EPA, NESHAP 40 CFR, Part 60, DOT 49 CFR, Parts 171 and 172.
   3. Comply with State and Local requirements.

PART 3 EXECUTION

2.01 LOW SLOPE ROOF SCOPE

A. This project includes specified roof upgrades, coating and replacement options to the existing modified bitumen roof systems on Roof Areas B, C, D, L, and O; The standing seam metal panel roof systems located on Roof Areas A, F, I and K; and the IRMA paver assemblies over a modified bitumen roof system on Roof Areas M and N.

B. Remove items indicated, for roofing, sheet metal trim and roof top equipment to be marked or identified for removal.

C. Conveyances: Buggies or wheelbarrows used on roofs to transport removed debris to chutes or crane apparatus location shall be of size and design to prevent damage to deck and structure.

D. Chutes: Provide enclosed chutes for debris transfer from roof areas at height of 10-feet or more. Do not allow debris to spill from bottom of chute directly onto ground. Direct chutes into approved construction debris container (dumpster). Control and contain dust and noise from falling debris by use of breaks in vertical alignment of chute or tarps covering dumpster. Provide hose with nozzle near chute outlet to wet debris, as necessary, for dust control.

E. Hoists/Cranes: Provide hoists or cranes to remove debris and transport materials to and from roof. Secure materials to prevent loss during lifting. Place debris transported from roof directly in approved construction debris containers. Provide proper protection of wall areas for entire height directly adjacent to or under area of hoisting.

F. Use of “bobcat” type removal equipment on roof is prohibited.

G. Mechanical cutting equipment: Roof cutting equipment shall be equipped with operable blade depth setting mechanisms to control cutting depth of blade and prevent damage to structural deck during cutting operations.

2.02 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
   1. Obtain all required permits.
   2. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
   3. Provide, erect, and maintain temporary barriers and security devices.
   4. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
   5. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
   6. Do not close or obstruct roadways or sidewalks without permit.
   7. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
   8. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.

B. Do not begin removal until receipt of notification to proceed from Owner.

C. During removal of existing roofing and related materials, report to Owner areas of damaged, deteriorated, or otherwise unsuitable structural deck or framing materials exposed during work. Do not cover or remove unacceptable deck or framing areas until reviewed by Owner. Provide temporary protection to areas in question. Use care in removal of membrane flashings and decking to prevent damage to substrates.

D. Do not remove more material than can be replaced in one day with the new specified roof system.

E. Set cutting blades of mechanical cutting equipment to proper depth to prevent scoring or damage to structural deck. Use care in removal of membrane flashing to prevent damage to substrates.

F. Remove roof materials down to structural deck. Sweep, clean and vacuum debris from deck surfaces, including flutes of steel deck.

G. Control visible emissions during roof removal and at dumpster level.

H. Take precautions to prevent water on or within existing roof system from migrating into building or new roof system.

I. Protect existing structures and other elements that are not to be removed.
   1. Stop work immediately if adjacent structures appear to be in danger.

J. If hazardous materials are discovered during removal operations, stop work and notify Designer and Owner; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury.

K. Hazardous Materials: Comply with 29 CFR 1926 and state and local regulations.

2.03 EXISTING UTILITIES

A. Protect existing utilities to remain from damage.

B. Do not disrupt public utilities without permit from Owner having jurisdiction.

C. This project includes the removal of the existing solar array for off-site storage and re-installation after the roof replacement has been completed. Protection of the solar panels will be the sole responsibility of the contractor for proper re-installation to a productive certified working condition.

D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.

E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.

2.04 SELECTIVE DEMOLITION FOR ALTERATIONS

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
   1. Verify that construction and utility arrangements are as indicated.
   2. Report discrepancies to Designer before disturbing existing installation.
   3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.

B. Maintain existing roof system in a weatherproof/watertight condition during the execution of this contract. No more roofing materials will be allowed to be removed than can be replaced and made watertight within the same work day.

C. Remove existing work as indicated and as required to accomplish new work.
   1. Remove deteriorated wood, corroded metals, compromised roof deck and deteriorated masonry and concrete; replace with new construction specified.
   2. Contractor will be required to document all repair/replacements in the submitted daily reports.
   3. Remove items indicated on drawings.

D. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove existing systems and equipment as indicated.
   1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components.
   2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
   3. Verify that abandoned services serve only abandoned facilities before removal.
   4. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification.

E. Protect existing work to remain.
   1. Prevent movement of structure; provide shoring and bracing if necessary.
   2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
   3. Repair adjacent construction and finishes damaged during removal work.
   4. Patch as specified for patching new work.

2.05 DEBRIS AND WASTE REMOVAL

A. Remove debris, junk, and trash from site, daily.

B. Leave site in clean condition, ready for subsequent work.

C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

SECTION 03 0100
MAINTENANCE OF CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Cleaning of existing concrete surfaces.

B. Repair of exposed structural, shrinkage, and settlement cracks.

C. Resurfacing of concrete surfaces having spalled areas and other damage.

1.02 RELATED REQUIREMENTS

A. Section 03 3000 - Cast-in-Place Concrete: Finishing of concrete surface to tolerance; floating, troweling, and similar operations; curing.

B. Section 03 4000 - Precast Concrete Roof Deck: Finishing of concrete surface to tolerance; floating, troweling, and similar operations; curing.

1.03 PRICE AND PAYMENT PROCEDURES

A. See Section 00 4100 - Bid Form, for additional unit price schedule.

B. Repair Surface: By the sf. (square foot). Includes surface preparation, repair, finishing.

1.04 REFERENCE STANDARDS

A. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement 2020.

B. ASTM A767/A767M - Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement 2016.

C. ASTM A775/A775M - Standard Specification for Epoxy-Coated Steel Reinforcing Bars 2017.

D. ASTM A996/A996M - Standard Specification for Rail-Steel and Axle-Steel Deformed Bars for Concrete Reinforcement 2016.

E. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete 2018a.

F. ASTM C33/C33M - Standard Specification for Concrete Aggregates 2018.

G. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens 2021.

H. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens) 2020b.

I. ASTM C150/C150M - Standard Specification for Portland Cement 2020.

J. ASTM C404 - Standard Specification for Aggregates for Masonry Grout 2018.

K. ASTM C928/C928M - Standard Specification for Packaged, Dry, Rapid-Hardening Cementitious Materials for Concrete Repairs 2020a.

L. ASTM C1059/C1059M - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete 2021.

1.05 SUBMITTALS

A. Product Data: Indicate product standards, physical and chemical characteristics, technical specifications, limitations, maintenance instructions, and general recommendations regarding each material.

1.06 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing work of the type specified and with minimum of 5 years of documented experience.

1.07 MOCK-UP(S)

A. Test each type of maintenance procedure required on each type of existing construction, to determine the most appropriate procedures to use and as a record of expected results.

B. Horizontal Surface Repair: Total of 10 foot (3 m) square area, demonstrating each type of repair.

C. Where color or texture matching is required, first prepare a small size sample on cementitious board.

D. Locate mock-up(s) where directed.

E. Re-work mock-up(s) until satisfactory to Designer.

F. Satisfactory mock-up(s) may remain as part of the work.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Comply with manufacturers' instructions for storage, shelf life limitations, and handling of products.

PART 2 PRODUCTS

2.01 CLEANING MATERIALS

A. Degreaser:
   1. Manufacturers:
      a. L&M Construction Chemicals, Inc, a subsidiary of Laticrete International, Inc; CITREX: www.lmcc.com/#sle.
      b. SpecChem, LLC; Orange Peel-Citrus Cleaner: www.specchemllc.com/#sle.
      c. W. R. Meadows, Inc; [_____]: www.wrmeadows.com/#sle.

B. Detergent: Non-ionic detergent.

2.02 CEMENTITIOUS PATCHING AND REPAIR MATERIALS

A. Manufacturers:
   1. BASF Construction Chemicals-Building Systems: www.buildingsystems.basf.com.
   2. Dayton Superior Corporation; [_____]: www.daytonsuperior.com/#sle.
   3. Kaufman Products Inc: www.kaufmanproducts.net/#sle.
   4. Prospec, an Oldcastle brand: www.prospec.com/#sle.
   5. The QUIKRETE Companies: www.quikrete.com/#sle.
   6. SpecChem, LLC: www.specchemllc.com/#sle.
   7. W. R. Meadows, Inc: www.wrmeadows.com/#sle.
   8. Substitutions: See Section 01 6000 - Product Requirements.

B. Bonding Slurry: Water-based latex admixture complying with ASTM C1059/C1059M, combined with Portland cement and sand in accordance with admixture manufacturer's instructions.
   1. Admixture Manufacturers:
      a. Dayton Superior Corporation; [_____]: www.daytonsuperior.com/#sle.
      b. The QUIKRETE Companies; QUIKRETE® Concrete Bonding Adhesive: www.quikrete.com/#sle.
      c. SpecChem, LLC; Strong Bond - Acrylic Bonder: www.specchemllc.com/#sle.
      d. W. R. Meadows, Inc; Acry-lok: www.wrmeadows.com/#sle.
      e. Substitutions: See Section 01 6000 - Product Requirements.

C. Cementitious Resurfacing Mortar: One- or two-component, factory-mixed, polymer-modified cementitious mortar designed for continuous thin-coat application.
   1. Mixed with water or latex type bonding agent in proportions as recommended by manufacturer.
   2. Integral corrosion inhibitor.
   3. Recommended Thickness: Feather edge to 1/8 inch (Feather edge to 3 mm).
   4. Color: Gray.

5. Manufacturers:
    a. Dayton Superior Corporation; Recrete 20 Minute: www.daytonsuperior.com/#sle.
    b. Kaufman Products Inc; Patchwell: www.kaufmanproducts.net/#sle.
    c. The QUIKRETE Companies; QUIKRETE® Concrete Resurfacer: www.quikrete.com/#sle.
    d. SpecChem, LLC: Duo Patch: www.specchemllc.com/#sle.
    e. W. R. Meadows, Inc; Meadow-Patch T2: www.wrmeadows.com/#sle.
    f. Substitutions: See Section 01 6000 - Product Requirements.

D. Cementitious Repair Mortar, Trowel Grade: One- or two-component, factory-mixed, polymer-modified cementitious mortar.
1. In-place material resistant to freeze/thaw conditions.
2. Mixed with water or latex type bonding agent in proportions as recommended by manufacturer.
3. Dry Material: Complies with ASTM C928/C928M.
4. Integral corrosion inhibitor.
5. Products:
    a. Dayton Superior Corporation; Special Patch: www.daytonsuperior.com/#sle.
    b. Kaufman Products Inc; Patchwell V/O: www.kaufmanproducts.net/#sle.
    c. The QUIKRETE Companies; QUIKRETE® FastSet Repair Mortar: www.quikrete.com/#sle.
    d. SpecChem, LLC; Duo Patch: www.specchemllc.com/#sle.

E. Pre-Blended Concrete Mix for Small Projects: Construction-grade Portland cement uniformly blended with aggregates and other approved concrete ingredients, requiring only the addition of water.
1. Compressive Strength: 4000 pounds per square inch (27.6 MPa), minimum, at 28 days, when tested in accordance with ASTM C39/C39M.
2. Manufacturers:
    a. The QUIKRETE Companies; QUIKRETE® Fast Set Concrete Mix: www.quikrete.com/#sle.

2.03 ACCESSORIES

A. Anchoring Adhesive: Self-leveling or non-sag as applicable.
1. Self-Leveling Epoxy Products:
2. Non-Sag Epoxy Products:

B. Portland Cement: ASTM C150/C150M, Type I, grey.

C. Sand: ASTM C33/C33M or ASTM C404; uniformly graded, clean.

D. Water: Clean and potable.

E. Reinforcing Steel: Deformed bars, ASTM A996/A996M Grade 40 (280), Type A.
1. Epoxy coated in accordance with ASTM A775/A775M.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are ready to receive work.

B. Beginning of installation means acceptance of substrate.

3.02 CLEANING EXISTING CONCRETE

A. Provide enclosures, barricades, and other temporary construction as required to protect adjacent work from damage.

B. Clean concrete surfaces of dirt or other contamination using the gentlest method that is effective.

1. Try the gentlest method first, then, if not clean enough, use a less gentle method taking care to watch for impending damage.
2. Clean out cracks and voids using same methods.

C. The following are acceptable cleaning methods, in order from gentlest to less gentle:
1. Water washing using low-pressure, maximum of 100 psi, and, if necessary, brushes with natural or synthetic bristles.
2. Increasing the water washing pressure to maximum of 400 psi.
3. Adding detergent to washing water; with final water rinse to remove residual detergent.
4. Steam-generated low-pressure hot-water washing.

3.03 CONCRETE SURFACE REPAIR USING CEMENTITIOUS MATERIALS

A. Clean concrete surfaces, cracks, and joints of dirt, laitance, corrosion, and other contamination using method(s) specified above and allow to dry.

B. Apply coating of bonding agent to entire concrete surface to be repaired.

C. Fill voids with cementitious mortar flush with surface.

D. Apply repair mortar by steel trowel to a minimum thickness of 1/4 inch (6 mm) over entire surface, terminating at a vertical change in plane on all sides.

E. Trowel finish to match adjacent concrete surfaces.

END OF SECTION

SECTION 05 3150
STEEL DECK REPAIR/REPLACEMENT

PART 1 - GENERAL

1.01 RELATED SECTIONS

A. The provisions of the Contract, the General Conditions, the Supplementary Conditions, and other miscellaneous assemblies as indicated in Division 1 Specification Sections, apply to the work in this section.

B. Section 06 1000 – Rough Carpentry.

C. Section 07 1500 - Vapor Retarder

1.02 SUMMARY

A. Work includes, but necessarily limited:
   1. Repair or Replacement of existing damaged or corroded metal roof decking with new metal roof decking as needed.
   2. Contractor will include in his/her Base Bid 100sf of metal deck repair based on prepping and priming with Red Oxide Primer.
   3. Contractor is to inspect the existing conditions of the deck surface, document and report any deficiencies that may affect the sound installation of the new roof system. Any changes to the scope of work will be corrected in accordance with Section 012100 - Allowances and the RFI process for payment.
   4. The building and site will be occupied and in use during the time of construction. The Contractor shall take all precautions to create as little disruption as possible during the course of the work.
   5. The Contractor shall utilize skilled and experienced specialty workers to install the work. Experienced trade workers shall be utilized for all aspects of the work.
   6. Contractor will be responsible to replace interior deck substrate and surrounding space to match the existing condition prior to construction including, but not limited to; state of cleanliness, painted finish, insulation, fireproofing, and any structures attached to the existing deck.

1.03 REFERENCES

A. Perform work in accordance with the recommendations of the Steel Deck Institute.

B. All steel deck repair and replacement shall conform to Factory Mutual Loss Prevention Data Sheet 1-28 and meet FM wind uplift requirements.

1.04 SUBMITTALS

A. Product Data:
   1. Manufactured Deck Panels.
   2. Finish.

1.05 QUALITY ASSURANCE

A. Qualifications of Workmen
   1. Provide sufficient workmen and supervisors who shall be present at all times during execution of this portion of the work and who shall be thoroughly familiar with the type of contraction involved and the materials and techniques specified.
   2. The Contractor shall be responsible for the correctness of detailing, fabrication and correct fit of all cold formed metal elements. Substitution of sections or modification of connection details will not be accepted unless approved by the Designer.

B. Rejections
   1. In the acceptance or rejection of the work, The Owner will make no allowance for lack of skill on the part of workmen.

1.06 PRECONSTRUCITON CONFERENCE

1.07 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Coordinate deliveries with Designer.

B. Keep all materials clearly identified with identifying marks legible. Keep damaged material clearly identified as damaged and stored separately to prevent its inadvertent use.

C. Do not allow installation of damaged or otherwise non-complying material.

D. Make necessary damage repairs and replacements at no additional cost to the Owner.

1.08 SEQUENCING AND SCHEDULING

A. Coordinate roof demolition and roofing replacement work in a manner for deck replacement to proceed unimpeded, and to ensure the facility is watertight in the event of rain or threat of rain.

PART 2PRODUCTS

2.01 STEEL ROOF DECK

A. Steel roof deck shall be a minimum 22 gauge galvanized steel, profile to match existing. Roof deck shall have a minimum yield strength of 33,000 psi, and a maximum sheet length of 42'-0".

B. Steel roof deck shall extend over three or more spans.

C. Steel roof deck shall be as manufactured by U.S. Steel, Vulcraft, Wheeling, or approved equal.

D. Metal screws shall be a self-drilling metal type, min. size 1/4" - #14 x 3/4" cadmium plated screw.

2.02 PATCHING MATERIALS

A. Metal screws shall be self-drilling metal type, minimum size 1/4 - #14 x 3/4" cadmium plated screw.

B. Filler material (small hole or damage repair) shall be 20 gauge galvanized steel unless specifically shown on the detail drawings.

PART 3EXECUTION

3.01 DEMOLITION

A. Cut out damaged sections of decking less than 18" in any dimension where rust has penetrated into metal more than 3 mils or where existing decking exhibits pitting or rust perforations. Deteriorated or damaged sections of decking greater than 18" in any dimension shall be removed and replaced with new decking.

B. Contractor is to provide protection to building interior, contents, and occupants to assure that debris does not enter building and to prevent harm to occupants.

3.02 SMALL REPAIR INSTALLATION

A. Filler material shall be fastened to existing steel deck at 6" centers using metal screws. Overlap existing steel deck by a minimum of 6" in each direction.

B. Cut and neatly fit filler material around roof top projections.

C. Verify that all existing roof deck is securely fastened to supporting structural members.

3.03 REPLACEMENT INSTALLATION

A. Steel deck units shall be anchored to supporting members, including bearing walls, to provide lateral stability to the top flange of the supporting structural members. New deck units shall be secured to a minimum of three bar joists.

B. Steel deck units shall be anchored to supporting members to resist the gross uplift force of 45 pounds per square foot minimum.

C. All deck shall be securely fastened to supporting structural members by the use of self-drilling metal screws.

D. All new metal roof decking shall be attached at a maximum of 12" O.C. at ends and intermediate supports of each deck unit and 6" O.C. at ends located in the perimeter and corner areas as defined on the drawings.

E. For spans 6 feet, or less, side laps shall be fastened together at a minimum of 12" O.C.; and for spans greater than 6 feet, side laps shall be fastened together at a minimum of 24" O.C.

F. End laps shall be overlapped a minimum of four (4) inches.

G. Ensure that fasteners do not penetrate conduit or miscellaneous piping located at bottom of the decking.

H. Place deck in straight alignment for entire length of run with adjoining deck units.

I. Place deck units flat and square, secured to adjacent framing without warp or excessive deflection.

J. Cut and neatly fit deck around roof top projections.

K. Provide approved structural supports at all penetrations larger than 6" on any side.

3.04 RUST OR CORROSION REPAIRS

A. Where corrosion or rust has not penetrated more than 3 mils into steel decking, perform all preparation and cleaning procedures in strict accordance with the paint manufacturer's recommendations.

B. Surface rust shall be removed by hand or mechanical brushing.

3.05 COORDINATION

A. Coordinate all work closely with the Owner's representative.

B. Work cannot disrupt the Owner's activities. Care shall be taken that no work is done without the Owner's approval on a daily basis.

3.06 CLEAN UP

A. Clean building interior where soiled by work of this section on a daily basis.

B. At completion of all deck replacement work, remove all construction debris and equipment from job site.

3.07 VERIFICATION

A. Upon completion of the installation in each area, visually inspect and verify that all components
   1. are complete and properly installed. Verify that fasteners are properly located and securely anchored.

- END OF SECTION -

SECTION 06 1000
ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wood blocking as related to modifications or alterations to existing roof-mounted curbs.

B. Perimeter flat roof wood nailers to be added to the height of the tapered insulation.

C. Preservative treated wood materials as specified.

D. Concealed wood blocking, nailers, and supports.

E. Refastening existing wood nailers and/or plywood in accordance with the specified standards, where existing nailers and/or plywood are suitable for reuse.

1.02 RELATED REQUIREMENTS

A. Section 07 6200 - SHEET METAL FLASHING AND TRIM: Step Flashing, Counterflashing, Valleys, etc....

1.03 REFERENCE STANDARDS

A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware 2016a.

B. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing 2017.

C. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board 2020.

D. ASTM C1396/C1396M - Standard Specification for Gypsum Board 2017.

E. ICC (IBC) - International Building Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

F. PS 1 - Structural Plywood 2009 (Revised 2019).

G. PS 20 - American Softwood Lumber Standard 2020.

H. SPIB (GR) - Grading Rules 2014.

I. All fasteners for wood decking to meet FM 4470

1.04 SUBMITTALS

A. Product Data: Provide technical data on wood preservative materials and application instructions.

B. Lumber certifications provided by lumber supplier identifying specification conformity.

C. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

A. Wood blocking Supplier
   1. Installer Qualification: Use accredited contractor, certified installers, and evaluated materials. All new materials shall match existing in size, like and kind.
   2. Manufacturer Qualification: Use evaluated materials from a single manufacturer regularly engaged in roof deck distribution. Use secondary materials approved in writing by primary material manufacturer.

B. Standards:
   1. Comply with all pertinent standards specified in the contract documents, including those listed below. If the building code references a specific edition or revision of an individual standard, then comply with that edition or revision. Otherwise comply with the latest

published edition or revision available on the date the Contractor submits its price proposal to the Owner.

a. Manufacturer's published specifications, product data sheets, application instructions, and technical bulletins.

C. Qualifications of Installers:

1. Use adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary crafts, and who are completely familiar with the specified requirements and the methods needed for proper performance of the work in this section.
2. In acceptance or rejection of the work of this section, the Owner will make no allowance for lack of skill on the part of the workers.

1.06 DELIVERY, STORAGE, AND HANDLING

A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

1.07 WARRANTY

A. Correct defective Work within a five year period after Date of Substantial Completion.

B. Provide five year workmanship warranty for all new wood blocking.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.

1. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.
2. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.
3. Lumber of other species or grades is acceptable provided structural and appearance characteristics are equivalent to or better than products specified.

B. Lumber fabricated from old growth timber is not permitted.

2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

A. Grading Agency: Southern Pine Inspection Bureau, Inc; SPIB (GR).

B. Sizes: Nominal sizes as indicated on drawings, and recommended by manufacturer for intended fit, S4S.

C. Moisture Content: S-dry or MC19.

D. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:

1. Lumber: S4S, No. 2 or Standard Grade.
2. Boards: Standard or No. 3.

E. Plywood

1. 5/8" minimum Exterior Grade, Exposure 1 Plywood, CDD Grade or better, one side sanded for smooth application of new roof flashing.

2.03 EXPOSED DIMENSION LUMBER

A. Submit manufacturer's certificate that products meet or exceed specified requirements, in lieu of grade stamping.

B. Grading Agency: Southern Pine Inspection Bureau, Inc; SPIB (GR).

C. Sizes: Nominal sizes as indicated on drawings.

D. Surfacing: S4S.

E. Moisture Content: S-dry or MC19.

F. Joist, Rafter, and Small Beam Framing (2 by 6 through 4 by 16 (50 by 150 through 100 by 400 mm)):
   1. Species: Douglas Fir.
   2. Grade: Select Structural.

2.04 EXPOSED BOARDS

A. Submit manufacturer's certificate that products meet or exceed specified requirements, in lieu of grade stamping.

B. Moisture Content: Kiln-dry (15 percent maximum).

C. Surfacing: S4S.

D. Species: Douglas Fir.

E. Grade: No. 2, 2 Common, or Construction.

2.05 CONSTRUCTION PANELS

A. Roof Sheathing, PS 1, Structural Plywood: Any type, rated Structural I Sheathing.
   1. Bond Classification: Exterior.
   2. Span Rating: 48/24.
   3. Performance Category: 3/4 PERF CAT.
   4. Exterior Grade, Exposure 1 Plywood, CDD Grade or better

B. Other Applications:
   1. Plywood Concealed From View But Located Within Exterior Enclosure: PS 1, C-C Plugged or better, Exterior grade.
   2. Plywood Exposed to View But Not Exposed to Weather: PS 1, A-D, or better.
   3. Roof Sheathing: All plywood roof sheathing is to be minimum 5/8", APA Rated Exterior, Structural 1. Only waterproof glue (CDD) is acceptable.
   4. Other Locations: 1, CDD Plugged or better.
   5. Exposure Time: Sheathing undamaged and integral roofing underlayment layer intact after exposure to weather for up to 180 days.

2.06 ACCESSORIES

A. Fasteners and Anchors:
   1. Slate Specific Stainless steel nails shall be annular ring or screw shank, minimum 3/8 inch diameter head, of sufficient length to penetrate through sheathing or 1/2 inch maximum into solid decking.
   2. Metal and Finish: Stainless steel for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
   3. All rough carpentry fasteners must be carbon steel with corrosion-resistant coating. Fasteners shall meet FM 4470
   4. Masonry/Concrete Fasteners
      a. Corrosion-resistant, threaded fastener with low profile head.
      b. Fasteners shall be a minimum of 3/16" diameter with a 1" minimum embedment.
      c. Fastener to be FM Global approved.
      d. Approved Products
         1) Tapcon Flat-Head Phillips with Blue Climaseal or White UltraShield by ITW Buildex
         2) Tapper Flat-Head Phillips with Perma-Seal Coating by Powers Fasteners, Inc.
   5. Steel / Wood Fasteners
      a. Corrosion-resistant, self-tapping, self-drilling screw with low profile head.
      b. Fastener to be FM Global approved.
      c. Approved Products
         1) Roof Grip by OMG with Climaseal Coating

2) Dekfast by SFS intec, Inc., with Sentri Coating
3) Standard roofing fastener by OMG, with CR-10 coating

d. Fasteners to be #12 minimum and of sufficient length to penetrate into steel 3/4" and wood 1".

6. Insulation Plates (washers
   a. Round, carbon steel, ASTM F 844-072, galvanized per ASTM F 2674. Minimum diameter 2 5/8".

B. Water-Resistive Barrier: As specified in Section 07 2500.

PART 3 EXECUTION

3.01 PREPARATION

A. Coordinate installation of rough carpentry members specified in other sections.

3.02 INSTALLATION - GENERAL

A. Select material sizes to minimize waste.

B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

3.03 BLOCKING, NAILERS, AND SUPPORTS

A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.

B. Discard units of material with defects that might impair quality of work and units that are too small to use in fabricating work with minimum joints or optimum joint arrangement.

C. Set nailers to required levels and lines with members plumb and true.

D. All perimeter nailers shall be of uniform height within a given roof section.

E. Nailers shall be installed with 1/4" gap between ends of adjoining pieces.

F. Nailers shall be fastened in accordance with the following schedule
   1. Fasteners in 6" or wider (nominal) lumber shall be installed in two (2) rows, staggered one-third of nailer width. Listed spacings indicate distance between fasteners in adjacent rows.
   2. Two (2) fasteners shall be installed within 6" of each nailer end
   3. Corner fastener spacing shall extend 8' from all outside building corners
   4. Where two or more nailers are installed, each nailer shall be fastened independently
   5. Over all deck types, the bottom nailer shall be fastened using the specified fasteners and 5/8" diameter washers. Countersink washers and fasteners level with top of wood using spade bit or similar method. Fasten subsequent nailers, where specified, using the specified screws without washers.

3.04 ROOF-RELATED CARPENTRY

A. Coordinate installation of roofing carpentry with deck construction, framing of roof openings, and roofing assembly installation.

B. All nailers shall be #2 or better, construction grade lumber.

C. Inspect and repair all wood curbs at all roof openings except where specifically indicated otherwise. Form corners by alternating lapping side members.

D. Plywood joints must be true and well fitting, allowing for expansion and contraction. Allow 1/8" at end and edge joints.

E. Plywood fasteners shall be installed in a uniform grid pattern, with a maximum spacing of 18" o.c. between adjacent fasteners

3.05 TOLERANCES

A. Framing Members: 1/4 inch (6 mm) from true position, maximum.

B. Variation from Plane (Other than Floors): 1/4 inch in 10 feet (2 mm/m) maximum, and 1/4 inch in 30 feet (7 mm in 10 m) maximum.

3.06 CLEANING

A. Waste Disposal:
   1. Comply with applicable regulations.
   2. Do not burn scrap on project site.
   3. Do not burn scraps that have been pressure treated.
   4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or “waste-to-energy” facilities.

B. Prevent sawdust and wood shavings from entering the storm drainage system.

C. When sawing of wood or plywood is performed on the rooftop, contain and/or clean sawdust in such a way as to prevent contamination of substrate to receive subsequent construction materials

END OF SECTION

SECTION 07 0150.19
PREPARATION FOR RE-ROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Removal of existing roofing materials to the existing structural deck in preparation for a new roof membrane system at Roof Area L and O.

B. Partial replacement of existing roofing system in preparation for replacement roofing system in designated areas as indicated on drawings at Roof Areas M and N.

C. Removal of existing flashing and counterflashings.

D. Installation of new wood nailers to accommodate the new tapered roof insulation heights.

E. Roof drain testing and replacement.

1.02 RELATED REQUIREMENTS

A. Section 02 41 19 - Selective Structure Demolition

B. Section 03 01 00 - Maintenance of Concrete

C. Section 05 3150 - Steel Deck Repair/Replacement

D. Section 06 10 10 - Miscellaneous Rough Carpentry:

E. Section [_____] - [_____]: Roof system.

F. Section 07 6200 - SHEET METAL FLASHING AND TRIM: Replacement of flashing and counterflashings.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordinate with affected subcontracted mechanical and electrical work associated with roof penetrations. Communicate with Owner's Representative to identify all equipment that is to be removed from the roof as abandoned or non-working.

B. Pre-installation Meeting: Convene one week before starting work of this section.

C. Provide site management (Building Engineer, Principal, Asst Principal, DCPS Representative, DGS Representative and Designer) with weekly updates of areas scheduled for work (using plan maps and bar chart schedules) including dates and hours, and access areas impacted by scaffolding or man-lifts.

D. Provide Design Consultant with drain inspection certification / report after pre-construction water test for acceptable drainage flow.

E. Schedule work to coincide with commencement of installation of new roofing system.

1.04 FIELD CONDITIONS

A. Contractor is responsible for ALL leak responses from the date of Notice to Proceed until the completion of the project. Contractor must respond within 24 hours for all reported non-emergency leaks. Contractor must commit to respond within 4 hours for all reported emergency leaks.

B. Do not remove existing roofing membrane when weather conditions threaten the integrity of the building contents, operations or intended continued occupancy.

C. Remove no more roofing than can be made watertight within the same work day.

D. Maintain continuous temporary protection prior to and during installation of new roofing system.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 EXAMINATION

A. Photo catalogue and document existing pre-construction conditions in the areas below and adjacent the contracted improvements, including stained finish surfaces that might be misconstrued as damage caused by selective demolition operations. Submit before any Work begins.

B. Verify that existing roof surface is clear and ready for work in the scheduled section.

C. Verify all roof drains to be free and clear to remove water from the roof.

D. Verify the condition of all roof top equipment. Document if the equipment is in good working condition.

3.02 PREPARATION

A. Provide pull test and insulation uplift testing prior to full tear-off begins. Sample test areas are defined by ASTM E907 and FM 1-52 which require a minimum of two tests per roof area. For roof areas of 50 squares to 100 squares, ASTM E907 requires four tests. For roof areas larger than 100 squares, ASTM E907 requires and FM 1-52 recommends an additional test for each additional 100 squares of roof area or portion

B. Water test all roof drains and document status with the estimated quantity of water applied to the drain piping, and how long for part (1) one and the length of test for the head pressure above the piping connection for part (2) two. A similar test will be required for the new drains assembly after the roof is completed.

C. Sweep roof surface and roof deck clean of loose matter prior to installation of new roof system.

D. Remove all loose debris, and refuse into an acceptable container and dispose offsite.

E. Broom clean all surfaces to receive new 32 mil SBS vapor barrier.

F. Provide removable screened fencing around any temporary stationed containers, scaffolding or storage areas. The fencing should be sufficient in height to deter access by pedestrians, faculty or children beyond the outlined perimeter.

3.03 MATERIAL REMOVAL: REFER TO SUMMARY SCOPE OF WORK AND CONTRACT DRAWINGS FOR MORE INFO AND MATERIAL LOCATIONS.

A. Remove only the existing roofing (in quantity) materials that can be replaced and installed with new materials the same day.

B. Remove metal counter flashings. Do not cut or damage the "keyed" receiver metal secured in the wall construction.

C. Remove existing coping and metal parapet cladding. Reinstall metal parapet cladding engaged on a securement cleat and refasten at top. Reinstall metal coping

D. Remove all roof drains and replace with new assemblies the same day. All new drains must be secured and made watertight the same day. No temporary drain plugs will be approved, unless approval is received prior to the requested work.

E. Remove all wood blocking used as a field pipe support in preparation of a new pre-manufactured unit. Provide temporary blocking as necessary.

F. Scrape roofing gravel from membrane surface without causing serious damage to membrane felts.

G. Remove existing roofing membrane, perimeter base flashings, roof curb base flashings around roof protrusions, associated sheet metal flashings, pitch pans and pockets.

H. Cut and lay flat any membrane blisters.

I. Remove insulation and fasteners, cant strips, blocking.

J. Remove vapor retarder, if present.

K. Repair existing concrete deck surface to provide smooth working surface for new roof system. All repairs must be completed to a sound surface in accordance with Section 03 01 00 MAINTENANCE OF CONCRETE

L. Repair existing steel deck surface to provide smooth working surface for new roof system. All repairs must be completed to a sound surface in accordance with Section 05 3150 STEEL DECK REPAIR/REPLACEMENT.

M. Replace deteriorated neoprene closure at roof area K.

N. Remove deteriorated sealant from composite panels, clean joint and recaulk.

O. Remove existing deteriorated mortar from the perimeter of the window frames, clean and install new backer rod and high-grade polyurethane sealant. Typical at (8) 4'x6' windows.

P. Clean and prepare existing crack and mortar joints for tuckpointing. Tuckpoint with mortar to match existing.

Q. Remove defective boot and install new Dektite flashing boot for positive seal. (26 ea.)

R. Replace Deteriorated rivets on Area K with new Stainless Steel Rivets. (allowance of 1000 ea.)

S. Remove deteriorated sealant from joint, clean joint and recaulk. (approximately 15 LF)

T. Remove existing coping and metal parapet cladding. Reinstall metal parapet cladding engaged on a securement cleat and refasten at top. Reinstall metal coping (approximately 76 LF).

U. Replace missing coping end cap with new to match existing.

V. Gutter damage: remove damaged section of existing gutter. Fabricate and install new box type gutter from matching materials and profiles in both color and thickness. Gutter to be properly sloped to existing downspouts and installed with the back leg behind the existing fascia / drip edge. Gutter supports to be 3/16" x 1" 300 series stainless bar fabricated to match the profile of the gutter. Spacing to be 24" O.C. gutter straps to be spaced evenly in between the hangers at 24" O.C. gutter straps to be fabricated using .025" series 302 / 304 stainless steel, double hemmed, and spaced at each rib and fastened with grommeted fasteners. (1)

W. Remove existing damaged lightning protection system, replace with new on S-5 clamps attached to the existing standing seam panel and recertify.

X. Remove deteriorated sealant and recaulk zee closure with silicone sealant to existing panel and seams. (approximately 440 LF).

Y. Remove and replace loose / missing / corroded fasteners with new proper sized grommeted fasteners. 1 (87 LF)

Z. Remove deteriorated rivets and reinstall new rivets to secure panel. Install reinforced liquid flashing repair over seam and paint to closely match existing panel.

AA. Remove existing sealants, clean joint and properly install new backer rod and high-grade polyurethane sealant. (approximately 14 LF).

3.04 INSTALLATION

A. Coordinate scope of this work with requirements for installation of new roofing system, see Section for PVC roof system and reinforced roof coating for additional requirements.

3.05 FIELD QUALITY CONTROL

A. Contractor shall verify that:
   1. The substrate is smooth, dry, and suitable for installation in accordance with the manufacturers specifications for the Special Project Warranty prior to installing the roof system.
   2. Existing roof drain body must be tested and certified to be clear prior to commencement of any roof demolition. The testing must be photo documented and reported to the Owner's Representative, and Designer for approval to move forward with the new roof assembly.

Any drains identified to be clogged must be cleared or modified to commence roofing in that section.

3. New Roof drain body assembly components must be installed and made watertight in accordance with Section 22 14 26 Roof Drains.
4. All projections and penetrations within the roof system less than eight (8) inches in height are to be modified and raised to a height of eight (8) inches, minimum, above the finished height of the roof system.
    a. Plumbing vent piping shall be raised using no-hub connectors and schedule 40 plastic piping to a height of not less than eight (8) inches and not more than twelve (12) inches above the finished height of the roof system.
5. Items not specified to be removed and replaced, but necessary for proper installation of the Work are included in this specification as the responsibility of the Contractor and cannot be proposed as a hidden condition or non-reported detail upon signing of the project contract. All required modifications to the existing roof penetrations, as defined above, must be properly coordinated for removal and replacement.

B. Do not proceed until unsatisfactory conditions have been corrected.

3.06 PROTECTION

A. Provide temporary protective sheeting over uncovered vaporbarrier and newly covered roof deck surfaces.

B. Provide adequate protection for any grounds that will be traveled by trucks, or heavy equipment that might damage the grass, shrubs, trees or other green growth that has been identified as protected by DGS.

C. Provide for sufficient surface drainage from sheeting to existing drainage openings, grates or roof drains.

D. Do not permit traffic over newly installed roof system(s) without proper protection.

E. Do not permit traffic over unprotected or repaired concrete deck surfaces.

3.07 SCHEDULES

A. Provide bar chart schedules and colored roof plan maps of all areas, to be completed and dispersed weekly.

B. Identify areas that have been completed with a percentage complete.

C. Provide a brief description of the progress for the scheduled weekly meetings.

D. DGS in coordination with the Designer will coordinate and schedule the weekly meetings to include DGS, Contractor Project Manager, Facility Manager, Lead Engineer, and the Designer.

END OF SECTION

SECTION 07 1500
SECTION 07 1500 - VAPOR RETARDER MEMBRANE

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes products and installation requirements for a one-ply SBS bituminous membrane to serve as a vapor retarder in the roof system.

B. Related Sections:
   1. Section 053150 – Steel Deck Repair/Replacement.
   2. Section 030100 – Maintenance of Concrete.
   3. Section 06100 – Rough Carpentry.

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM):
   1. D41-94(2000)e1 Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
   2. D312-00 Standard Specification for Asphalt Used in Roofing.
   3. D2178-97a Standard Specification for Asphalt Glass Felt Used in Roofing and Waterproofing.
   4. D4586-00 Standard Specification for Asphalt Roof Cement, Asbestos-Free.
   5. D4601-98 Standard Specification for Asphalt-Coated Glass-Fiber Base Sheet Used in Roofing.
   6. ASTM D 5849 - Standard Test Method for Evaluating Resistance of Modified Bituminous Roofing Membrane to Cyclic Fatigue (Joint Displacement)
   7. ASTM D 6162 - Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcements.
   8. ASTM D 6163 - Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements.
   9. ASTM D 6164 - Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements.
   10. ASTM D 6298 - Standard Specification for Fiberglass Reinforced Styrene-Butadiene-Styrene (SBS) Modified Bituminous Sheets with a Factory Applied Metal Surface.
   11. ASTM D 7379 - Standard Test Methods for Strength of Modified Bitumen Sheet Material Laps Using Cold Process Adhesive.
   12. ASTM E 108 - Standard Test Methods for Fire Tests of Roof Coverings.
   13. F1667-02 Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.

1.03 QUALITY ASSURANCE

A. All work to be performed in accordance with the manufacturer's published specifications. Advise Consultant of any discrepancies prior to commencement of work.

B. Take care to avoid contamination of the new membrane with debris from tear-off operations. Avoid all traffic over new membrane until bitumen has cooled.

C. Contractor shall ensure that the vapor retarder membrane is properly sealed at all perimeters and projections after installation and shall correct all defects and/or damage to the membrane before proceeding with roof system installation.

1.04 SEQUENCING

A. Perform work in a sequential manner to avoid construction traffic over completed areas as operations progress.

1.05 WIND UPLIFT RESISTANCE:

A. Performance testing shall be in accordance with ANSI/FM 4474, FM 4450, FM 4470, UL 580 or UL 1897.

1.06 FIRE CLASSIFICATION:

A. Performance testing shall be in accordance with UL 790, ASTM E108, FM 4450 or FM 4470 to meet the 4:12 roof slope requirement.
   1. Meets requirements of UL Class A or FM Class A.

B. Performance testing shall be in accordance with UL 1256, FM 4450 or FM 4470 to meet the specified requirements for interior flame spread and fuel contribution.
   1. Meets requirements of UL 1256, or FM Class 1.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Where possible, Contractor shall utilize the same manufacturer for both the vapor retarder membrane and the roof membrane meeting the following product requirements:

2.02 MATERIALS AND COMPONENTS

A. SBS-modified bitumen self-adhered membrane with release film on the bottom surface and a tri-laminate woven polyethylene film top surface reinforcement.
   1. Thickness: 31.5 mils (0.80 mm)
   2. Width: 45 in (1.14 m)
   3. Length: 133 ft (40.8 m)
   4. Meets or exceeds ASTM D2178 “Standard Test Method for Air Permeance of Building Materials.”
   5. Meets or exceeds ASTM E96 (Procedure B) “Standard Test method for Water Vapor Transmission of Materials.”

B. Miscellaneous:
   1. Asphalt mastic: Shall conform to ASTM D4586, Type I.
   2. Plastic roof cement: Shall conform to ASTM D4586, Type I.
   3. Asphalt primer: Shall conform to ASTM D41.
   4. PMMA or PU resin based mastic - ASTM 412, D1653

C. Fasteners for attaching roofing plies to wood blocking: Shall comply with ASTM F1667; type as required by item anchored and substrate.
   1. Zinc-coated steel roofing nails with 3/8-inch head diameter.

D. Approved Manufacturer's
   1. GAF Building Materials Corporation, Wayne, NJ.
   2. Johns-Manville Corporation, Denver, CO.
   3. Sika Sarnafil Corporation, Canton MA
   4. Soprema Corporation
   5. Seaman Corporation

PART 3 - EXECUTION

3.01 EXAMINATION

3.02 FOR ALL SECTIONS :

A. Contractor shall verify that:
   1. The substrate is sound, smooth and dry prior to installing the vapor retarder membrane.
   2. Existing projections such as pipes and curbs are properly anchored, secure and acceptable prior to installing the vapor retarder membrane.

B. Do not proceed until unsatisfactory conditions, including moisture, have been corrected.

3.03 PREPARATION

A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's most current requirements. Remove sharp projections.

B. Repair any defective or damaged steel and/or concrete roof deck sections prior to installation of new roof system.

C. Prevent materials from entering and clogging roof drains and flashings and from spilling or migrating onto surfaces of other construction. Remove roof drain plugs when no work is taking place or when rain is forecast.

3.04 PREPARATION FOR CONCRETE DECK:

A. Inspect and repair roof decking as required prior to commencing the work of this section.

B. Remove unused projections and close off openings as shown in the Contract Drawings.

C. Sweep the substrate to broom-clean condition to remove all dust, dirt and debris.

D. Prime the entire substrate with asphalt primer applied at the rate of one (1) gallon per 150 square feet of surface.

E. Seal cracks at perimeters and projections with plastic roof cement or manufacturer's approved material to prevent bituminous materials from entering the building.

3.05 INSTALLATION

A. Prime concrete substrate with manufacturers' approved primer. Allow primer to dry to tack.

B. Start membrane installation at the lowest point of the roof; install plies in a uniform and continuous surface thickness of primer coverage.

C. Peel away backing and adhere to concrete substrate, side and end lap each sheet a minimum of 3 inches and 6 inches, respectively. Stagger each sheet at least 12 inches Hot Air Weld laps. Laps must have a minimum ½ inch bleed out.

D. Apply Colply Adhesive and/or approved liquid applied membrane to seal all roof penetrations, corners, detail flashing and temporary seals that may require over-night protection.

E. Continue installing full-width plies of vapor barrier, lapping in accordance with the manufacturer’s specifications; side and end lap each sheet a minimum of 3 inches and 6 inches, respectively.

F. Termination at roof perimeters and projections:
   1. At walls, curbs and other vertical surfaces, turn up vapor barrier a minimum of four (4) inches. Seal top edge of vapor barrier with approved VB mastic or approved liquid applied membrane.
   2. Apply Colply Adhesive and/or approved liquid applied membrane to seal all roof penetrations, corners, detail flashing and temporary seals that may require over-night protection.
   3. All areas to receive vapor barrier are required to be made watertight daily. Remove only an area or existing roofing that can be covered in the same work day.
   4. Water test all roof drains after vapor barrier is applied to check for sound connections and a watertight application.

END OF SECTION 07150

SECTION 07 5419
POLYVINYL-CHLORIDE ROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Adhered roof system with polyvinyl-chloride (PVC) textured roofing membrane.

B. Vapor retarder.

C. Thermal Barrier.

D. Cover boards.

E. Insulation.

1.02 RELATED REQUIREMENTS

A. Section 03 0100 - Maintenance of Concrete

B. Section 05 3150 - Steel Deck Repair/Replacement

C. Section 05 3100 - Steel Decking.

D. Section 06 1000 - Rough Carpentry:

E. Section 07 0150.19 - Preparation for Re-Roofing.

F. Section 07 6200 - SHEET METAL FLASHING AND TRIM.

G. Section 07 7100 - Roof Specialties - Pre-Manufactured Warranted Edge Metal:

1.03 REFERENCE STANDARDS

A. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures Most Recent Edition Cited by Referring Code or Reference Standard.

B. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board 2020.

C. ASTM D4434/D4434M - Standard Specification for Poly(Vinyl Chloride) Sheet Roofing 2021.

D. ASTM D4263 - Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method 1983 (Reapproved 2018).

E. ASTM E1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces 2011 (Reapproved 2019).

F. FM DS 1-28 - Wind Design 2016.

G. FM DS 1-29 - Roof Deck Securement and Above-Deck Roof Components 2016, with Editorial Revision (2020).

1.04 ADMINISTRATIVE REQUIREMENTS

1.05 SUBMITTALS

A. See Section 01 3000 - Project Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's written information listed below.

C. Shop Drawings: Indicate joint or termination detail conditions, conditions of interface with other materials, setting plan for tapered insulation, mechanical fastener layout, and paver layout.

D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

E. Manufacturer's Installation Instructions: Indicate membrane seaming precautions, finish coating installation, special procedures, and perimeter conditions requiring special attention.

F. Manufacturer's Qualification Statement.

G. Installer's Qualification Statement.

H. Warranty Documentation.

1. Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
2. Submit installer's certification that installation complies with required warranty conditions for waterproofing membrane.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with at least twenty years of documented experience.

B. Installer Qualifications: Company specializing in performing work of type specified and with at least Ten years documented experience.
1. Current Contractor in Good Standing letter from Manufacturer for Special Project Warranty on the Manufacturers' letterhead.
2. Extend manufacturer's "No Dollar Limit" warranty.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Protect foam insulation from direct exposure to sunlight.

1.08 FIELD CONDITIONS

A. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed that same day.

B. Proceed with work so new roofing materials are not subject to construction traffic as work progresses.

C. Do not allow grease, oils, fats, or other contaminants to come into direct contact with roofing membrane.

1.09 WARRANTY

A. System Warranty: Provide manufacturer's system NDL warranty agreeing to repair or replace roofing membrane that leaks or is damaged due to wind or other natural causes.
1. System Warranty Term: 20 years.
2. For repair and replacement include costs of both material and labor in warranty.
3. Include metal roof edge water tightness in accordance with manufacturer's standard warranty terms.

PART 2 PRODUCTS

2.01 MANUFACTURER

A. Sika Sarnafil

B. Carlisle SynTec

C. Johns Manville

2.02 ROOFING APPLICATIONS:

A. 80 mil PVC (Polyvinyl-Chloride) Textured Membrane Roofing: Single-ply membrane.
1. Adhered, over cover board insulation.

2.03 PERFORMANCE / DESIGN CRITERIA

A. Solar Reflectance Index (SRI): Minimum of 64 based on three-year aged value; if three-year aged data is not available, minimum of 82 initial value, calculated in accordance with ASTM E1980.
1. Field applied coating may not be used to achieve specified SRI.

B. Wind Uplift:
1. Designed to withstand wind uplift forces calculated in accordance with ASCE 7.
2. Design Wind Speed: In accordance with local building code and authorities having jurisdiction (AHJ).

C. Factory Mutual Classification: Class 1 with windstorm resistance of 1-90, in accordance with FM DS 1-28.

D. Insulation Thermal Resistance (R-Value): Provide R-Value over entire roof deck in accordance with local building code requirements.- Existing flashing heights may require modifications to the current acceptable flashing heights.

E. Drainage: No standing water within 48 hours after precipitation.

2.04 ROOFING MEMBRANE MATERIALS

A. Single Source Responsibility: Provide and install products from single source.

B. Membrane: Textured, Polyvinyl-Chloride (PVC); ASTM D4434/D4434M, internally reinforced.
   1. Thickness: 80 mils, 0.080 inch (2.0 mm), minimum.
   2. Sheet Width: Factory fabricated into largest sheets possible.

C. Seaming Materials: As recommended by membrane manufacturer.

D. Vapor Retarder: Material approved by roofing membrane manufacturer and in compliance with fire rating classification requirements, and compatible with roofing and insulation materials.
   1. Provide fire-retardant adhesive.

E. Flexible Flashing Material: Same material as roofing membrane.

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

2.05 INSULATION:

A. When applicable, insulation shall be installed in multiple layers. The first and second layer of insulation shall be adhered to the substrate in accordance with the manufacturer’s published specifications.

B. Insulation shall be polyisocyanurate. Minimum average R-value required is 30, unless specified otherwise.

C. Roof Insulation:
   1. Polyisocyanurate Board Insulations: Closed cell polyisocyanurate foam with black glass-reinforced mat laminated to faces, complying with ASTM C1289 Type II, Class 1, with the following additional characteristics:
      a. Minimum thickness at the drains: 2.00 inches.
      b. Compressive Strength: 25 psi (138 kPa) when tested in accordance with ASTM C1289.
      c. UL-Classified and FM-approved for direct to steel deck applications.
      d. Ozone Depletion Potential: Zero; made without CFC or HCFC blowing agents.

D. Insulation at Crickets and Sumps:
   1. Polyisocyanurate tapered board stock at crickets and sumps: Boards shall have bonded fiber glass mat facer sheets. Insulation shall comply with ASTM C1289, Type II, Class 1, glass fiber mat both faces; Grade 1; UL and FM Class 1classified; LTTR values in accordance with CAN/ULC-S770. When adhering boards, maximum board size shall be factory cut 4' x 4'. Physical properties; Dimensional stability ASTM D2126, less than 2%; Density of foam core, ASTM D1622, nominal 2 pounds per cubic foot; Compressive strength, ASTM 1621, 25 psi nominal.
      a. Tapered Insulation System: See Hunter Panel's Recommended Design Tapered Drawing or approved equal. Submit final design to Owner for review.
         1) Drain Sump:
            (a) Starting Thickness: Two inch.
            (b) Slope: min.1/4-inch per lineal foot.
            (c) Minimum - 8' x 8' sumps
         2) Crickets: Provide as indicated on approved layout submittal and at upslope side of curbed penetrations.(see attached construction drawings)

(a) Starting Thickness: 1/2-inch at Roof Area 1.
(b) Slope: 1/2-inch per lineal foot.
(c) Curb crickets are required at all units greater that 24" (inches) perpendicular to the designed slope

2.06 VAPOR RETARDER

A. See specification Section 071500.

2.07 THERMAL BARRIER AND COVER BOARD

A. Buildings:
1. Thermal Barrier **:** High-performance gypsum roof board mechanically fastened to the deck. Class A. Complying with ASTM C1278 and with the following additional characteristics:
   a. Size: 48 inches (1220 mm) by 48 inches (1220 mm), nominal.
   b. Thickness: 5/8 inch.
   c. Surface Water Absorption: 1.6 g, maximum, when tested in accordance with ASTM C473.
   d. R-Value: 0.5 as per ASTM C518.
   e. Combustibility: Non-combustible, when tested in accordance with ASTM E136.
   f. Mold Growth Resistance: 10, when tested in accordance with ASTM D3273.
   g. Manufacturers:
      1) Carlisle Syntec Systems: https://www.carlislesyntec.com/.
      2) Johns Manville:
2. Cover Board.: Adhered Polyisocyanurate High-Density Board. Class A. Complying with ASTM C1278 and with the following additional characteristics at Roof Areas with slope over 1/2":12" only.
   a. Size: 48 inches (1220 mm) by 48 inches (1220 mm), nominal.
   b. Thickness: 1/2 inch.
   c. Surface Water Absorption: 1.6 g, maximum, when tested in accordance with ASTM C473.
   d. R-Value: 2.5 as per ASTM C518.
   e. Combustibility: Non-combustible, when tested in accordance with ASTM E136.
   f. Mold Growth Resistance: 10, when tested in accordance with ASTM D3273.
   g. Manufacturers:
      1) USG: https://www.usg.com/content/usgcom/en.html.

2.08 ACCESSORIES

A. Prefabricated Flashing Accessories:
1. Corners and Seams:
   a. Inside Corners: Pre-molded PVC, 60 mil (0.060 inch) (1.5 mm) thick; used for flashing inside corners.
   b. Outside Corners: Pre-molded PVC, 60 mil (0.060 inch) (1.5 mm) thick; used for flashing outside corners.
   c. Curb Wrap Corners: PVC or KEE HP, 60 mil (0.060 inch) (1.5 mm) thick; used for flashing wraps at curb corners.
   d. T-Joint Covers: PVC, non-reinforced, 4 inch (102 mm) diameter; used to seal step-offs at splice intersections.
      1) Color and Thickness: White and 60 mil (0.060 inch) (1.5 mm) thick.
2. Penetrations: Same material as membrane, with manufacturer's standard cut-outs, rigid inserts, clamping rings, and flanges.
   a. Pipe Seals: Prefabricated PVC flashing for pipes 1 inch (25.4 mm) to 6 inch (152 mm) in diameter.
   b. Molded Pipe Seals: Injection-molded PVC flashing for pipes 3/4 inch (19 mm) to 8 inch (203 mm) in diameter.

1) Color: White.

c. Sealant Pockets: Interlocking, two-piece, injection molded flexible pocket with rigid 6 inch (152 mm) high vertical flange and pre-formed deck flange, used to waterproof pipe clusters or other oddly shaped penetrations.

1) Pocket Adjustment: Adjustable from 7-1/2 inch (191 mm) to 11-1/2 inch (292 mm) long.

B. Fasteners: Appropriate for application indicated as recommended and approved by membrane manufacturer.

1. Length as required for thickness of membrane and insulation material and penetration of deck substrate; with metal washers.
2. Seam Fastening Plate: Use 2 inch (51 mm) diameter metal plate for insulation attachment on mechanically fastened systems, or membrane securement at angle changes on adhered systems with manufacturer's acceptable fasteners.
3. Insulation Fastening Plate: Use 3 inch (76 mm) nominal diameter metal plate with manufacturer's acceptable fasteners to attach insulation.
4. Metal, Insulation Fastening Plates: Hexagon shaped galvalume-coated steel plate, with 2-7/8 inch (73 mm) hexagon width.

C. Walkway Rolls: Heat weldable PVC membrane, 36 inch (914 mm) wide by 60 feet (18.3 m) long, and 90 mils, 0.090 inch (2.3 mm) thick, gray colored; used to protect PVC membrane in areas exposed to foot traffic.

D. Miscellaneous Flashing: Non-reinforced PVC membrane; 60 mils, 0.060 inch (1.5 mm) thick, in manufacturer's standard lengths and widths. Asphalt resistant membrane flashing is to be used at all locations where existing bituminous flashings were removed in preparation for the new PVC membrane.

E. Membrane Adhesive: As recommended by membrane manufacturer.

1. Bonding Adhesive: Low-VOC, water-based, wet lay-in, one-sided dispersion adhesive and light tan colored.
2. Bonding Adhesive: Low-rise polyurethane adhesive, two-component, and construction-grade.
   a. Compatible with Recovery Board, VersiCore MP-H Polyiso, SecurShield CD, SecurShield HD Plus, SecurShield Polyiso, EPS, XPS, SPF, DensDeck, SecuRock, and DuraFaceR.
   b. Deck Types: Concrete, cellular lightweight concrete, gypsum, cementitious wood fiber, wood, and painted or galvanized steel.

F. Surface Conditioner for Adhesives: Compatible with membrane and adhesives.

G. Sealants: As recommended by membrane manufacturer.

1. Sealant: One-component, 100 percent solids, solvent-free, polyether sealant used to provide weather-tight seal.
2. Cut-Edge Sealant: Free-flowing, translucent polymeric material used for sealing cut edges; clear colored.
3. Pourable Sealant: One-component, moisture curing, elastomeric polyether sealant; white colored.

H. Membrane Cleaner: Manufacturer's recommended products for applications indicated.

I. Primer: Manufacturer's recommended products for applications indicated.

J. Roof Edgings and Terminations: Manufacturer's standard roof edge and termination accessories.

1. Color: As selected by Architect.
2. Roof Edge: Roof edge system with galvanized formed rail having pre-punched fastening slots, and stainless steel spring to lift cover at 4 feet (1.2 m) on center.
   a. Cover Height: 4 inch (102 mm), and top edge extending 1-1/8 inch (28.6 mm) above roof surface.

3. Coping: Parapet wall type coping system providing galvanized steel hold-down cleats and snap-on coping cap.
    a. Parapet Wall Width: As indicated on drawings.
    b. Face and Back Leg Heights: 4 inch (102 mm) face height, and 4 inch (102 mm) back height, nominal.

PART 3 EXECUTION

3.01 VERIFICATION OF CONDITIONS

A. Verify that surfaces and site conditions are ready to receive work.

B. Verify deck is supported and secure.

C. Verify deck is clean and smooth, flat, free of depressions, waves, or projections, properly sloped and suitable for installation of roof system.

D. Verify deck surfaces are dry and free of snow or ice.

E. Verify that roof openings, curbs, and penetrations through roof are solidly set, and nailing strips and reglets are in place.

3.02 SURFACE PREPARATION

A. Clean substrate thoroughly prior to roof application.

B. Do not begin this work until other work that requires foot or equipment traffic on roof has been completed.

3.03 CONCRETE DECK PREPARATION

A. Fill all open deck joints with approved firestopping backer rod and sealants

B. Verify dry concrete deck moisture content using plastic sheet method in accordance with ASTM D4263.

3.04 METAL DECK PREPARATION

A. Mechanically fasten insulation to roof deck, in accordance with FM DS 1-29 and roofing manufacturer's installation instructions
    1. Fasten insulation boards on entire roof area, using at least eight fasteners with washers on each sheathing board.

3.05 INSTALLATION - GENERAL

A. Install roofing system in accordance with manufacturer's instructions, as well as NRCA (RM) and NRCA (WM) applicable requirements.

B. Application of roofing membrane during unsuitable weather is not permitted.

C. Application of roofing membrane when ambient temperature is outside temperature range recommended by manufacturer is not permitted.

D. Application of roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring is not permitted.

E. Exposing materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day is not permitted.

3.06 VAPOR RETARDER APPLICATION

A. Apply vapor retarder to deck surface with adhesive in accordance with manufacturer's instructions.
    1. Extend vapor retarder under cant strips and blocking to deck edge.
    2. Install flexible flashing from vapor retarder to air seal material of wall construction, lap and seal to provide continuity of air barrier plane.

B. Verify that vapor retarder is clean and dry, continuous, and ready for application of insulation.

3.07 INSULATION APPLICATION

A. Attachment of Insulation:
   1. Mechanically fasten insulation to deck in accordance with roofing manufacturer's instructions and FM (AG), FM DS 1-28, and FM DS 1-29 applicable requirements.

B. Installing wet, damaged, or warped insulation boards is not permitted.

C. Apply subsequent layers of insulation with joints staggered minimum 6 inch (152 mm) from joints of preceding layer.

D. On metal deck, place boards parallel to flutes with insulation board edges bearing on deck flutes.

E. Apply boards with edges in moderate contact without forcing, and with gap between boards no greater than 1/4 inch (6 mm) wide; cut insulation to fit neatly to perimeter blocking and around penetrations through roof.

F. At roof drains, use factory-tapered boards or boards cut to slope to slope down to roof drains over an 8' x 8' sump

G. Only apply quantity of insulation than can be completely waterproofed in same day.

3.08 MEMBRANE APPLICATION

A. Roll out membrane, free from wrinkles or tears; place sheet membrane into place without stretching.

B. Shingle joints on sloped substrates in direction of drainage.

C. Adhesive Adhered Membrane Application: Apply adhesive at manufacturer's recommended rate, and fully embed membrane in adhesive except in areas directly over or within 3 inch (75 mm) of expansion joints; fully adhere one roll before proceeding to adjacent rolls.

D. Seam Welding:
   1. Overlap edges and ends at least 2 inch (51 mm), and seal seams by heat welding.
   2. Probe each seam once welds have thoroughly cooled, approximately 30 minutes.
   3. Repair any deficient seams within same workday.
   4. Seal cut edges of reinforced membrane after seam probe has been completed.
      a. Seal with cut edge type sealant as recommended by membrane manufacturer.

E. At membrane intersections with vertical surfaces, provide the following:
   1. Fully adhere flexible flashing over membrane and up to nailing strips.
   2. Secure flashing to nailing strips at 4 inch (102 mm) on center, maximum.

F. At gravel stops, extend membrane under gravel stop and to outside face of wall.

G. Install roofing expansion joints as indicated on drawings, and ensure joints are watertight.

H. Coordinate installation of roof related flashings, sumps, and drains; locate field splices away from low areas and roof drains, and shingle lap upslope sheets over downslope sheets.

I. Daily Seal: Provide daily seal in accordance with manufacturer's installation instructions at end of each workday to prevent infiltration of water at incomplete flashings, terminations, and other unfinished membrane edges.

3.09 FIELD QUALITY CONTROL

A. Attendance is required on-site of roofing and insulation material manufacturer's bi-weekly during installation of this work.

3.10 CLEANING

A. Remove wrappings, empty containers, paper, and other debris from roof daily, and dispose of debris in compliance with local, State, and Federal regulations.

B. Remove bituminous markings from finished surfaces.

C. In areas where finished surfaces are soiled by work of this section, consult manufacturer of surfaces for cleaning advice and comply with their documented instructions.

D. Repair or replace defaced or damaged finishes caused by work of this section.

3.11 PROTECTION

A. Protect installed roofing and flashings from construction operations.

B. This project will require interior protection. All work must conform to CFR Title 21 FDA regulations to protect against contamination in continuous food processing production.

C. Where traffic must continue over finished roof membrane, protect surfaces using durable materials.

END OF SECTION

SECTION 07 5600
FLUID-APPLIED WATERPROOFING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Provide a cold-fluid-applied polyurethane roofing/waterproofing system on structural concrete, plywood sheathing, cover board, metal or other substrates.
   1. Work includes substrate preparation.
   2. Work includes bridging and sealing air leakage and water intrusion pathways and gaps including connections of the walls to the roof air barrier, and penetrations of the building envelope including piping, conduit, ducts and similar items.

B. Related Work: The following items are not included in this Section and are specified under the designated Sections:
   1. Section 03 0100 – MAINTENANCE CONCRETE.
   2. Section 05 3150 – STEEL DECK REPAIR/REPLACEMENT.
   3. Section 07 60 00 – FLASHING AND SHEET METAL.
   4. Section 07 9200 – JOINT SEALANTS
   5. Section 22 0010 – ROOF DRAINS AND STORM WATER PIPING.

1.03 PERFORMANCE REQUIREMENTS

A. Cold fluid applied polyurethane roofing/waterproofing system is intended to perform as a continuous barrier against liquid water and to flash or discharge to the exterior incidental water. Membrane system is expected to remain exposed and shall accommodate movements of building materials as required with accessory sealant materials at such locations such as, changes in substrate, perimeter conditions and penetrations.

B. Installed roofing/waterproofing membrane system shall not permit the passage of water and will withstand the design pressures calculated in accordance with the most current revision of ASCE 7.

C. Manufacturer must have completed a Cradle-To-Grave Life Cycle Analysis (LCA) and Environmental Product Declaration (EPD) according to ISO 14025:2006 for the roofing/waterproofing system.

D. Manufacturer shall provide all primary roofing/waterproofing materials that are physically and chemically compatible when installed in accordance with manufacturers current application requirements.

1.04 SUBMITTALS

A. Submittals: Comply with project requirements for submittals as specified in Division 01.

B. Product Data: For each product.

C. Shop Drawings: Manufacturer’s standard details and shop drawings for the specified system.

D. Manufacturer must provide a complete Cradle-To-Grave Life Cycle Analysis (LCA) and Environmental Product Declaration (EPD) according to ISO 14025:2006 for the roofing/waterproofing system.

E. VOC Certification: Manufacturer’s certification that all roofing/waterproofing system products meet current Volatile Organic Compound (VOC) regulations as established by the State in which they are being installed; and stating total VOC content, in grams per liter, for all system components (i.e. primers, adhesives, coatings, etc.).

F. Installer's Authorization: Installer shall provide written documentation from the manufacturer of their authorization to install the system, and eligibility to obtain the warranty specified in this section.

G. Manufacturer' Certification: Certification showing full time quality control of production facilities and that each batch of material is tested to ensure conformance with the manufacturer's published physical properties.

1.05 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Manufacturer shall demonstrate qualifications to supply materials of this section by certifying the following:
   1. Membrane Manufacturer shall have been producing fluid-applied roofing membranes for over 30 years.
   2. Membrane Manufacturer shall have available an in-house technical staff to assist the contractor when necessary in the application of the products and site review of the assembly.

B. Installer's Qualifications: The Contractor shall demonstrate qualifications to perform the Work of this Section by submitting certification or license by the roofing/waterproofing membrane manufacturer as a trained and authorized applicator of the product the installer intends to use.

C. Source Limitations: All components listed in this section shall be provided by a single manufacturer or approved by the primary roofing/waterproofing manufacturer.

D. Materials Compatibility: All materials included in the roofing/waterproofing assembly, as well as associated materials adhered to/applied beneath the roofing/waterproofing membrane shall have been tested and verified to be compatible. Include written testing documentation if requested by Architect.

E. Final Inspection: Manufacturer's representative shall provide to the Architect a comprehensive site visit report after the completion of the roofing/waterproofing system.

F. Applicable Regulations: Comply with local code and requirements of authorities having jurisdiction. Do not exceed VOC regulations as established by the State in which they are being installed; including total VOC content, in grams per liter, for all system components (i.e. primers, adhesives, coatings, and similar items).

G. Roofing Terminology: Refer to ASTM D1079 and the glossary of the National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual for definitions of roofing terms related to this section.

1.06 PRE-INSTALLATION CONFERENCE

A. Prior to scheduled commencement of the roofing installation and associated work, conduct a meeting at the project site with the installer, architect/consultant, owner, manufacturer's representative and any other persons directly involved with the performance of the Work. The Installer shall record conference discussions and to include decisions and agreements reached (or disagreements) and furnish copies of recorded discussions to each attending party. The main purpose of this meeting is to review foreseeable methods and procedures related to the Work.

1.07 DELIVERY, STORAGE AND HANDLING

A. Deliver all roofing/waterproofing materials to the site in original containers, with factory seals intact.

B. Store all goods in their original undamaged containers in a clean, dry location within their specified temperature range on the product data sheet.

C. Do not expose materials to moisture in any form before, during, or after delivery to the site. Reject delivery of materials that show evidence of contact with moisture.

D. Remove manufacturer supplied plastic covers from materials provided with such. Use "breathable" type covers such as canvas tarpaulins to allow venting and protection from

weather and moisture. Cover and protect materials at the end of each work day. Do not remove any protective tarpaulins until immediately before the material will be installed.

1.08 PROJECT CONDITIONS

A. Weather: Proceed with roofing/waterproofing only when existing and forecasted weather conditions permit. Membrane application can proceed when precipitation is imminent. Sikalastic® RoofPro is capable of curing in immersion immediately after application. Visual marks in the form of pock marks may occur if uncured membrane is exposed to rainfall but is not considered a limiting factor in the performance of the roofing membrane. Ambient temperatures shall be above 41°F (5°C) when applying the roofing/waterproofing system.

B. All surfaces to receive the roofing/waterproofing membrane shall be free from visible water, dew, frost, snow and ice. Application of roofing/waterproofing membrane shall be conducted in well ventilated areas.

C. Roofing Membrane:
   1. Roofing/waterproofing membrane is not intended to be exposed or in contact with a constant temperature below -22°F (-30°C) or in excess of 176°F (80°C). See technical data sheets for limitations, i.e., hot pipes and vents or direct steam venting.
   2. Specified roofing/waterproofing membrane is non-flammable and VOC compliant. Consult container, packaging labels and Safety Data Sheets (SDS) for specific safety information.
   3. Specified roofing/waterproofing membrane is resistant to gasoline, paraffin, fuel oil, mineral spirits, and moderate solutions of acids and alkalis, acid rain and detergents. Some low molecular weight alcohols can soften. Any exposure to foreign materials or chemical discharges shall be presented to membrane manufacturer for evaluation to determine any impact on the waterproof membrane assembly performance prior to installation.

D. Contractor shall ensure adequate protection(s) during installation of the roofing/waterproofing system.

E. Specified roofing/waterproofing membrane may be used as a temporary roofing/waterproofing barrier when applied at a wet film thickness of 15-20 mils to a properly prepared deck. When the specified roofing/waterproofing membrane is used as a temporary roofing/waterproofing barrier the roofing/waterproofing membrane does not need to be removed prior to installation of the finished roofing/waterproofing system

1.09 WARRANTY

A. Warranty: Provide manufacturer's standard warranty. Materials warranty shall be for a minimum of one year starting at the date of Substantial Completion. System warranty shall be for the following duration in accordance with specified system.
   1. Warranty Length: 20 years

PART 1 PRODUCTS

2.01 MANUFACTURER

A. Basis-of-Design Manufacturer: Sikalastic RoofPro System as manufactured by Sika Corporation, 201 Polito Avenue, Lyndhurst NJ 07071 web: usa.sika.com. No substitutions without prior written approval by the Architect.

2.02 ROOFING SYSTEM

A. Fluid-Applied Membrane System, 20 Year Warranty, Sikalastic® RoofPro 20, Sika Fleece 140:
   1. Base Layer: Sikalastic® 641 Lo-VOC, 50 mils wet film thickness, 32 sf/gal coverage rate approx.
   2. Top Layer: Sikalastic® 641 Lo-VOC, 30 mils wet film thickness; 53 sf/gal coverage rate approx.

2.03 MEMBRANES AND COATINGS

A. Base embedment coat with Fleece reinforcement shall be Sikalastic® 641 Lo-VOC by Sika Corp, a single component, cold, fluid applied, moisture triggered, aliphatic, polyurethane base coat membrane.

B. Top coat shall be Sikalastic® 641 Lo-VOC by Sika Corp, a single component, cold, fluid applied, moisture triggered, aliphatic, polyurethane top coat membrane.

C. Base coat and top coat membranes shall be low in VOC's and be a one component elastomeric polyurethane membrane that may be brush or roller applied. Membrane shall have the following physical properties

D. Liquid Property Requirements:
   1. Liquid Applied, Single-component, Moisture-Triggered, Aliphatic Polyurethane. Sikalastic®-641 Lo-VOC: VOC Content, ASTM D-2369-81: < 50 g/l
   2. Volume Solids, ASTM D2697: 89% minimum.
   3. Weight Solids: ASTM D1644: 92% minimum.
   4. Sag Resistance, ASTM D4400: No sag at 700 micrometers (0.028 in. / 28 mil)

E. Film Physical Property Requirements:
   1. Tensile Strength (Tension): ASTM D412: Minimum 1.86 MPa (270lb/in2)
   2. : MIN 200%.
   3. Accelerated Weathering FL/UV – 5000 Hours, ASTM G 154, No cracking or checking.
   4. Water Vapor Transmission, Permeability / Permeance: ASTM E96: Maximum 8.5 gms/m2/ day (0.033 perm-inches).
   5. Flexibility – Mandrel Bend, ASTM D522: Pass, no cracking or flaking.
   6. Tear Resistance, ASTM D625: Minimum 5.8 kN/m (33 lbf/in)
   7. Indentation Hardness, ASTM D2240: 82 Durometer Units (+/- 5 units)
   8. Dynamic Puncture Resistance, ASTM D5635: Minimum 15 joules (357 ft.poundals)
   9. Static Puncture Resistance, ASTM D5602: Minimum 20.7 kg. (45.5 lbs.)

2.04 MEMBRANE REINFORCEMENT – POLYESTER (CHOOSE TO MATCH SYSTEM IN 2.2)

A. Reinforcement for the roofing/waterproofing membrane system shall be Sika Fleece by Sika Corp., a non-woven, needle-punched polyester fleece specifically designed to provide greater impact resistance and greater resistance to excessive thermal and structural movement while maintaining elasticity and membrane film integrity.

B. Supplemental reinforcement of the waterproofing membrane system specifically designed for local reinforcement of the waterproofing membrane at structural cracks, expansion joints and transitions between dissimilar materials shall be Sika Flexitape Heavy by Sika Corp., a nylon mesh OR Sika Joint Tape SA by Sika Corp., a self-adhering polymeric rubberized tape with woven polyester facer.

2.05 FILLET BEAD AND PENETRATION SEALANT

A. Sealant for fillet bead applications and membrane penetrations shall be Sikaflex®-11 FC by Sika Corp., a one-part, polyurethane sealant suitable for fillet bead transition compound to be applied prior to the installation of the membrane system at changes in substrate direction, cove beads, cracks in the substrate and penetrations of the roof /waterproofing system.

B. Exposed finish sealant shall be SikaHyflex-150 LM by Sika Corp., a one-part low modules hybrid sealant OR Siksil WS-295. A one-part, low-modulus, weather sealing, silicone sealant. suitable for finishing terminations at saw cuts and all UV exposed sealant terminations. SikaHyflex-150 LM is also suitable for fillet bead transition, changes in substrate direction, cracks in the substrate and penetrations of the roof before installation of the RoofPro membrane system.

2.06 PRIMERS

A. Concrete, roof cover boards and sealing cementitious and gypsum-based substrates shall be primed with Sika Concrete Primer Lo-VOC by Sika Corp., a single component, rapid curing, high solids, moisture cured primer designed for OR Sika Concrete Primer by Sika Corp., a two component, rapid curing, high solids, solvent based polyurea primer.

B. Green and damp concrete shall be primed with Sikalastic® GDC primer by Sika Corp., a 2-component, moisture mitigating epoxy primer for Green, Damp and Dry Concrete surfaces as well as plywood.

C. Metal substrates shall be primed with Sikalastic® EP Primer/Sealer by Sika Corp., a two-component, cyclo-aliphatic, amine cured material with a high level of corrosion resistance for metal, modified bitumen surfaces, and chemically treated wood or the faster curing version Sikalastic® EP Primer Rapid by Sika Corp.,

D. Overpainting Sikalastic-600 Series shall be done with Sika Bonding Primer by Sika Corp: fast-drying, two-component, water-based, adducted polyamide epoxy primer also acceptable for roof coverboards

E. Wood substrates shall be primed with Sikalastic® EP Primer/Sealer by Sika Corp., a two-component, cyclo-aliphatic, amine cured material with a high level of corrosion resistance for metal, modified bitumen surfaces, and chemically treated wood

F. Existing Sikalastic-600 Series Membrane (if over 7 days old) shall be primed with Sika Reactivation Primer or Sikalastic Recoat Primer.

2.07 COVER BOARD/THERMAL BARRIER

A. Glass-faced/treated gypsum core, moisture resistant cover board/thermal barrier, intended for use as a thermal barrier directly to the structural wood or steel deck. Cover board shall be Dens-Deck Prime by Georgia-Pacific Corp. Thickness and orientation to match existing where wet roofing was removed.

2.08 POLYISOCYANURATE FOAM INSULATION

A. Fiber-reinforced faced polyisocyanurate foam insulation, either flat stock or tapered, meeting the requirements of ASTM C1289 Type II, Class 1 Grade 2 (20 psi) or Grade 3 (25 psi). Insulation shall be H-Shield by Hunter Panels, Inc., AC Foam III by Atlas Roofing Corp., Sarnatherm or Sika RMAX. Thickness to match existing where wet roofing is removed.

2.09 MECHANICAL FASTENERS

A. Mechanical fasteners and plates for polyisocyanurate foam insulation and cover board/thermal barrier securement shall meet requirements of Factory Mutual, and be of appropriate type and length for structural deck substrate.

B. #12 or #14 screw-type fasteners for steel decks shall penetrate through the steel deck a minimum of ½".

C. #12 or #14 screw-type fasteners for wood decks shall achieve a minimum of 1" penetration depth into the wood or shall penetrate through the wood deck a minimum of ¼".

D. #14 screw-type or drive spike fasteners for concrete decks shall achieve a minimum of penetration depth into the concrete. Predrilling of the concrete deck is required.

E. All fasteners shall be installed with 3" diameter galvalume plates.

F. Fasteners and plates shall be by OMG, Inc.

2.10 URETHANE FOAM ADHESIVE

A. Low-rise urethane foam adhesive for polyisocyanurate foam insulation and cover board/thermal barrier securement shall meet requirements of Factory Mutual and be compatible with the intended deck substrate.

B. Adhesive shall be Sarnacol OM Board Adhesive

PART 1 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces and conditions are ready to accept the Work of this section. Notify Architect in writing of any discrepancies. Commencement of the Work in an area shall mean Installer's acceptance of the substrate.

B. Surfaces shall be sound, dry, clean and free of oil, grease, dirt, excess mortar or other contaminants. Fill voids, gaps and spalled areas in substrate to provide an even plane. Strike masonry joints full flush.

3.02 SURFACE PREPARATION

A. Verify that the deck is clean and smooth, free of depressions, waves, or projections, and properly sloped to drains, valleys, eaves, scuppers or gutters. Verify that all roof openings or penetrations through the roof are secured back to solid blocking. Ensure all preparatory Work is complete prior to applying membrane.

B. Mechanical fasteners used to secure sheathing boards or penetrate sheathing boards shall be set flush with sheathing and fastened into solid backing.

C. All surfaces shall be blown clean using an air compressor to remove any remaining loose debris.

D. All cracks and voids greater than 1/16th on an inch shall be routed and caulked with a polyurethane sealant. Allow to cure per roof /waterproofing membrane manufacturer's technical data sheets prior to over-coating with the specified roof /waterproofing membrane system.

E. At all inside corners, gaps or voids at the juncture of the deck and penetrations apply a minimum 3/4 inch fillet bead of polyurethane sealant and allow to cure per roof /waterproofing membrane manufacturer's technical data sheets prior to installing the roof /waterproofing membrane system.

F. At all moving cracks, moving joints between dissimilar materials, and similar conditions, create a minimum 1 inch wide bond break utilizing bond breaker tape, centered over the crack or joint.

G. Membrane terminations shall be established prior to project start-up and documented in shop drawings. Terminations shall occur in raked-out mortar joints, saw cut terminations or under installed counter-flashing materials.

H. Use tape lines to achieve a straight edge detail.

3.03 SUBSTRATE PREPARATION

A. Acceptable substrates include concrete, concrete block, solid wood and plywood sheathing, approved cover boards and metal.

B. Wood and Plywood Sheathing:
   1. Solid wood sheathing shall be tongue & groove, or splined, or covered with a layer or plywood sheathing. Solid wood sheathing shall be not less than 3/4 inch (13 mm) thick.
   2. Plywood sheathing shall be exterior grade, minimum 4 ply, and not less than 15/32 inch (12 mm) thick.
   3. Preservatives or fire retardants used to treat the decking shall be compatible with roofing materials.
   4. The deck shall be installed over joists that are spaced 24 inches (61 cm) o.c. or less and that all four sides bear on and are secured to joist and cross blocking. "H" clips are not acceptable.
   5. Panels shall be installed with a 1/8 inch to 1/4 inch (3mm – 6mm) gap between panels and shall match vertically at joints to within (1/8 inch (3mm).
   6. Decking shall be kept dry and roofed promptly after installation.
   7. Special attention is required for application over pressure treated wood: use Sikalastic EP Primer/Sealer as per Product Data Sheet. WOOD MOISTURE CONTENT SHALL NOT

EXCEED 18% WOOD MOISTURE EQUIVALENT (WME) as measured by a Tramex moisture meter calibrated for WME.

C. Structural Concrete:
   1. Acceptable concrete substrates are limited to poured in place concrete decks.
   2. Minimum deck thickness for structural concrete is 4 inches (10.2 cm).
   3. Concrete surface to be light broom finish or equivalent.
   4. Curing agents shall be checked for compatibility with specified roofing/waterproofing materials. Most curing agents shall be completely removed from the substrate by grinding, scarifying, or other mechanical means.
   5. Concrete and masonry surfaces shall be low-pressure (5,000 psi or less) power-washed in accordance with ICRI Guideline No. 03732: Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays to remove all dirt, debris or surface contamination that would compromise bonding of the specified roofing/waterproofing membrane system. Remove oil or grease with solvents, or detergent and water. Rinse surface clean of remaining cleaning agents.
   6. Do not apply on substrates with moisture content greater than 4% by weight, measured by Tramex Concrete Moisture Encounter meter.
   7. Application to Damp (moisture content greater than 4%) Concrete: Sikalastic® GDC Primer can be applied to damp concrete as soon as surface water has dissipated after rainfall or other sources of water have ceased.
   8. Application to Green Concrete: Sikalastic® GDC Primer can be applied to horizontal concrete surfaces 48 hours after concrete pour (or when concrete is walkable) and vertical surfaces 24 hours after forms are removed.
   9. Minimum substrate compressive strength > 3000 psi. at the time Sikalastic® GDC Primer is applied.

D. Metal Decking:
   1. Metal profile decks shall be sound and secured to purlins, bar joists, etc. If required, a ½" thick thermal barrier shall be installed and secured over all metal profile decks in accordance with wind uplift requirements.

E. Metal Surfaces:
   1. Exposed drain bowls, pipes, and other metal surfaces shall be cleaned by power tool cleaning (SSPC Standards) to remove corrosion deposits back to a clean, bright metal followed by a solvent wipe prior to application of the specified primer.

F. Existing Membrane:
   1. Acceptable existing waterproofing membrane must be sound, well adhered and free of any trapped moisture. Verification that the membrane is free of trapped moisture must be established with a moisture scan and a copy of the moisture scan must be provided to the manufacturer.
   2. Ensure that there is no trapped moisture via an infrared scan.
   3. Existing areas of wet roofing and insulation shall be removed down to the deck and outward until dry, sound material is reached. Replace removed roofing to match existing in installation, composition and thickness.
   4. Pressure wash the roof to remove all dust, dirt and debris from the surface.
   5. Validate primer adhesion to Single-ply membranes to determine the level of surface preparation required.

3.04 PRIMING

A. Concrete, Masonry, Cover Boards, Plywood and solid wood:
   1. Mix and apply specified primer for concrete/masonry/wood surfaces by brush or roller at the application rate shown on the technical data sheet. Porous, rough or absorbent surfaces will decrease coverage rates.

B. Metal

1. Apply specified primer for metal drain bowls and other metal surfaces by brush or roller at the application rate shown on the technical data sheet. High roughness of the substrate will decrease coverage rates.

C. Modified Bitumen:
   1. Apply specified primer to clean and prepared modified bitumen surfaces by brush or roller at the application rate shown on the technical data sheet. High porosity and roughness of the substrate will decrease coverage rates.

D. Existing Sikalastic-600 series Membrane Tie-In:
   1. Apply specified primer to existing roof/waterproofing membrane greater than seven (7) days old by roller at the coverage rate specified on the product data sheet. Allow to cure in accordance with manufacturer's technical data sheets prior to application of subsequent roof/waterproofing membrane system.

3.05 MEMBRANE REINFORCEMENT

A. Reinforcement of Cracks, Plywood and Cover Board Joints, and Base/Curb Flashing Transitions:
   1. For all locations where the specified membrane system is to be applied directly to the substrate surface, provide reinforcement of cracks and joints prior to applying the specified membrane system
   2. For all moving cracks and joints, create a minimum 1 inch wide bond break centered over the crack or joint by applying bond break tape centered over each crack or joint.
   3. For all non-moving cracks and joints, rout and seal with Sikaflex polyurethane sealant.
   4. For all horizontal-to-vertical transitions, provide a ¾" x ¾" Sikaflex polyurethane sealant cant.
   5. Apply a minimum of a 3 inch wide strip of Sika Joint Tape SA directly or alternatively Flexitape Heavy membrane reinforcement of into a bed of liquid roofing/waterproofing membrane. Back roll reinforcement to fully embed reinforcement into the wet liquid polyurethane membrane. Add more liquid membrane as needed to fully embed the reinforcement.
   6. Ensure reinforcement is not in tension during embedment.

3.06 COLD FLUID APPLIED FIELD MEMBRANE APPLICATION

A. Install roofing/waterproofing membrane system in accordance with current technical data sheets and in accordance with Part 2 Section 2.2.

B. Apply base embedment coat to horizontal deck and vertical wall surfaces by brush or with 1/2 inch nap roller to achieve a continuous and uniform minimum wet film thicknesses as specified in Part 2 Section 2.2. For fleece application, approximately 2/3 of the total resin shall be applied as the base embedment coat.

C. Immediately lay specified conformable membrane reinforcement into the wet base embedment coat. Reemat reinforcement is typically precut before application; Fleece reinforcement is typically precut at flashings only before application.

D. Apply pressure to the membrane reinforcement with a roller as appropriate to fully embed and saturate the membrane reinforcement into liquid roofing/waterproofing material. Remove air pockets from under the membrane by rolling them out.

E. Apply additional liquid material as required to ensure the membrane reinforcement is fully embedded and has conformed to the substrate without tenting, visible pinholes, air pockets, fish mouths or wrinkles.

F. Overlap sheets of Fleece membrane reinforcement a minimum of 3 inches at side laps and 6 inches at end laps.

G. Extend membrane reinforcement vertically at adjacent wall surfaces in accordance with project details and specifications.

H. When using fiberglass mat reinforcement, allow the base embedment coat to fully cure dry prior to the placement of top coat or other applications of the specified roofing/waterproofing material.

I. When using polyester fleece reinforcement, immediately apply the resin top coat wet-on-wet.

J. Apply top coat by nap roller or brush to achieve a continuous and uniform minimum wet film thickness as specified in Part 2 Section 2.2.

K. Install all flashings in accordance with manufacturer's and/or project specific construction details.

3.07 PARAPET AND WALL FLASHINGS

A. Clean, prepare and prime flashing substrate surfaces ready to receive membrane flashing applications.

B. All parapet, wall, and curb flashings shall be provided with a sealant cant with Flexitape reinforcement prior to flashing application.

C. Terminate roofing/waterproofing membrane system at raked-out mortar joints, termination saw cut joint, or under installed counter-flashing materials. Seal all mortar joints and saw cut joints with specified sealant.

D. Install metal counter flashings in accordance with details.

3.08 DRIP EDGES AND OTHER METAL FLANGED FLASHING

A. Clean, prepare and prime metal flange surfaces ready to receive membrane flashing applications.

B. Metal flanges are typically encapsulated between two membrane layers, usually by providing membrane flashing as a stripping ply over the metal flange, with the field or flashing membrane extending beneath the metal flange. It is preferred to install the stripping ply under the metal flange and extend the field or flashing membrane over the metal flange.

C. For insulated roof assemblies, metal flanges shall be mechanically fastened through the first membrane layer to wood nailers. For direct to substrate membrane applications where the roof / waterproofing membrane is applied directly to the structural deck, metal flanges shall be mechanically fastened through the first membrane layer to the structural deck.

3.09 ROOF DRAINS

A. Clean, prepare and prime surfaces ready to receive membrane applications. Block drain bowl opening to avoid roofing/waterproofing material from entering the drainage system.

B. Remove strainer baskets and clamping rings from the drain bowl assembly. Temporarily replace the bolts back into assembly to avoid miss-alignment of connections after membrane applications are completed.

C. Extend the liquid roofing/ waterproofing material and membrane reinforcement directly into the bowl of the prepared drain.

D. Remove drain blocks and allow the roofing/waterproofing system to fully cure dry prior to re-connecting the drain bowl assembly.

3.10 ROOF PENETRATIONS

A. Clean, prepare and prime surfaces ready to receive membrane flashing applications. Ensure that penetrations are secured to prevent movement.

B. Penetration flashings typically consist of two components. A vertical flashing component extends up the penetration and is torn (if Reemat reinforcement) or finger cut (if fleece reinforcement) at the bottom so that it can be extended horizontally onto the deck/substrate. A horizontal flashing component covers all of the tears/finger cuts and extends vertically up the penetration. The intent is to achieve a 2-3 inch overlap of the two flashing components.

3.11 EXPANSION JOINTS

A. Clean, prepare and prime surfaces ready to receive membrane flashing applications. For insulated roof assemblies, wood nailers shall be installed as insulation stops prior to expansion joint flashing application.

B. Expansion joints shall be sealed with a compressible filler such as batt insulation to prevent condensation and to provide support for the flashing bellows.

C. Expansion joint flashings typically consist of four components. An initial reinforced membrane cradle of 6" wide Flexitape Heavy or Fleece is installed first, followed by a compressible foam rod under 25% compression, extending equally above and below the membrane level. A second reinforced membrane layer is installed over the foam rod to create a bellows. A third reinforced membrane layer is installed over the bellows. It is acceptable to use the flashing or roof / waterproofing membrane as the final layer. Refer to Manufactures' standard expansion joint detail.

3.12 AGGREGATE SURFACING

A. Apply aggregate surfacing as specified for walkways and other areas requiring enhanced slip resistance. DO NOT BROADCAST SAND INTO TOP COAT.

B. Apply an additional 15 wet mil layer of Sikalastic®-641 Lo-VOC resin to cured roofing/waterproofing membrane as soon as membrane can be walked on without damage.

C. Broadcast kiln-dried sand to achieve partial coverage and backroll.

D. Alternatively, broadcast kiln-dried sand or ceramic-coated aggregate to refusal into the additional 15 wet mil layer of Sikalastic®-641 Lo-VOC and allow to cure. Remove all loose sand/aggregate. Apply an additional 15 wet mil layer of Sikalastic® 641 Lo-VOC resin to seal kiln-dried sand. Apply an additional 10-15 wet mil layer of Sikalastic® 748 PA clear resin to seal ceramic-coated aggregate.

E. Perform a mock-up for approval of the selected aggregate surfacing.

3.13 APPLICATION OF PENETRATION SEALANT

A. Seal reglet-based membrane terminations, heads of exposed mechanical fasteners, around penetrations, duct work, electrical and other apparatus extending through the roofing/waterproofing membrane with specified penetration sealant.

3.14 FLOOD TEST (AS REQUIRED)

A. Upon the completion of the roofing/waterproofing membrane system and associated terminations the contractor shall flood test the system. Provide temporary stops and plugs for the roof drains within the test area. Flood test with a minimum 2 inches of water for no less than 24 hours.

B. Repair and retest the system for no less than 24 hours, report all deficiencies to the Architect. Remove temporary stops and plugs. No other Work is to proceed without prior direction from the Architect.

3.15 ROOF PROTECTION

A. Protect roofing/waterproofing Work from other trades until completion.

B. Stage materials in such a manner that avoids foot traffic over completed roof areas.

C. Provide temporary walkways and platforms to protect completed Work from traffic and point loading during the application process.

D. Provide temporary membrane tie-ins and water-stops at the end of each workday and remove prior to commencement of Work the following day.

3.16 CLEAN-UP

A. Work areas are to be kept clean, clear and free of debris at all times.

B. Do not allow trash, waste, and/or debris to collect on the roof deck area. Trash, waste, and/or debris shall be removed from the roof on a daily basis.

C. All tools and unused materials shall be collected at the end of each workday and stored properly off of the finished roof surface and protected from exposure to the elements.

D. Dispose of or recycle all trash and excess material in a manner conforming to current EPA regulations and local laws.

E. Properly clean the finished roof surface after completion, and make sure the drains and gutters are not clogged.

F. Clean and restore all damaged surfaces to their original condition.

END OF SECTION

SECTION 07 5610
PMMA (POLYMETHYL METHACRYLATE) FLUID-APPLIED ROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fluid-Applied standing seam metal roof panel repairs.

B. Adhered cold fluid-applied reinforced (PMMA) polymethyl methacrylate waterproofing

C. system including, membrane, penetration flashings, base flashings, and expansion joints.

D. Substrate preparation, cleaning, leveling and patching

E. Temporary waterproofing

F. Waterproofing membrane installation

G. Accessories.

1.02 SYSTEM DESCRIPTION

A. All membrane materials to be installed to cover the existing copper hidden gutter shall have a superior coefficient of expansion, to allow for differential movement between the horizontal and vertical surface of the flashed penetration or projection.

B. New membrane system MUST provide fast-drying primers to allow substrate preparation, priming and membrane application to be completed the same day.

C. The use of cold fluid-applied reinforced (PMMA) polymethyl methacrylate membrane materials will be required for all gutter coating restorations.

1.03 RELATED REQUIREMENTS

A. Section 07 6200 - SHEET METAL FLASHING AND TRIM: Metal parapet covers, copings, and counterflashings.

B. Section 076201 - Restoration of Copper Sheetmetal Fascia & Roof Flashing

1.04 REFERENCE STANDARDS

A. American Society for Testing and Materials (ASTM) C 836 Standard Specification for High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane.

B. Forschungsgesellschaft Landschaftsentiwicklung Landschaftsbau (FLL), Guidelines for the Planning, Execution and Upkeep of Green Roof Sites (2002).

C. Dow Chemical Company, TechNote 508 “Ballast Design Guide for IRMA Roofs”.

D. National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual.

E. ACI-308 - Recommended Practice for Curing Concrete

F. ASTM - D638 - Test Methods for Tensile Properties of Plastics

G. ASTM - D4258 - Standard Practice for Surface Cleaning Concrete for Coatings

H. ASTM - D4259 - Standard Practice for Abrading Concrete

I. ASTM - D4541 - Method for Pull-Off Strength of Coatings using Portable Adhesion Tester

J. ASTM - E96(A) - Test Methods of Moisture Transmission of Material

K. ASTM E-108, ANSI/UL 790 for fire resistance.

L. Steel Structures Painting Council (SSPC)

M. CRRC-1 - Standard; Cool Roofs Rating Council 2017.

1.05 SUBMITTALS

A. See Section 01 3000 - Project Administrative Requirements, for submittal procedures.

B. Membrane System Product Data: Provide current standard printed product literature indicating characteristics of membrane materials, flashing materials, components, and accessories product specification and installation.

C. Product Samples: Submit product samples of membrane and flashing materials showing color, texture, thickness and surfacing representative of the proposed system for review and approval by the Owner's Representative.

D. Submit sample copies of both the Manufacturer and Applicator warranties for the periods stipulated. Each specimen must be a preprinted representative sample of the issuing company's standard warranty for the system specified.

E. Submit copies of current Material Safety Data Sheets (MSDS) for all components of the work.

F. Membrane Shop Drawings: Submit shop drawings of cold fluid-applied reinforced polymethyl methacrylate membrane showing all a project plan, size, flashing details, and attachment for review and approval by the Owner's Representative and Membrane Manufacturer.

G. Product Data: Provide manufacturer's data for membrane and accessory materials.

H. Field Quality Control Test Report.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacture of fluid-applied roofing or waterproofing systems.

B. Membrane Manufacturer: Company specializing in manufacturing the products specified in this section with ten (10) years documented experience. Membrane Manufacturer shall submit the following certifications for review:
   1. Substrates and conditions are acceptable for purpose of providing specified warranty.
      a. Materials supplied shall meet the specified requirements.
   2. Applicator: Company specializing in performing the work of this section with (3) years documented experience and approved by system manufacturer for warranted membrane installation. Applicator shall submit the following certification for review:
      a. Applicator shall submit documentation from the membrane manufacturer to verify contractor's status as an approved applicator for warranted installations.
   3. Evaluate moisture content of substrate materials. Constructor shall determine substrate moisture content throughout the work and record with Daily Inspection Reports or other form of reporting acceptable to the Owner or designated Representative, and Membrane Manufacturer.

C. Random tests to determine tensile bond strength of membrane to substrate shall be conducted by the Contractor at the job site using an Elcometer Adhesion Tester Model 106 or similar device. Contractor shall perform tests at the beginning of the Work, and at intervals as required to assure specified adhesion with a minimum of three (3) tests per 5000 square feet. Smaller areas shall receive a minimum of three (3) tests. Test results shall be submitted to the
   1. Owner or his designated Representative and the Membrane Manufacturer. Contractor shall immediately notify the Owner or his designated Representative and Membrane Manufacturer in the event tensile bond test results are below specified values.
      a. Adequate surface preparation will be indicated by tensile bond strength of membrane to substrate greater than or equal to 220 psi (1.5 N/mm2) for pedestrian traffic and 300 psi (2.0 n/mm2) for vehicular (low speed) traffic and water flow/containment.
      b. In the event the tensile bond strengths are lower than the minimum specified, additional substrate preparation is required. Repeat testing to verify suitability of substrate preparation.

D. Monitor quantities of installed materials. Monitor application of resin mixture, reinforcing fleece and flashing. Perform Work in accordance with manufacturer's instructions.

1.07 REGULATORY REQUIREMENTS

A. Conform to applicable building and jurisdictional codes for roofing/waterproofing assembly and fire resistance requirements.

B. Comply with requirements of OSHA, NIOSH or local governing authority for work place safety.

C. Comply with authority or agency “Confined Space Policy” during and throughout all work to be performed.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's original containers, dry and undamaged, with seals and labels intact.

B. Store materials in weather protected environment, clear of ground and moisture.

C. Ensure storage and staging of materials does not exceed static and dynamic load-bearing capacities of roof decking.

D. The Contractor together with the Owner or his designated Representative shall define a storage area for all components. The area shall be cool, dry, out of direct sunlight, and in accordance with manufacturer‘s recommendations and relevant regulatory agencies. Materials shall not be stored in quantities that will exceed design loads, damage substrate materials, hinder installation or drainage.

1. Store solvent-bearing solutions, resins, additives, inhibitors or adhesives in accordance with the MSDS and/or local fire authority. After partial use of materials replace lids promptly and tightly to prevent contamination.
2. Roll goods shall be stored horizontally on platforms sufficiently elevated to prevent contact with water and other contaminants. DO NOT use rolls which are wet, dirty or have damaged ends.

E. Roofing/waterproofing materials must be kept dry at all times. If stored outside, raise materials above ground or roof level on pallets and cover with a tarpaulin or other waterproof material. Plastic wrapping installed at the factory should not be used as outside storage covers.

F. Follow manufacturer's directions for protection of materials prior to and during installation. Do not use materials which have been damaged to the point that they will not perform as specified. Fleece reinforcing materials must be clean, dry and free of all contaminants.

G. Copies of all current MSDS for all components shall be kept on site. Provide any and all crewmembers with appropriate safety data information and training as it relates to the specific chemical compound he or she may be expected to deal with. Each crewmember shall be fully aware of first-aid measures to be undertaken in case of incidents. Comply with requirements of OSHA, NIOSH or local governing authority for work place safety.

1.09 ENVIRONMENTAL REQUIREMENTS

A. Do not apply roofing/waterproofing membrane during or with the threat of inclement weather.

B. Application of cold fluid-applied reinforced polymethyl methacrylate roofing/waterproofing membrane may proceed while air temperature is between 23 °F and 95 °F (-5 - 35 °C) providing the substrate is a minimum of 5 °F above the dew point.

C. When ambient temperatures are at or expected to fall below 23 °F (-5 °C) or reach 95 °F (35 °C) or higher, follow Membrane System Manufacturer's recommendations for weather related restrictions and application procedures.

D. Ensure that substrate materials are dry and free of contaminants. DO NOT commence with the application unless substrate conditions are suitable. Contractor shall demonstrate that substrate conditions are suitable for the application of the materials.

E. Where required by the Owner or his designated Representative, Contractor shall implement odor control and elimination measures prior to and during the application of the

roofing/waterproofing materials. Control/elimination measures shall be field tested at off- hours and typically consists of one (1) or a multiple of the following measures:

1. Sealing of air intakes with activated carbon filters. Install filters in accordance with requirements and recommendations of the filter manufacturer. Seal filters at joints and against building exterior walls to prevent leakage of unfiltered air where required due to size of intake opening. Provide track system to secure filters.
2. Erection and use of moveable enclosure(s) sized to accommodate work area(s) and stationary enclosure for resin mixing station. Enclosure shall be field constructed or pre-manufactured of fire retardant materials in compliance with local code requirements in accordance with requirements of the Owner or his designated Representative. Equipment enclosure(s) with mechanical air intake/ exhaust openings and Odor Control Air Cleaners, as required to clean enclosed air volume and to prevent odor migration outside the enclosure. Exhaust opening shall be sealed with activated carbon filter.
3. Placement of odor elimination stations inside and outside of the enclosure(s) as required by field condition, in coordination with the Owner or his designated Representative.
4. Protection of Contractor personnel and occupants of the structure and surrounding buildings as necessary to comply with requirements of OSHA, NIOSH and/or governing local authority.
5. When disposing of all refuse or unused materials, observe all EPA, OSHA or local disposal requirements.

1.10 COORDINATION & PROTECTION

A. Coordinate the work with the installation of associated metal flashings, accessories, appurtenances, etc. as the work of this section proceeds.

B. Building components shall be protected adequately (with tarp or other suitable material) from soil, stains, or spills at all hoisting points and areas of application. Contractor shall be responsible for preventing damage from any operation under its Contract. Any such damage shall be repaired at Contractor's expense to Owner's satisfaction or be restored to original condition.

C. Provide barricades, retaining ropes, safety elements (active/passive) and any appropriate signage required by OSHA, NIOSH, and NSC and/or the Owner or designated Representative.

D. Protect finished roofing/waterproofing membrane from damage by other trades. Do not allow waste products containing petroleum, grease, acid, solvents, vegetable or mineral oil, animal oil, animal fat, etc. or direct steam venting to come into direct contact with the membrane. Contact membrane manufacturer for further exposure limitation and restrictions.

1.11 FIELD CONDITIONS

A. Maintain ambient temperatures above 40 degrees F (5 degrees C) for 24 hours before and during application and until cured.

B. Schedule applications so that no partially completed sections of roof are left exposed at end of workday.

1.12 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. A. Manufacturer's Total System Premier Warranty: Provide Twenty (20) Year manufacturer's waterproofing warranty under provisions of this section. This waterproofing warranty provides for cost of labor and materials for loss of watertightness, limited to amounts necessary to effect repairs necessitated by either defective material or defects in related installation workmanship, with no dollar limitation (“NDL”). The warranty shall also include the insulation, garden roof components, pavers and pedestals when they are supplied or approved by membrane manufacturer and installed in accordance with membrane manufacturer general installation guidelines.

C. Waterproofing Contractor's Warranty: Provide Five (5) year "Applicator Maintenance Warranty" covering workmanship for all work of this section including installation of membrane, flashings, metal work, and roofing/waterproofing accessories.

D. Submit (2) executed copies of both the manufacturer and applicator warranties for the periods stipulated, starting from the date of substantial completion. Each warranty must be signed by an authorized representative of the issuing company.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Fluid-Applied Roofing:

1. Basis of Design:
    1. The products herein specified are totally pre-engineered products of the listed manufacturer and establish criteria for the approval of substitutions. Products must be part of a pre- engineered system, equivalent in function, quality, composition and method of application to be considered for approval as an "Approved Substitute."
        a. Alsan RS System by Soprema, Inc., Wadsworth, OH
        b. Siplast - Parapro
    2. Substitutions: See Section 01 6000 - Product Requirements.

2.02 MATERIALS

I. PHYSICAL PROPERTIES

A. Membrane: Two-component, with catalyst, cold fluid-applied reinforced (PMMA) polymethyl methacrylate waterproofing membrane with a 360 degree needle punched non-woven

B.	Property	Value	Test Method
C.	Pebble Gray -		
D.	Physical state	(Liquid) Cures to solid	-
E.	Nominal thickness (with Fleece)	115 mils	ASTM D5147 (Sect. 5)
F.	Elongation @ peak load, avg. 55%		ASTM D412 (dumbbell)
G.	Peak load @ 73°F, avg.	809 lbf/in2 (809 kN/m2	ASTM D412 (dumbbell)
H.	Tear strength	107 lbf (0.5 kN)	ASTM D5147 (Sect. 7)
I.	Shore A hardness,	avg.81	ASTM D2240
J.	Water absorpt.,(Method I)(24h @ 73°F)	0.41%	ASTM D570
K.	Water absorpt.,(Method I)(48h @ 122°F)	1.57%	ASTM D570
L.	Low temperature flexibility	-13°F (-25°C)	ASTM D5147 (Sect.11)
M.	Dimensional stability (max. movement)	-0.063%	ASTM D5147 (Sect.10)
N.	Usage time*	15-20 minutes	
O.	Rainproof after*	30 minutes	
P.	Solid to walk on after*	60 minutes -	
Q.	Solid to drive on with air rubber tires	*3 hours -	
R.	Overburden may be applied after	3 hours -	
S.	Completely hardened after	3 hours -	
T.	Crack spanning	2mm / 0.08 inch	
U.	Resistance to temp. up to (short term)	250°C/482°F	

V. *All times are approximate and depend upon wind, humidity and temperature.

2.03 ACCESSORIES

A. FLASHINGS
   1. Membrane Flashings: Two-component, with catalyst, cold fluid-applied reinforced (PMMA) polymethyl methacrylate flashing/vertical grade waterproofing membrane with a 360 degree needle punched non-woven 110 g/m2 polyester reinforcing fleece, for a finished dry film membrane thickness of .115 inch nominal per ply; conforming to ASTM C 836. Provide products manufactured and supplied by the following:
      a. Soprema System's Alsan RS 230 Flash resin for use in an adhered waterproofing system.

B. Polymethyl Methacrylate Primer: Two-component, high solids polymethyl methacrylate resin for use in improving adhesion of membrane to wood, asphalt and concrete substrate surfaces. Monitor application rate and adjust depending on substrate absorbency:
   1. Soprema System's Alsan RS 276 Primer resin for use in an adhered waterproofing system applied over cementitious/masonry and wood substrates.
   2. Soprema System's Alsan RS 222 Primer resin for use in an adhered waterproofing system applied over asphalt surfaces.

C. Epoxy Primer (Protection from Substrate Wetness): Two-component, solvent-free, 100% solids, epoxy resin for use in improving adhesion of membrane to cementitious/masonry substrate surfaces. Monitor application rate and adjust depending on substrate absorbency.

D. Reinforcement Fleece: A 360 degree needle punched non-woven 110 g/m2 polyester reinforcing fleece used to improve tear strength, puncture resistance, flexural fatigue and crack bridging capabilities while maintaining membrane uniformity:
   1. Soprema's Alsan RS Fleece reinforcement fabric for use in an adhered waterproofing system.

E. Surface Leveling/Pitching Mortar Resin: Multi component, high solids polymethyl methacrylate mortar resin mix for use in leveling, pitching and smoothing deck substrate surfaces:
   1. Soprema System's Alsan RS 233 Self-Leveling Mortar resin for use in an adhered waterproofing system.

F. Patching, Filling and Smoothing Resin: Two-component, high solids polymethyl methacrylate paste resin for use in filling surface cracks, voids and depressions and for smoothing/leveling surfaces prior to application of membrane system:
   1. Soprema System's Alsan RS Paste resin for use in an adhered waterproofing system.

G. Tools, Accessories, and Cleaners: Supplied and/or approved by membrane manufacturer for product installation.

H. Catalyst/Curing Agent: White granular powder, based on dibenzoylperoxide, used as a reactive agent to induce curing of all polymethyl methacrylate resins:
   1. Soprema's Alsan RS Catalyst Powder for use with all regular-odor polymethyl methacrylate resins.

I. Leveling and Patching Aggregate: Silica sand shall be washed, kiln-dried, and dust-free, suitable for troweling or pourable self-leveling, round grain or angular with the following size specification:
   1. For voids less than ¼" in depth: 0.4 - 0.8 mm
   2. For voids ¼" to 2" in depth: 0.7 - 1.2 mm
      a. Mixing Proportions shall be a ratio of resin to sand at 1:2 by volume or as approved by membrane manufacturer.

J. Miscellaneous Fasteners: Appropriate for purpose intended and approved by membrane system manufacturer; length required for thickness of material [with metal washers]; as supplied by membrane manufacturer.

K. Caulking: Single component, non-sag elastomeric polyurethane sealant, as recommended or supplied by membrane manufacturer for use in making airtight and watertight seals where required.

L. Adhesive/Sealants: Single component SBS-based sealant compound as recommended by membrane manufacturer for use in adhering certain geotextile seam overlaps:
   1. Soprema Sopramastic sealant compound.

M. Flexible Flashing Sheet: Neoprene or other elastic type sheets approved by roofing membrane manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions prior to starting this work.

B. Verify substrate surfaces are free of frozen matter, dampness, loose particles, cracks, pits, projections, penetrations, or foreign matter detrimental to adhesion or application of roofing system.

C. Verify that substrate surfaces are smooth, free of honeycombs or pitting, and not detrimental to full contact bond of roofing materials.

3.02 PREPARATION

A. Clean and prepare surfaces to receive roofing in accordance with manufacturer's instructions and recommendations.

B. The contractor shall determine the condition of the existing structural deck/substrate. All defects in the deck or substrate shall be corrected before new waterproofing work commences. Areas of deteriorated deck/substrate, porous or other affected materials must be removed and replaced with new to match existing.

C. Existing copper surface must be wire brushed to a bright copper condition

D. Prepare flashing substrates as required for application of new waterproofing membrane flashings.

E. Inspect substrates, and correct defects before application of new waterproofing. Fill all surface voids greater than 1/8 inch wide with an acceptable fill material.

F. Remove all ponded water, snow, frost and/or ice from the work substrate prior to installing new waterproofing materials.

G. The final substrate for waterproofing shall be clean, dry, free of loose, spalled or weak material including coatings, mineral aggregate, and flood coat/gravel surfacing, oil, grease, contaminants, abrupt changes in level, waterproofing agents, curing compounds, and free of projections which could damage membrane materials.

H. Steel/Metal:
   1. Clean and prepare metal surfaces to near white metal in accordance with SSPC - SP3 (power tool clean) or as required by membrane manufacturer. Extend preparation a minimum of three (3) inches beyond the termination of the membrane flashing materials. Notch steel surfaces to provide a rust-stop.
   2. Stainless steel (series 400, 300) shall be abraded to provide a rough open surface.

I. Other Flashing Surfaces:
   1. Remove all contaminants as required by membrane manufacturer. Surface preparation shall be performed by means approved by Owner or his designated Representative.

J. Finish Leveling, Patching and Crack Preparation:
   1. General: Resin/sand mix is the preferred material for all substrate finish leveling, crack and wall/deck preparation and patching. Resin/sand patching mix provides a fast-set time of approximately 30 minutes and does not require surface grinding.

2. Primer/sand mix is an alternative substrate leveling and patching material over horizontal surfaces. Primer/sand patching mix provides a set time of approximately 30 minutes, and does not require surface grinding. Primer/sand mix is typically applied in conjunction with general surface priming.
3. Substrate Leveling & Patching: Substrate conditions are to be evaluated by the Contractor, the Owner, or his designated Representative, and Membrane manufacturer. Perform leveling and patching operations as follows:
    a. Level uneven horizontal and low-slope surfaces with a leveling mixture of (PMMA) polymethyl methacrylate Alsan RS 233 Self-Leveling Mortar [depth < ½“, (12mm)] resin. Depths < ½“ should be build up in separate layers. Spread and plane this resin with a squeegee, trowel and/or roller to achieve a flat surface. Spike roller may be used to smooth out the surfaces.
    b. Fill cavities on horizontal and low-slope surfaces with a patching mixture of (PMMA) polymethyl methacrylate primer and approved kiln-dried sand in a 1:3 primer to sand ratio by volume or with (PMMA) polymethyl methacrylate Alsan RS Paste using trowels to apply the resin mortar in place and achieve flat surface.
    c. Fill cavities on sloped and vertical surfaces with (PMMA) polymethyl methacrylate Alsan RS Paste using trowels to apply the resin mortar in place and achieve flat surface.
    d. Silica sand must be kept absolutely dry during storage and handling.
    e. Any surface to be leveled or filled must first be primed with an appropriate (PMMA) polymethyl methacrylate primer and all Alsan RS resin mortars shall be placed in lifts no greater than the maximum thickness indicated by the manufacturer.

K. Joint and Crack Preparation:
1. Joints, cracks and fractures in the structural deck/substrate shall be prepared as defined below prior to installation of the waterproofing membrane. Note: Joints, cracks, and fractures may telegraph through the waterproofing membrane.
2. Non-Moving Cracks: Determine that crack is non-moving. Clean out crack by brushing and oil-free compressed air. Fill crack with (PMMA) polymethyl methacrylate Alsan RS Paste. Allow for a minimum of one (1) hour cure or as required by product manufacturer.
3. Moving Cracks: Determine that crack is moving. Clean out crack by brushing and oil-free compressed air. Fill crack with (PMMA) polymethyl methacrylate Alsan RS Paste. Allow for a minimum of one (1) hour cure or as required by product manufacturer. Apply resin and 4 inch (10 cm) wide strip of membrane (resin and fleece) in strict accordance with Membrane manufacturer’s written instructions

3.03 WOOD NAILER LOCATION AND INSTALLATION

A. Install pressure-treated wood nailers as specified, or as required by the Membrane manufacturer.

3.04 SECURE WOOD NAILER:

A. Wood nailers shall be firmly fastened to the deck. The wood nailer attachment must be able to resist a minimum force of 200 lbs. Per lineal foot, in any direction. Mechanically fasten wood nailers as required to resist a force of 200 lbs. per lineal foot, but with no less than 5 fasteners per 8 foot or 6 fasteners per 10-foot length of nailer. Refer to current FM loss prevention bulletin 1-49 for additional attachment recommendations

3.05 PLUMBING / WATER LINE INSTALLATION

A. A permanent line should be installed for the connection of an irrigation system (if required, e.g. the integral 2’ o.c. drip tape in capillary mat) and frost-resistant taps located for the connection of garden hose for routine maintenance and/or manual watering of the green roof during periods of extraordinarily dry weather (if irrigation is not installed).

3.06 PRIMER APPLICATION

A. General:

1. Mix and apply two-component primer in strict accordance with written instructions of Membrane Manufacturer. Use only proprietary materials, as supplied by the membrane manufacturer.
    a. The substrate surface must be dry, with any remaining dust or loose particles removed using clean, dry, oil-free compressed air, industrial vacuum, cloth wipe or a combination of methods.
    b. Do not install primer on any substrate containing newly applied and/or active asphalt, coal-tar pitch, creosote or penta-based materials unless approved in writing by Membrane Manufacturer. Some substrates may require additional preparation before applying primer.

B. Mixing of Polymethyl Methacrylate Primer:
    1. Premix polymethyl methacrylate primer thoroughly with a spiral agitator or stir stick. Add pre-measured catalyst amount into mixed primer container and mix the components for approximately 2 minutes with a clean spiral agitator on slow speed or stir stick without creating any bubbles or streaks. DO NOT AERATE. The primer solution should be a uniform color, with no light or dark streaks present.
    2. Do not thin primer. Determine required primer coverage for each substrate material/condition and apply in strict accordance with written instructions of Membrane Manufacturer.
    3. Mix only that amount of primer that can be used within 15 minutes.

C. Mixing of Two-Component Epoxy Primer:
    1. Mix A and B components together with a spiral agitator or stir stick. Use slow speed. DO NOT AERATE. The primer solution should be a uniform color, with no light or dark streaks present.
    2. Do not thin primer. Determine required primer coverage for each substrate material / condition and apply in strict accordance with written instructions of Membrane Manufacturer.
    3. Mix only that amount of primer that can be used within 15 minutes.

D. Application of Primer:
    1. Apply primer in accordance with manufacturer’s written instructions and details.
    2. Roll or brush the primer evenly onto the surface to fully saturate the substrate in one application. Do not allow primer to pond or collect in low areas.
    3. Apply primer only up to the edge of the membrane flashing terminations. Primer application past the membrane terminations requires surfacing with an approved material.
    4. For polymethyl methacrylate primer applications over cementitious substrates where protection from substrate wetness is required, apply primer coat at a heavier application rate until pore saturation is achieved.
    5. For epoxy based primer applications, apply kiln-dried sand into the final coat of primer while still wet at the rate of 30 lbs. per 100 square feet (1.5 kg/m^2). Use quartz size # 0 (0.4 – 0.8 mm).
    6. Allow polymethyl methacrylate primers to cure for a minimum of thirty (30) minutes before membrane application. Allow epoxy-based quick-dry primers to cure for a minimum of two (2) hours before membrane application. Membrane must be applied to primer only when completely dry and without tack.
    7. Premature exposure to moisture may require removal and application of new primer. DO NOT apply new primer over exposed primer older than six (6) months, primer prematurely exposed to moisture, or primer used as temporary waterproofing, unless approved in writing by the Membrane Manufacturer.

E. Disposal of Primer:
    1. Cured primer may be disposed of in standard landfills. This is accomplished by thoroughly mixing all components.

2. Uncured primer is considered a hazardous material and must be handled as such, in accordance with local, state and federal regulation. Do not through uncured resin away.

3.07 MEMBRANE APPLICATION

A. General:
   1. Mix and apply cold fluid-applied reinforced polymethyl methacrylate waterproofing membrane in strict accordance with written instructions of Membrane Manufacturer. Use only proprietary membrane resins and materials, as supplied by the membrane manufacturer.
   2. The primed substrate surface shall be dry, with any remaining dust or loose particles removed using clean, dry, oil-free compressed air, industrial vacuum, cloth-wipe or a combination.
   3. Protect all areas where membrane has been installed. Do not work off installed membrane during application of remaining work before three (2) hours of curing. Movement of materials and equipment across installed membrane is not acceptable. If movement is necessary, provide complete protection of affected areas.
   4. Closely follow the Membrane Manufacturer's recommendation for hot and cold weather application. Monitor surface and ambient temperatures, including the effects of wind chill.

B. Mixing of Resin:
   1. Mix resin with a spiral agitator for a minimum of 2 minutes until the liquid has a uniform color.
   2. Add the pre-measured Catalyst Powder to resin and mix with the same agitator for 2 minutes or until the powder is completely mixed. The catalyst is completely dissolved when there are no white specs remaining.

C. Application of Resin/Fleece
   1. Apply mixed resin to the prepared surface in accordance with manufacturer’s written instructions and details. The resin should be rolled or brushed liberally and evenly onto the surface using a broad, even stroke. Cover one working area at a time, between 15 – 20 ft.2 (1.4 – 1.9 m2).
   2. Roll out dry polyester fleece onto the liquid resin mix, making sure the SMOOTH SIDE IS FACING UP (natural unrolling procedure), avoiding any folds and wrinkles. The fleece will begin to rapidly saturate with the liquid resin mix. Use a medium nap roller or brush to work the resin into the fleece, saturating from the bottom up, and eliminating air bubbles, wrinkles, etc. The appearance of the saturated fleece should be light opaque amber with no white spots. White spots are indications of unsaturated fleece or lack of adhesion. It is important to correct these faults before the resin cures.
   3. Apply additional liquid resin mix on top of fleece in accordance with manufacturer’s written instructions and details to finish the saturation of the fleece. Roll this final coating into the fleece, which will result in a glossy appearance. The fleece can only hold so much resin and all excess should be rolled forward to the unsaturated fleece, eliminating ponding or excessive build-up of the resin. Any excess resin left on the top of the fleece will weather and peel off. The correct amount of resin will leave no whiteness in fleece and there will be a slightly fibrous surface texture. The final resin coating should be smooth and uniform.

D. Prevent contact between mixed/unmixed resin and new/existing membrane. If any unmixed resin contacts membrane surface remove immediately and clean thoroughly with a cloth rag

3.08 INSTALLATION

A. Install fluid-applied roofing in accordance with manufacturer's instructions and recommendations, to specified minimum thickness.

B. Apply primer or surface conditioner at a rate recommended by manufacturer, and protect surface conditioner from rain or frost until dry.

C. Joint Cover Assembly: Install at expansion joints, moving joints 1/2 inch (12.7 mm) wide or wider, and joints between horizontal and vertical surfaces.

1. Use flexible flashing sheet wide enough to extend 6 inches (152 mm) on both sides of joint with a loop of sheet extended down into the joint to a depth at least the width of the joint.
2. Embed sheet in one coat of fluid-applied roofing material.
3. Before installing the remainder of the roofing material, install a compressible joint sealer backer rod into joint above loop to prevent roofing material from filling loop.

D. Applying to Vertical Surfaces: Extend fluid-applied roofing material at least 6 inches (152 mm) above horizontal roofing surfaces.

E. Roof Drains: Unless otherwise recommended by roofing manufacturer, set drain flange in one coating of roofing material and extend a full thickness of roofing material onto drain clamp flange, with adequate coating of roofing material to ensure waterproof seal of clamp ring.

F. Apply extra thickness of roofing material at corners, intersections, and angles, when recommended by roofing manufacturer.

G. When using as a repair method on existing metal roof panels, paint finished product to match roof panels.

3.09 FIELD QUALITY CONTROL

A. Owner will provide testing services in accordance with Section 01 4000 - Quality Requirements, and Contractor shall provide temporary construction and materials for testing.

B. Upon completion of horizontal fluid-applied roofing material installation, install dam at perimeter of installation area in preparation for flood testing.

C. Flood area to a minimum depth of 1 inch (25.4 mm) with clean water, and after 72 hours, inspect for leaks.

D. If leaking is found, remove water, repair leaking areas with new roofing materials as directed by Designer, and repeat flood test. Repair damages to building related to roof test leakage.

E. When area is confirmed to be watertight, drain water and remove dam materials.

3.10 PROTECTION

A. Protect installed roofing and flashings from construction operations.

B. Where traffic must proceed over installed roofing materials, protect surfaces using durable materials acceptable to roofing material manufacturer.

END OF SECTION

SECTION 07 6200
SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fabricated sheet metal items, including flashings, counterflashings, downspouts, and gutters, reglets.

B. Sealants for joints within sheet metal fabrications.

1.02 RELATED REQUIREMENTS

A. Section 06 1010 - Rough Carpentry - Wood Nailers for sheet metal work

B. Section 07 7100 - Roof Specialties - Pre-Manufactured Warranted Edge Metal: Manufactured copings, flashings, and expansion joint covers.

C. Section 07 9200 - Joint Sealants: Sealing non-lap joints between sheet metal fabrications and adjacent construction.

1.03 REFERENCE STANDARDS

A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2020.

B. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar 2015.

C. ASTM B32 - Standard Specification for Solder Metal 2020.

D. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate 2014.

E. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric) 2014.

F. ASTM C920 - Standard Specification for Elastomeric Joint Sealants 2018.

G. ASTM International (ASTM)

H. ASTM B 117 - Practice for Operating Salt Spray (Fog) Apparatus.

I. ASTM B 244 - Standard Test Method for Measurement of Thickness of Anodic. Coatings on Aluminum and of Other Nonconductive Coatings on Nonmagnetic Basis Metals with Eddy-Current Instruments.

J. ASTM D 523 - Standard Test Method for Specular Gloss.

K. ASTM D 968 - Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive.

L. ASTM D 1308 - Standard Test Method for Effect of Household Chemicals on Clear and Pigmented Organic Finishes.

M. ASTM D 1400 - Standard Test Method for Nondestructive Measurement of Dry Film Thickness of Nonconductive Coatings Applied to a Nonferrous Metal Base.

N. ASTM D 1654 - Standard Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments.

O. ASTM D 2244 - Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates.

P. ASTM D 2247 - Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity.

Q. ASTM D 2248 - Standard Practice for Detergent Resistance of Organic Finishes.

R. ASTM D 2794 - Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).

S. ASTM D 3359 - Standard Test Methods for Measuring Adhesion by Tape Test.

T. ASTM D 3363 - Standard Test Method for Film Hardness by Pencil Test.

U. ASTM D 4214 - Test Methods for Evaluating Degree of Chalking of Exterior Paint Films.

V. ASTM E 1980 - Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.

W. CDA A4050 - Copper in Architecture - Handbook current edition.

X. SMACNA (ASMM) - Architectural Sheet Metal Manual 2012.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Pre-installation Meeting: Convene one week before starting work of this section.

1.05 SUBMITTALS

A. See Section 01 3000 - Project Administrative Requirements, for submittal procedures.

B. Contractor shall have all submittals in to the Consultant prior to the preconstruction meeting.

C. Contractor shall provide Owner with one hard copy and one electronic copy of manufacturer's

D. Material Safety Data Sheets (MSDS) for all material prior to bringing on site.

E. Contractor shall submit to the Consultant for approval, one electronic copy of all materials used on project, identified by building to be used on, manufacturer's name, size, thickness, type or grade. List shall be submitted on Contractor's letterhead stationary.

F. If requested, Contractor shall submit actual samples of prefinished material showing the exact colors and texture(s) available for color selection.

G. Contractor shall submit for approval one electronic copy of shop drawings showing any proposed detail changes.

1.06 QUALITY ASSURANCE

A. Perform work in accordance with SMACNA (ASMM) and CDA A4050 requirements and standard details, except as otherwise indicated.

B. Contractor to counter flash with metal all vertical surfaces flashed with roofing.

C. Where metal is hooked to a continuous cleat, crimp metal to cleat full length.

D. Utilize good weather to utmost. Plan and schedule all work to occur during least threatening weather. Contractor to have standing arrangement with all subcontractors, all parties agreeing to proceed as arranged, but also agreeing to adjust to sudden changes of weather.

E. Work, once begun, will leave building subject to leakage and therefore must be considered in state of emergency when weather threatens. Existing building shall be protected by Contractor from water entering through any roof or parapet area under repair for life of the project.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

B. Prevent contact with materials that could cause discoloration or staining.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Sheet Metal Flashing and Trim Manufacturers:

1. Shop Fabricated metal flashings, other than the engineered perimeter edge metal specified in Section 07 71 00 Roof Specialties - Pre Manufactured Warranted Edge Metal.
2. Substitutions: See Section 01 6000 - Product Requirements.

2.02 SHEET MATERIALS

A. Stainless Steel: ASTM A167 AISI 302/304

1. No 2D finish, temperas required for forming and performance; 0.018” thick (28 gage), except as otherwise indicated.

B. Pre-Finished Aluminum: ASTM B209 (ASTM B209M); .040" thick Aluminum, shop pre-coated with Kynar 500 coating.
   1. Kynar 500 Shop-applied, coil coating system, 70% Kynar 500® FSF® resin-based, fluoropolymer coating system, on aluminum.
   2. Color: As selected by Designer/Owner from manufacturer's standard colors.

C. Concealed Cleats
   1. Aluminum: ASTM B 209 (ASTM B 209M); 0.050 inch thick; mill-finish.

D. Stainless Steel: ASTM A666, Type 304 alloy, soft temper, 28 gage, (0.0156 inch) (0.40 mm) thick; smooth No. 4 - Brushed finish, fabricated for counterflashing wind clips only.

2.03 ACCESSORIES

A. Fasteners: Stainless steel, with soft neoprene washers.

B. Concrete Masonry Fasteners:
   1. Galvanized Deformed Shank, zinc expansion with stainless steel pin or screw type fastener requiring a predrilled hole. Nylon expansion fasteners and fasteners not requiring a predrilled hole are not allowed. Head to be countersunk or rounded. Fastener to provide a minimum of 250 lbs. per foot pullout resistance in any direction.

C. Sealant:
   1. 1. One part gun grade polyurethane base elastomeric joint sealant conforming to all applicable requirements of Federal Specification TT-S-00230C, Type II, Class A.
   2.

D. Secondary Flashing (either/or option):
   1. Elastomeric sheet membrane, minimum 30 mils.
   2. EPDM roofing membrane, 45-mils.

E. Concealed Screws:
   1. Cadmium plated pan head sheet metal screw.

F. Exposed Screws:
   1. Nonmetallic stainless steel sheet metal screw. When screw is specified to have a weather tight washer, washer shall have an integral stainless steel metal cap.

G. Nails:
   1. 11 or 12 gauge shank, minimum 3/8" head; nail composition similar to base metal being fastened.

H. Solder: ASTM B32; Sn50 (50/50) type.

2.04 FABRICATION

A. Form sections true to shape, accurate in size, square, and free from distortion or defects.

B. Form pieces in longest possible lengths.

C. Hem exposed edges on underside 1/2 inch (13 mm); miter and seam corners.

D. Fabricate corners from one piece with minimum 18 inch (450 mm) long legs; seam for rigidity, seal with sealant.

E. Fabricate flashings to allow toe to extend 2 inches (50 mm) over top of masonry wall / nailer transition. Return and brake edges.

2.05 GUTTER AND DOWNSPOUT FABRICATION

A. Gutters: Match existing Rectangular profile.

B. Downspouts: match existing profile.

C. Accessories: Profiled to suit gutters and downspouts.

1. Anchorage Devices: In accordance with SMACNA (ASMM) requirements.
2. Gutter Supports: Brackets.
3. Downspout Supports: Brackets.

D. Downspout Extenders: Same material and finish as downspouts.

E. Seal metal joints.

2.06 CONDUCTORS (DOWNSPOUTS)

A. Fabricate conductors of same metal and thickness as gutters in sections approximately 3000 mm (10 feet) long [with 19 mm (3/4 inch) wide flat locked seams].
1. Fabricate open face channel shape with hemmed longitudinal edges.

B. Fabricate elbows by mitering, riveting, and soldering except seal aluminum in lieu of solder. Lap upper section to the inside of the lower piece.

C. Fabricate conductor brackets or hangers of same material as conductor, 2 mm (1/16 inch) thick by 25 mm (one inch) minimum width. Form to support conductors 25 mm (one inch) from wall surface in accordance with Architectural Sheet Metal Manual Plate 34, Design C for rectangular shapes and E for round shapes.

D. Conductor Heads:
1. Fabricate of same material as conductor.
2. Fabricate conductor heads to not less than 250 mm (10 inch) wide by 200 mm (8 inch) deep by 200 mm (8 inches) from front to back.
3. Form front and side edges channel shape not less than 13 mm (1/2 inch) wide flanges with edge hemmed.
4. Slope bottom to sleeve to conductor or downspout at not less than 60 degree angle.
5. Extend wall edge not less than 25 mm (one inch) above front edge.
6. Fabricate outlet tube or sleeve at bottom not less than 50 mm (2 inches) long to insert into conductor.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.

B. Verify roofing termination and base flashings are in place, sealed, and secure.

3.02 PREPARATION

A. Install starter and edge strips, and cleats before starting installation.

B. Install surface mounted reglets true to lines and levels, and seal top of reglets with sealant.

C. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil (0.4 mm).

3.03 INSTALLATION

A. Secure flashings in place using concealed fasteners, and use exposed fasteners only where permitted.

B. Fit flashings tight in place; make corners square, surfaces true and straight in planes, and lines accurate to profiles.

C. Seal metal joints watertight.

D. Solder stainless metal joints for full metal surface contact. After soldering, wash metal clean with neutralizing solution and rinse with water.

E. Secure gutters and downspouts in place with concealed fasteners.

F. Slope gutters 1/4 inch per 10 feet (2.1 mm per m), minimum.

3.04 FIELD QUALITY CONTROL

A. Inspection will involve inspection of work during installation to ascertain compliance with specified requirements.

3.05 SCHEDULE

A. Through-Wall Flashing in Masonry: 302/304 .018 " Stainless

B. Gutters and Downspouts: replace in like kind, if required,

C. Coping, Cap, Parapet: .040" thick Aluminum, shop pre-coated with Kynar 500 coating.

D. Sheet Metal Roof Expansion Joint Covers, and Roof-to-Wall Joint Covers: 302/304 .018 " Stainless

E. Sill and ledge metal fabrications: 302/304 .018 " Stainless

F. Counter flashings at Roofing Terminations (over roofing base flashings): 302/304 .018 " Stainless

G. Counter flashings at Curb-Mounted Roof Items, including skylights and roof hatches: 302/304 .018 " Stainless

H. Roofing Penetration Flashings, for Pipes, Structural Steel, and Equipment Supports: 302/304 .018 " Stainless

END OF SECTION

SECTION 07 7100
ROOF SPECIALTIES - PRE-MANUFACTURED WARRANTED EDGE METAL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This section is included for the perimeter edge metal to be incorporated with the membrane manufacturer to accompany and compliment the installation with a special project warranty.

B. Manufactured roof specialties, including copings.

C. Roof control and expansion joint covers.

1.02 RELATED REQUIREMENTS

A. Section 07 5419 - Polyvinyl-Chloride Membrane Roofing

B. Section 07 6200 - Sheet Metal Flashing and Trim

C. Section 07 9200 - Joint Sealants

1.03 PREINSTALLATION MEETINGS

A. Convene preinstallation meeting [1 week] [2 weeks] before start of installation of fascia or copings.

B. Require attendance of parties directly affecting Work of this Section, including Contractor, Designer, installer and manufacturer’s representative.

C. Review the Following:
1. Materials.
2. Installation.
3. Adjusting.
4. Cleaning.
5. Protection.
6. Coordination with other Work.

1.04 REFERENCE STANDARDS

A. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate 2014.

B. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels; 2013.

C. NRCA ML104 - The NRCA Roofing and Waterproofing Manual Fifth Edition, with interim updates.

D. SMACNA (ASMM) - Architectural Sheet Metal Manual 2012.

E. SPRI ES-1 - Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems 2011.

1.05 SUBMITTALS

A. Product Data: Provide data on shape of components, materials and finishes, anchor types and locations.

B. Shop Drawings: Indicate configuration and dimension of components, adjacent construction, required clearances and tolerances, and other affected work.

C. Submit specific product FM Roof Nav number and print approval listing product FM rating.

D. Color Samples: Submit manufacturer’s color samples of kynar finished fascia or coping, or ring consisting of complete color chips representing manufacturer’s full range of available colors.

E. Samples: Submit two appropriately sized samples of coping and gravel stop.

F. Manufacturer's Installation Instructions: Indicate special procedures, fasteners, supporting members and perimeter conditions requiring special attention.

G. Manufacturer's Certification: Submit manufacturer's certification that materials comply with specified requirements and are suitable for intended application.

H. Special Project Warranty Documentation: Submit manufacturer's standard warranty. Minimum 20-year, 120 mph wind warranty on fascia or coping system, 30-year, kynar finish warranty minimum, 5 year workmanship warranty minimum on the manufactured fascia or coping systems specified.

1.06 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Manufacturer regularly engaged in the manufacturing of fascia and coping systems of a similar type to that specified for a minimum of 10 years.

B. Fascia and Coping Testing Requirements: All manufactured fascia and copings must be FM tested and listed on Roof Nav for verification in accordance with FM4435.

C. Fascia and coping systems must be documented by an independent testing provider to meet or exceed minimum wind speed design in accordance with the latest version of ANSI SPRI ES-1 FM4435 in the version of International Building Code adopted by the Owner having jurisdiction.

D. Installer's Qualifications:
   1. Installer regularly engaged in installation of fascia and coping systems of similar type to that specified for a minimum of 5 years.
   2. Use persons trained for installation of fascia and coping systems following manufacturer's installation instructions.

E. Perform work in accordance with SMACNA (ASMM) details.

F. Maintain copies of Specifications, Plans and Manufacturers Installation manual on site at all times during the project installation.

1.07 DELIVERY STORAGE AND HANDLING

A. Delivery Requirements: Deliver materials to site in manufacturer's original, unopened containers and packaging.

B. Storage and Handling Requirements:
   1. Store and handle materials in accordance with manufacturer's instructions.
   2. Keep materials in manufacturer's original, unopened containers and packaging until installation.
   3. Store materials in clean, dry area indoors.
   4. Do not store materials directly on floor or ground.
   5. Protect materials and finish during storage, handling and installation to prevent damage.

1.08 WARRANTY

A. Warranty Period, Product: 5-year workmanship warranty covering replacement or repair of products that are defective in material or workmanship.

B. Warranty Period, Finish: Limited 30-year warranty for prefinished coil-coated steel and aluminum coated, with Kynar 500 standard colors covering fade, chalk, and film integrity.

C. Warranty Period, Product: Limited 20-year, 120 mph wind warranty for properly installed fascia, perimeter edge metal and coping systems from straight line wind events.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Roof Edge Flashings:
   1. Manufacturer: Metal-Era, Inc., 1600 Airport Road, Waukesha, Wisconsin 53188. Phone 800-558-2162. Fax 800-373-9156. www.metalera.com http://www.metalera.com quotes@metalera.com mailto:quotes@metalera.com.
   2. Manufacturer: Johns Manville
   3. Manufacturer: Sika Sarnafil

4. Approved shop fabricated Perimeter edge metal with ANSI / SPRI and Manufacturers Certifications for similar wind uplift and warranties as identified in Section 1.06 Quality Assurance. All Substitutions must be approved by Consultant prior to bid date.

2.02 MANUFACTURED FASCIA

A. Skirted PVC Coated Drip Edge: 2-piece fascia, skirted drip edge version with TPO or PVC factory attached.
   1. Provides watertight termination at leading edge of roofing material.
   2. Material: 24-gauge (0.65-mm) galvanized stainless steel with factory applied TPO or PVC finish to match manufacturer of roofing system, with factory applied 6” or 8”, 60 mil, PVC skirt, factory applied to match manufacturer of roofing system.

B. Fabrication
   1. Color: Match Roofing System
   2. Formed Lengths: 12’-0” (3.65 m).
   3. Slotted Fastening Holes: 12 inches (305 mm) on center.
   4. Prenotched Lap Joints: 3 inches (76 mm).

2.03 CONTROL AND EXPANSION JOINT COVERS:

A. As shown in construction drawings.

B. Approved shop fabricated engineered metal with ANSI / SPRI and Manufacturers Certifications for similar wind uplift and warranties as identified in Section 1.06 Quality Assurance. All Substitutions must be approved by Designer prior to bid date.

C. Substitutions: See Section 01 6000 - Product Requirements.

2.04 COMPONENTS

A. Roof Edge Flashings: Factory fabricated to sizes required; mitered, welded corners; concealed fasteners.
   1. Configuration: Fascia, cant and edge securement for roof membrane.
   2. Material: Formed aluminum sheet, 0.050 inch (1.3 mm) thick, minimum.
   3. Manufacturers:
      a. Approved Membrane Manufacturer's Metal Edge components to be included in the Special Project Warranty and roof membrane manufacturer's systems warranty.
      b. Metal-Era, Inc., 1600 Airport Road, Waukesha, Wisconsin 53188. Phone 800-558-2162. Fax 800-373-9156. www.metalera.com. quotes@metalera.com.
      c. Substitutions: See Section 01 6000 - Product Requirements.

B. Copings: Factory fabricated to sizes required; mitered, welded corners; concealed fasteners.
   1. Configuration: Concealed continuous hold down cleat at both legs; internal splice piece at joints of same material, thickness and finish as cap; concealed stainless steel fasteners.
   2. Material: Formed aluminum sheet, 0.050 inch (1.3 mm) thick, minimum.
   3. Finish: 70 percent Kynar.
   4. Color: As scheduled.
   5. Manufacturers:
      a. Approved Membrane Manufacturers Metal Edge components to be included in the systems warranty.
      b. W.P. Hickman Company; PermaSnap 2 Coping: www.wph.com.
      c. Substitutions: See Section 01 6000 - Product Requirements.

2.05 ACCESSORIES

A. Sealant for Joints in Linear Components: As recommended by component manufacturer.

B. Adhesive for Anchoring to Roof Membrane: Compatible with roof membrane and approved by roof membrane manufacturer.

2.06 FINISHES

A. PVDF (Polyvinylidene Fluoride) Coating: Superior Performance Organic Finish, AAMA 2605; multiple coat, thermally cured fluoropolymer finish system; color as scheduled.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that deck, curbs, roof membrane, base flashing and other items affecting work of this Section are in place and positioned correctly.

B. Examine areas to receive edge metal or expansion joint cover.

C. Verify surfaces to support edge metal or expansion joint cover are clean, dry, straight, secure and of proper dimensions.

D. Notify Designer of conditions that would adversely affect installation.

E. Do not begin installation until unacceptable conditions are corrected.

3.02 INSTALLATION

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

B. Remove protective vinyl film immediately before installation.

C. Install edge metal or expansion joint cover to provide watertight termination at leading edge of roofing material.

D. Install edge metal or expansion joint cover per manufacturer’s instructions to allow for thermal movement.

E. Seal joints within components when required by component manufacturer.

F. Anchor components securely.

G. Coordinate installation of components of this section with installation of roofing membrane and base flashings.

H. Coordinate installation of sealants with work of this section to ensure water tightness.

I. Coordinate installation of flashing flanges into reglets.

3.03 ADJUSTING

A. Repair minor damages to finish in accordance with manufacturer’s instructions and as approved by Designer.

B. Remove and replace with new material, damaged components that cannot be successfully repaired, as determined by Designer.

3.04 CLEANING

A. Clean edge metal or expansion joint cover promptly after installation in accordance with manufacturer’s instructions.

B. Do not use harsh cleaning materials or methods that could damage finish.

3.05 PROTECTION

A. Protect installed fascia or coping system to ensure that, except for normal weathering, counterflashing will be without damage or deterioration at time of Substantial Completion.

END OF SECTION

SECTION 07 9200
JOINT SEALANTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This section is included as a general guide for sealant repairs

B. Nonsag gunnable joint sealants.

C. Joint backings and accessories.

D. Owner-provided field quality control.

1.02 REFERENCE STANDARDS

A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer 2015.

B. ASTM C920 - Standard Specification for Elastomeric Joint Sealants 2018.

C. ASTM C1087 - Standard Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems 2016.

D. ASTM C1193 - Standard Guide for Use of Joint Sealants 2016.

E. ASTM C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants 2018.

F. ASTM C1311 - Standard Specification for Solvent Release Sealants 2014.

G. ASTM C1521 - Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints 2019 (Reapproved 2020).

1.03 SUBMITTALS

A. See Section 01 3000 - Project Administrative Requirements, for submittal procedures.

B. Product Data for Sealants: Submit manufacturer's technical data sheets for each product to be used, that includes the following.
   1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
   2. List of backing materials approved for use with the specific product.
   3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
   4. Substrates the product should not be used on.
   5. Substrates for which use of primer is required.

C. Product Data for Accessory Products: Submit manufacturer's technical data sheet for each product to be used, including physical characteristics, installation instructions, and recommended tools.

D. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.

E. Field Quality Control Plan: Submit at least two weeks prior to start of installation.

1.04 QUALITY ASSURANCE

A. Maintain one copy of each referenced document covering installation requirements on site.

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

C. Installer Qualifications: Company specializing in performing the work of this section and with at least three years of documented experience.

D. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

E. Field Quality Control Plan:
   1. Visual inspection of entire length of sealant joints.

2. Non-destructive field adhesion testing of sealant joints, except interior acrylic latex sealants.
    a. Test the entire length of every sealant joint.
    b. If any failures occur in the first 10 linear feet (3 linear m), continue testing at 12 inches (305 mm) intervals at no extra cost to Owner.
3. Field testing agency's qualifications.
4. Field Quality Control Log Form: Show same data fields as on Preinstallation Field Adhesion Test Log, with known information filled out and lines for multiple tests per sealant/substrate combinations; include visual inspection and specified field testing; allow for possibility that more tests than minimum specified may be necessary.

F. Non-Destructive Field Adhesion Test: Test for adhesion in accordance with ASTM C1521, using Nondestructive Continuous Method.
1. Repair failed portions of joints.

1.05 WARRANTY

A. Correct defective work within a two year period after Date of Substantial Completion.

B. Warranty: Include coverage for installed sealants and accessories that fail to achieve watertight seal , exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Non-Sag Sealants: Permits application in joints on vertical surfaces without sagging or slumping.
1. Tremco Global Sealants: www.tremcosealants.com.
2. Triangle Fastener Corporation, www.trianglefastener.com
3. Sika Corporation: www.usa-sika.com. Sikaflex PRO for control joints.
4. Sonalastic MP-1.
5. ChemLink M1.

2.02 JOINT SEALANT APPLICATIONS

A. Scope:
1. Exterior Joints: Seal open joints, whether or not the joint is indicated on drawings, unless specifically indicated not to be sealed. Exterior joints to be sealed include, but are not limited to, the following items.
    a. Wall expansion and control joints.
    b. Joints between door, window, and other frames and adjacent construction.
    c. Joints between different exposed materials.
    d. Openings below ledge angles in masonry.
    e. Metal standing seam roof upgrades..
2. Do not seal the following types of joints.
    a. Intentional weepholes in masonry.
    b. Joints indicated to be treated with manufactured expansion joint cover or some other type of sealing device.
    c. Joints where sealant is specified to be provided by manufacturer of product to be sealed.
    d. Joints where installation of sealant is specified in another section.
    e. Joints between suspended panel ceilings/grid and walls.

B. Exterior Joints: Use nonsag, UV resistant polyurethane sealant, unless otherwise indicated.
1. Lap Joints in Sheet Metal Fabrications: one-part urethane.
2. Lap Joints between Manufactured Metal Panels: Silicone .

2.03 NONSAG JOINT SEALANTS

A. Sealant for Metal standing roof upgrades:

B. Type S - Non-Staining Silicone Sealant: ASTM C920, Grade NS, Class 50, Uses NT, M, G, A and O; not expected to withstand continuous water immersion or traffic.
   1. Elongation: ASTM D412 - Plus and minus 500-650 percent, minimum.
   2. Tensile strength - ASTM D412 - 140 - 200 psi
   3. Tear Resistance - ASTM D624 - 30 - 35 Pil.
   4. Specific Gravity: 1.00 - 1.25.
   5. Dirt Pick-Up: Reduced dirt pick-up compared to other silicone sealants.
   6. Tear resistance - ASTM D 624 - 30 -35 Pil.
   7. Color: To be selected by Designer from manufacturer's standard range.
   8. Service Temperature Range: -40 to +400 degrees F (-40 to 204.4 degrees C).
   9. Manufacturers:
   10. Triangle Fasteners Corporation
      a. Substitutions: See Section 01 6000 - Product Requirements.
   11. Manufacturers:
      a. Sika Corporation; Sikaflex-1a: www.usa-sika.com/#sle.
      b. Sonalastic.
      c. ChemLink.

C. Non-Curing Butyl Sealant: Solvent-based; ASTM C1311; single component, nonsag, non-skinning, non-hardening, non-bleeding; vapor-impermeable; intended for fully concealed applications.

2.04 ACCESSORIES

A. Backer Rod as Required: Cylindrical cellular foam rod with surface that sealant will not adhere to, compatible with specific sealant used, and recommended by backing and sealant manufacturers for specific application.

B. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that joints are ready to receive work.

B. Verify that backing materials are compatible with sealants.

C. Verify that backer rods are of the correct size.

3.02 PREPARATION

A. Remove loose materials and foreign matter that could impair adhesion of sealant.

B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.

C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.

D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

3.03 INSTALLATION

A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Perform installation in accordance with ASTM C1193.

C. Install bond breaker backing tape where backer rod cannot be used.

D. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.

E. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.

F. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

3.04 FIELD QUALITY CONTROL

A. Perform field quality control inspection/testing as specified in PART 1 under QUALITY ASSURANCE article.

B. Non-Destructive Adhesion Testing: If there are any failures in first 100 linear feet (30 linear m), notify Designer immediately.

C. Remove and replace failed portions of sealants using same materials and procedures as indicated for original installation.

END OF SECTION

SECTION 08 6200
PLASTIC GLAZED BARREL VAULT SKYLIGHTS

THERMALIZED BARREL VAULT / VERTICAL ENDS

PART 1-GENERAL

2.01 SUMMARY

A. This section includes the following:
   1. Curb-mounted plastic glazed barrel vault skylights.
      a. CBSD model, double dome, thermalized, barrel vault, with vertical ends.
         1) [Formerly Wasco Model TBVDD]

B. Related Sections: The following sections contain requirements that relate to this section:
   1. Division 6 Section Rough Carpentry for wood curbs and nailers.
   2. Division 7 Section Roof Accessories for curbs, roof hatches, and smoke vents.
   3. Division 7 Section Flashing and Sheet Metal for metal flashing for skylights.
   4. Division 8 Section Plastic Glazing

C. Refer to roofing system sections for roofing accessories to be built into the roofing system to accommodate work of this section.

2.02 PERFORMANCE REQUIREMENTS

A. General: Provide unit skylights capable of withstanding loads as defined by the local codes having jurisdiction where units are to be installed without failure. Failure includes the following:
   1. Thermal stresses transferred to the building structure.
   2. Framing members transferring stresses, including those caused by thermal and structural movement, to glazing.
   3. Weakening of fasteners, attachments, and other components.

B. Structural Performance: Provide metal-framed skylights, including anchorage, capable of withstanding design pressure indicated without material and deflection failures and permanent deformation of structural members exceeding 0.2 percent of span when tested according to ASTM E 330-97.
   1. Design Test Pressure: 40 PSF positive and 40 PSF negative.

C. Air Infiltration: Provide metal-framed skylights with maximum air leakage of 0.09 scfm/sq. ft. of surface when tested according to ASTM E 283-91 at a minimum static-air-pressure differential of 6.20psf.

D. Water Penetration: Provide metal-framed skylights that do not evidence water penetration when tested according to ASTM E 331-00 and E 547-00 at a minimum differential static pressure of 20 percent of positive design wind load, but not less than 8psf.

SUBMITTALS

A. Product Data Sheet: For each type of skylight specified, include details of construction and installation, relative to applicable curb configuration.

3.02 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: Provide glazing fabricated from sheets identical to those tested for the following fire-test-response characteristics, per ASTM test method indicated below, by UL or other testing and inspecting agencies acceptable to authorities having jurisdiction. Identify plastic sheets with appropriate markings of applicable testing and inspecting organization.
   1. Continuous Cast Acrylic:
      a. Self-Ignition Temperature: 833 deg F when tested per ASTM D 1929 on plastic sheets in the thickness intended for use.
      b. Smoke density of 3.4% when tested per ASTM D 2843 on plastic sheets in the thickness intended for use.

c. Relative- Burning Characteristics: As follows, when tested per ASTM D 635:
   1) Burning rate of 1.019 inches (30 mm) per minute or less when tested with a nominal thickness of 0.118 inches (2.3 mm).

3.03 WARRANTY

A. General: Warranties specified in this section shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

B. Skylight Warranty: Provide written warranty signed by manufacturer, agreeing to repair or replace work that exhibits defects in materials or workmanship and guaranteeing weather-tight and leak-free performance. "Defects" is defined as uncontrolled leakage of water and abnormal aging or deterioration.
   1. Warranty Period: 5 years from date of Substantial Completion.

C. Plastic Warranty: Provide written warranty signed by manufacturer agreeing to repair or replace work that has or develops defects in the plastic. "Defects" is defined as abnormal aging or deterioration.
   1. Warranty Period for Acrylic/Polycarbonate: 5 years from date of Substantial Completion against yellowing.

D. Finish Warranty: Provide written warranty signed by manufacturer agreeing to repair or replace work with finish defects. "Defects" is defined as peeling, chipping, chalking, fading, abnormal aging or deterioration, and failure to perform as required.
   1. Warranty Period for Powder Coat Finish: 5 years from date of Substantial Completion.

PART 2- PRODUCTS

4.01 MANUFACTURER

A. Manufacturer: Subject to compliance with requirements, provide products by Wasco part of the Velux Group, Wells, ME (800-388-0293).

B. Substitutions: Manufactures shall not be considered without prior approval in writing no later than ten (10) calendar days prior to bid. Substitute manufacturers must have been in the custom skylight business for not less than a period of 15 years and must submit to the Architect the following:
   1. List of similar projects successfully completed within the last five years.
   2. Proof of financial capability.
   3. Complete details of proposed skylight.
   4. Complete specifications for Architect's review.

4.02 MATERIALS

A. Curb Frame: Extruded aluminum alloy 6063-T5 (min.) ASTM B 221 (ASTM B 221 M) with minimum effective thickness of .090 inches. Provide integral condensation gutter system with corners fully welded for waterproof quality. Curb frame to have glass fiber reinforced polymer thermal break.
   1. Poured and de-bridged polyurethane thermal breaks are not acceptable

B. Retainer Frame: Extruded aluminum alloy 6063-T5 (min). ASTM B 221 (ASTM B 221 M) with minimum effective thickness of 0.60 inches.

C. Pressure Caps: Extruded aluminum alloy 6063-T5 (min). ASTM B 221 (ASTM B 221 M) with minimum effective thickness of 0.100 inches.

D. Plastic Sheets: Monolithic, sheets with good weather and impact resistant.
   1. Acrylic: (Continuous cast acrylic) or (impact modified continuous cast acrylic) sheet, thermo-formable, and cold formable, Category C-2 or CC-2 Type UVA (formulated with ultraviolet absorber), with Finish 1 (smooth or polished), unless otherwise indicated.
      a. Extruded acrylic sheet is not acceptable.

E. Thermal Break: Glass fiber reinforced polymer separating interior metal framing from materials exposed to outside temperature.
   1. Poured and de-bridged polyurethane thermal breaks are not acceptable.

F. Fasteners: Same metal as metals being fastened, or nonmagnetic stainless steel or other non-corrosive metal as recommended by Wasco Products, Inc.

G. Bituminous Coating: SSPC-Paint 12, solvent-type, bituminous mastic, nominally free of sulfur and containing no asbestos fibers, compounded for 15-mil (0.4 mm) dry film thickness per coating.

4.03 PLASTIC BARREL VAULT SKYLIGHT

A. General: Factory-assembled or knocked down, curb-mounted unit consisting of cast acrylic glazing, gasketing, inner frame designed to mount on separate curb, and self-contained flashing.
   1. Products: Provide model CBSD meeting the requirements of this section.

B. Curb: Minimum 3 ½" wide field built (By Others).

C. Condensation Control: Fabricate skylight units with integral internal gutters and weeps to collect and dispose of condensation beyond the outside of support curb.

D. Shape and Size: As indicated on project drawings.

E. Glazing: Outer (Continuous cast acrylic), (Clear). Extruded acrylic not acceptable.

F. Glazing: Inner (Continuous cast acrylic). (white). Extruded acrylic not acceptable.

4.04 FALL PROTECTION SAFETY SCREENS

A. Screen: Welded steel wire mesh, 4" x 4" spacing, wire diameter - .188" min. hot dipped galvanized finish on carbon steel or unfinished stainless steel.

B. Frame: Extruded aluminum alloy 6063-T5 (min). ASTM B 221 (ASTM B 221 M) with minimum effective thickness of 0.090 inch (2.2 mm).
   1. Frame includes a pocket for the edges of the screen material, and a downward leg for attachment to any vertical surface of a skylight retainer or frame.

C. Adjustment Bar: Extruded aluminum bar stock, ¼" x 1", alloy 6063-T5 (min). ASTM B 221 (ASTM B 221 M).
   1. Adjustment bar is slotted for width adjustment in the field.

D. Fasteners: Nonmagnetic stainless steel or other non-corrosive metal as recommended by manufacturer.

4.05 FABRICATION

A. Framing Components: As follows:
   1. Factory fit and assemble components.
   2. Fabricate components that, when assembled, will have accurately fitted joints with ends coped or mitered to produce hairline joints free of burrs and distortion.
   3. Fabricate components to drain water passing joints and to drain condensation and moisture occurring or migrating within skylight system to the exterior.
   4. Fabricate components to accommodate expansion, contraction, and field adjustment, and to provide for minimum clearance and shimming at skylight perimeter.
   5. Form shapes with sharp profiles, straight and free of defects or deformations, before finishing.
   6. Fit and secure joints by heliarc welding.

4.06 ALUMINUM FINISHES

A. General: Comply with NAAMM "Metal Finishes Manual" recommendations for application and designations of finishes.

B. Finish designations prefixed by AA conform to the system for designations of aluminum finishes established by the Aluminum Association.
   1. Powder Coat High-Performance Architectural Coating: comply with AAMA 2604. Color: TBD

PART 3- EXECUTION

5.01 EXAMINATION

A. Examine substrates and conditions, with installer present, for compliance with requirements for installation tolerances and other conditions affecting skylight performance.
   a. Proceed with installation only after unsatisfactory conditions have been corrected.

5.02 PREPARATION

A. Metal Protection: As follows:
   1. Where aluminum will contact dissimilar metals, protect against galvanic action by paining contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose.
   2. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.
   3. Where aluminum will contact pressure-treated wood, separate dissimilar materials by methods recommended by manufacturer.

5.03 INSTALLATION

A. General: Comply with manufacturer's written instructions for protecting, handling, and installing skylight components.

B. Following manufacturer's installations instructions and job specific drawings to ensure proper installation.

C. Coordinate with installation of roof deck and other substrates to receive skylight units.

D. Coordinate with installation of vapor barriers, roof insulation, roofing, and flashing as required to assure that each element of the work performs properly and that combined elements are waterproof and weather tight. Anchor units securely to supporting structural substrates, adequate to withstand lateral and thermal stresses as well as inward and outward loading pressures.

5.04 CLEANING AND PROTECTION

A. Clean exposed metal and plastic surfaces according to manufacturer's instructions. Touch up damaged metal coatings.

B. Final cleaning by others.

END OF SECTION

SECTION 22 0010
ROOF DRAIN AND STORM WATER PIPING

PART 1 - GENERAL

1.01 RELATED REQUIREMENTS

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

B. Section 07 1500 - Vapor Retarder

C. Section 03 0100 – Maintenance of Concrete

D. Section 05 3150 - Steel Deck Repair / Replacement

E. Section 07 6000 – Sheet Metal Flashings.

1.02 SUMMARY

A. This section includes products and installation procedures for the replacement or addition of roof drain assemblies and related plumbing components.

B. All new installations are to include plumbing pipe through the first elbow to a horizontal line.

C. This section also addresses plumbing vent extensions in conjunction with the new roofing system.

1.03 REFERENCES

A. American Society for Testing and Materials (ASTM):
   1. A74-98 - Standard Specification for Cast Iron Soil Pipe and Fittings.
   2. C564-97 - Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings.
   3. D2564-02 - Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems.
   4. D2665-02a - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings.

B. Cast Iron Soil Pipe Institute (CISPI): 301-90 Hubless Cast Iron Soil and Fittings.

C. Factory Mutual (FM): FM 1680-89 – Coupling Used in Hubless Cast Iron Systems for Drains, Waste and Vent Systems.

D. National Fire Protection Association (NFPA).

E. National Association of Plumbing-Heating-Cooling Contractors (PHCC): National Standard Plumbing Code (1996).

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Jay R. Smith Manufacturing Company, Montgomery, AL.

B. Tyler Pipe/Wade Division, Tyler, TX.

C. Zurn Industries, Inc., Erie, PA.

2.02 PRODUCTS

A. Cast-iron roof drain, no-hub style outlet, size to match existing, minimum four (4) inches:
   1. Model 1010 (by Smith).
   2. Series 3000 Roof Drain (by Tyler).
   3. Model Z-100 (by Zurn).
   4. Roof drain assembly options:
      a. Cast-iron gravel stop/clamping ring.
      b. Cast-iron or cast-aluminum strainer (not plastic).
      c. Cast-iron extension ring (where required to raise clamping ring height above deck).
   5. Approved equal.

B. Drainage piping:
   1. Shall be PVC pipe conforming to ASTM D2665; use Schedule 40 pipe in heated spaces, Schedule 80 pipe in unheated spaces.
   2. Shall match drain outlet diameter, minimum four (4) inches.
   3. Fittings shall conform to ASTM D2665:
      a. Solvent Welded Socket Type: Use solvent cement, ASTM D2564.
      b. Threaded Type: Molded threads only. Use tape or lubricant specifically intended for use with PVC plastic pipe.
   4. Connection to cast-iron piping, where applicable, shall meet the requirements and criteria for pressure, leak, deflection and shear tests as outlined in Factory Mutual No. 1680 for Class 1 couplings.
      a. Stainless steel, clamp-type coupling of elastomeric sealing sleeve, ASTM C564 and a Series 300 stainless steel shield and clamp assembly. Sealing sleeve with center-stop to prevent contact between pipes/fittings being joined shall be marked ASTM C564.
   5. Shall be cast-iron pipe conforming to ASTM A74, CISPI-301, Service Class; use Schedule 40 pipe in heated spaces, Schedule 80 pipe in unheated spaces.
      a. Shall match drain outlet diameter, minimum four (4) inches.
      b. Shall be bell and spigot, modified hub, or plain end (no-hub) as required by selected jointing method.
   6. Joints: Provide any one of the following types to suit pipe furnished:
      a. Double seal, compression-type molded neoprene gasket. Gaskets shall suit class of pipe being jointed.
      b. Mechanical: Shall meet the requirements and criteria for pressure, leak, deflection and shear tests as outlined in Factory Mutual No. 1680 for Class 1 couplings.
         1) Stainless steel, clamp-type coupling of elastomeric sealing sleeve, ASTM C564 and a Series 300 stainless steel shield and clamp assembly. Sealing sleeve with center-stop to prevent contact between pipes/fittings being joined shall be marked ASTM C564.
         2) Cast-iron coupling with neoprene gasket and stainless steel bolts and nuts.

C. Piping accessories:
   1. Provide piping expansion joints, hangers, anchors, etc. necessary for proper installation of drainage piping system.
   2. Pipe insulation: Shall be one (1) inch thick, sized to fit piping; provide mitered sections of same material, with jointing tape to cover fittings and drain bowl.
      a. Preformed Fiberglas #25 ASJ (by Owens-Corning Corporation, Toledo, OH).
      b. Approved equal.

PART 3 - EXECUTION

3.01 INSTALLATION

A. General requirements:
   1. A Plumbing Contractor that is licensed in the state where the project is located shall perform all Work of this section.
   2. Comply with the PHCC National Standard Plumbing Code.
   3. Pipe shall be round and straight. Cutting shall be done with proper tools. Cast-iron pipe shall be reamed to full size after cutting.
   4. All pipe runs shall be laid out to avoid interference with other work.
   5. Piping four (4) inches or larger in diameter shall be installed with minimum 1/8 inch per foot slope-to-drain.

B. Existing drain head replacement:
   1. Disconnect and remove the existing roof drain head. If the existing roof drain was set into a recessed sump pan, remove the sump pan.

2. Install new cast-iron roof drain assembly and set height of new drain bowl using either of the following options:
    a. Shim bowl to the proper height, relative to the roof deck surface, to match the new insulation thickness.
    b. Install bowl at deck surface in a steel receiver plate; install a cast-iron extension ring to attain clamping point at new insulation thickness.
3. Secure the drain bowl to the deck with under-deck clamping ring.
4. Connect the drain bowl to the existing drainage piping on the building interior.
5. Insulate the drainage piping from the drain bowl to the vertical drop.

C. Final adjustments:
1. After installation of new roof membrane, install the lead flashing and cast-iron clamping ring and tighten clamping bolts. Re-tighten after membrane has “acclimated” for thirty (30) days.
2. All drains, whether new or existing, shall be provided with an undamaged, cast-iron or cast-aluminum strainer. Install strainer and secure in place.
3. Paint drain assemblies and plumbing stack flashings with aluminum paint.

END OF SECTION

SECTION 23 0510
MECHANICAL AND ELECTRICAL GENERAL REQUIREMENTS

PART 1 - GENERAL

1.01 RELATED REQUIREMENTS

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

B. Section 07 1500 - Vapor Retarder

C. Section 03 0100 – Maintenance of Concrete

D. Section 05 3150 - Steel Deck Repair / Replacement

E. Section 07 6000 – Sheet Metal Flashings.

1.02 SUMMARY

A. This Section specifies requirements for the following Scope of Work:
   1. All roof curbs must meet the manufacturers' minimum height requirements above the finished roof system surface to accommodate the new membrane flashing and terminations for the special project warrantable application.
   2. Mechanical disconnection, extension, shortening, and/or reconnection shall be performed in accordance with the current District of Columbia adopted International Building Code, Mechanical.
   3. Electrical disconnection, extension, shortening, and/or reconnection shall be performed in accordance with the current District of Columbia adopted International Building Code, Electrical.
   4. Plumbing work shall be performed in accordance with the current District of Columbia adopted International Building Code, Plumbing.
   5. Details, not shown or specified but necessary for proper modification, installation and operation shall be included within the work as though specified herein.
   6. It is the Contractor's responsibility to identify the means and methods of the required modifications and alterations that will be needed to achieve the approved flashing height for the special project roof warranty.

1.03 SUBMITTALS

A. Shop Drawings: Provide detailed Drawings including plans, elevations and connections of equipment.
   1. Include seals and signatures of Registered Professional in the District of Columbia.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 GENERAL

A. Mechanical, electrical, and associated work shall be performed by a District of Columbia licensed tradesman and shall comply with the applicable code requirements.

B. Wherever possible match the existing mechanical and electrical components; replace in kind when made necessary by roofing operations.

C. Lengthening and installation of additional connections for ducts, conduits, control wiring, condensate pipes and similar mechanical and electrical work made necessary by roof replacement work shall be identified and incorporated into the project scope of work prior to the bid and performed by the successful Contractor.

D. Handle, store, and protect equipment and materials to prevent damage before and durin g installation.

E. This work will most likely be required during off hours as it will require MEP disconnects that may impact the interior conditioned space.

F. New RTU conduit and gas lines that are in the field of the roof will be required to receive new piping supports.

3.02 AIR CONDITIONING RTU REMOVAL AND REINSTALLATION

A. Coordinate unit disconnection with building occupants. In no case shall an individual unit be out of service for more than 1 calendar day, unless previously approved by Owner.

B. Disconnect, extend, raise, or otherwise modify existing ductwork and mechanical / electrical conduit as required to restore operation to the unit.

C. Provide temporary cooling, or heating of interior spaces if disconnection exceeds 2 hours.

END OF SECTION

ROOF UPGRADE PROJECT

PROJECT LOCATION

VICINITY MAP

SITE PHOTO

AERIAL ROOF PLAN

The Deptartment of General Services
1250 U Street NW, 3rd Floor
Washington D.C. 20009

Department of Youth YSC
Roof Upgrade Project
1000 Mt. Olivet Road NE
Washington, D.C. 20002

ROOF CONSULTANT

1701 Rhode Island Avenue NW
Washington, DC 20036

CONTACT: AHMAD TABANA
EMAIL: atabana@mantisinnovation.com
Mob.: (201) 696-5607

Abbreviations

ALT	ALTERNATE	G	GAS	QTY	QUANTITY	TPO	THERMOPLASTIC
ALUM	ALUMINUM	GA	GAUGE	R&REINS	REMOVE AND REINSTALL		POLYETHYLENE
ARCH	ARCHITECT(URAL)	GALV	GALVANIZED	R&REP	REMOVE AND REPLACE	TYP	TYPICAL
APP	ATACTIC POLYPROPYLENE	GS	GALVANIZED STEEL	RD	ROOF DRAIN	W/	WITH
APPROX	APPROXIMATE	GWB	GYPSUM WALL BOARD	RE	REFERENCE	W/O	WITHOUT
ATTEN	ATTENUATION	HVAC	HEATING VENTILATING	REINF	REINFORCE(D), (ING)	WD	WOOD
BD	BOARD		AND AIR CONDITIONING	REQ	REQUIRED	WP	WATERPROOF(ING)
B/F	BASE FLASHING	HV	HEATER VENT	REV	REVISION	XEPS	EXPANDED POLYSTYRENE
BLK	BLOCK	IN	INCHES	RIG. INS.	RIGID INSULATION		
BLKG	BLOCKING	INCL	INCLUDE	RJ	ROOF JACK		
BOT	BOTTOM	INSUL	INSULATION/INSULATING	RSS	REINFORCED SECUREMENT		
B/O	BOTTOM OF	INT	INTERIOR		STRIP		
BTWN	BETWEEN	JT	JOINT	RTU	ROOFTOP UNIT		
BUR	BUILT UP ROOFING	LP	LOW POINT	(S)	SEALANT		
C	CONDUIT	LVR	LOUVER	SBS	STYRENE BUTADIENE		
C/F	COUNTERFLASHING	LWIC	LIGHTWEIGHT INSULATING		STYRENE		
CL	CENTER LINE		CONCRETE	SDF	STEEL DECK FASTENER		
COL	COLUMN	MA	MECHANICALLY ATTACHED	SECT	SECTION		
CONC	CONCRETE	MATL	MATERIAL	SF	SQUARE FEET		
CORR	CORRUGATED	MECH	MECHANICAL	SHTG	SHEATHING		
CMU	CONCRETE MASONRY UNIT	MED	MEDIUM	SHT	SHEET		
DIAM	DIAMETER	MFR	MANUFACTURE(R)	SIM	SIMILAR		
DTL	DETAIL	MIN	MINIMUM	S/L	SKYLIGHT		
DS	DOWNSPOUT	MISC	MISCELLANEOUS	SPEC	SPECIFICATION(S)		
DWG	DRAWING	MTL	METAL	SPM	SINGLE PLY MEMBRANE		
(E)	EXISTING	(N)	NEW	SQ	SQUARE		
E	ELECTRICAL	N/A	NOT APPLICABLE	SSMR	STANDING SEAM METAL		
EA	EACH	NO	NUMBER		ROOF		
ELEC	ELECTRIC(AL)	NOM	NOMINAL	STD	STANDARD		
ELEV	ELEVATIONS/ELEVATOR	NTS	NOT TO SCALE	STL	STEEL		
EPDM	ETHYLENE PROPYLENE	OC	ON CENTER(S)	STRUCT	STRUCTURE(AL)		
	DIENE MONOMER	OD	OUTSIDE DIAMETER	S/H	SMOKE HATCH		
EPS	EXPANDED POLYSTYRENE	OSB	ORIENTED STRAND BOARD	SV	SOIL VENT		
EQ	EQUAL	PNT	PAINTED	THK	THICKNESS		
EQUIP	EQUIPMENT	POLYISO	POLYISOCYANURATE	THRU	THROUGH		
EXP	EXPANSION	PEV	POWERED EXHAUST FAN	TOD	TOP OF DECK		
EJ	EXPANSION JOINT	PREFAB	PREFABRICATED	TOI	TOP OF INSULATION		
FA	FULLY ADHERED	PVC	POLYVINYL CHLORIDE	TOW	TOP OF WALL		
FT	FEET	PW	PLYWOOD				

DESIGN PARAMETERS

CODES: IINT'L BUILDING CODE 2015
INT'L EXISTING BUILDING CODE 2015
AND ALL WASHINGTON, DISTRICT OF COLUMBIA AMENDMENTS

FIRE RESISTANCE: UL CLASS A

ROOF WIND DESIGN CRITERIA FOR ALTERANTE:
ASCE 7-16 WIND DESIGN: 115 MPH 3 SEC. PEAK GUST

ROOF AREAS L & N:
ZONE 2: 54.5 PSF FIELD OF ROOF.
ZONE 3: 74.2 PSF 8'X24' @ CORNERS

ROOF AREA M:
ZONE 2: 50.0 PSF FIELD OF ROOF.
ZONE 3: 68.1 PSF 6'X18' @ CORNERS

ROOF AREA O:
ZONE 2: 54.5 PSF FIELD OF ROOF.
ZONE 3: 74.2 PSF 8' @ ENTIRE PERIM. EDGE

INDEX OF DRAWINGS

ROOF PLAN LEGEND

- ABANDONED CURB
- ABANDONED ROUND PEN.
- ANTENNA
- ATTIC VENT
- ATTIC VENT CURBED
- CHIMNEY
- CONDENSING UNIT
- CORE LOCATION
- CORE LOCATION TO DIM.
- CURBED PENETRATION
- EQUIP CURB 2
- EQUIP CURB CRICKET
- EQUIP ON PITCH PANS
- EQUIP ON SLEEPERS
- EQUIP ON SUPPORTS
- EXISTING ROOF DRAIN
- FLOOD LIGHT
- FRESH AIR IN-EX
- GOOSENECK ROUND
- GOOSENECK SQUARE
- GUTTER DOWNSPOUT 2
- GUY WIRE ANCHOR
- HOT STACK
- HVAC UNIT ON SLEEPERS
- DUCT PENETRATION RD
- LOUVERED VENT
- LADDER
- HVAC UNIT ON CURB
- LADDER W/ CAGE
- PIPE SUPPORT
- PIPE SUPPORT ROLLER
- PITCH PAN
- PLUMBING VENT
- POWERED VENT
- ROOF AREA DESIGNATION
- ROOF DRAIN
- ROOF DRAIN OVERFLOW
- ROOF DRAIN WALL
- ROOF DRAIN SUMPED
- ROOF DRAIN SUMPED 02
- ROOF HATCH
- ROUND PENETRATION
- SATELLITE DISH
- SATELLITE LARGE
- SCUPPER
- SCUPPER DOWNSPOUT
- SKYLIGHT
- SLOPE (STRUCTURAL)
- SLOPE (TAPERED INSULATION)
- SMOKE HATCH
- SPLASHBLOCK
- TURBINE
- VENT
- VENT STACK CURBED
- WALKPAD
- WALK PAVER

REVISIONS

1		
2		
3		
4		

BUILD MAINTAIN SUSTAIN
DGS DEPARTMENT OF GENERAL SERVICES

Lightbox | BLUEFIN Improving Facility Performance
ROOFS | WALLS | PAVEMENT
1701 Rhode Island Avenue NW
Washington, DC 20036

FACILITIES:
Department of Youth YSC
1000 Mt. Olivet Road NE
Washington, DC 20002

ROOF UPGRADE PROJECT
COVER SHEET & INDEX

JOB NO: 50696
DATE: 10/24/2022
DRAWN: C.A.M.P.
FILENAME: DYRS_YSC
PLOTSCALE: 1:1
SHEET 1 of 12

C1.0

GENERAL PROJECT CONSTRUCTION NOTES:

The information given herein and on the plans is as exact as could be secured for bidding purposes. Accuracy is to be field verified. Contractors must examine the job conditions and verify all measurements, distances, elevations, clearances, etc. And base their bids and work on verified conditions.

Refer to project specifications for additional information.

The city of Washington D.C. hereby adopts and elects to enforce the provisions of the work to be performed in conformance with the latest adopted 2015 International Building Code (IBC), 2015 IECC; ASHRAE 90.1-2015 building codes, 2015 IBC for mechanical & plumbing codes, local governing building codes, local ordinances and all referenced standards. These documents serve to depict the final configuration of improvements, not dictate all responsibilities the contractors have in achieving that end. The contractor is to report to the DGS Project Manager any conflict between bid documents, field conditions and/or code requirements prior to commencement of work. All products proposed for use shall be in accordance with applicable federal, state, and local governing ordinances, codes, and regulations. Notify the DGS Project Manager immediately of conflicts between the specified products and/or project work requirements and codes, ordinances and/or regulations.

Summary Project Description: This project includes specified roof upgrades, coating and replacement options to the existing modified bitumen roof systems on Roof Areas B, C, D, L, and O; The standing seam metal panel roof systems located on Roof Areas A, F, I and K; and the IRMA paver assemblies over a modified bitumen roof system on Roof Areas M and N.

Base Bid Roof Coating System: The existing roof system at **Roof Area B** consists of a 2 ply modified bitumen roof system with a granulated cap sheet over an existing ¼" Dens Deck cover board, tapered polyisocyanurate foam insulation, vapor retarder and existing concrete deck. The existing roof systems at **Roof areas C, D and G** consist of a 2 ply modified bitumen roof system with a granulated cap sheet over an existing ¼" Dens Deck cover board, tapered polyisocyanurate foam insulation, vapor retarder, ½" gypsum thermal barrier and metal deck. Remove existing wet areas back to dry, sound roofing and replace to match the existing construction. Remove existing loose granules, clean and prepare existing roof per coating manufacturers requirements. Install a fully reinforced coating system per the drawings and specifications.

Base Bid Roof Replacement: At **Roof Areas L and O**; Remove the existing roof system to the existing concrete deck. Prime the existing deck and install a new self-adhered vapor retarder. Adhere Min. R33, ¼" per foot tapered polyisocyanurate insulation over the vapor retarder. Adhere a ½" high density polyisocyanurate cover board over the insulation. Install a fully adhered 80 mil PVC roof system per the drawings and specifications. Additional work includes the replacement of the existing (5) skylights.

Base Bid Roof Recover System: The existing roof system at **Roof Area M and N** consists of pavers and pedestals over extruded polystyrene, 2 ply modified bitumen roof membrane, and existing concrete deck. Remove the existing pavers and extruded polystyrene and set aside for reinstallation. Demo existing roof flashings and perimeter metals. Broom clean, prepare and prime the existing roof membrane for recover. Adhere ½" high density polyisocyanurate cover board over the existing prepared roof membrane. Install a 80 mil fully adhered PVC roof system. Reinstall the extruded polystyrene, new filter cloth and the existing pavers and pedestals.

The existing roof system at **Roof Area A, F, I and K** consists of a steel standing seam metal panel roof system over an existing bituminous underlayment over an existing 2" polyisocyanurate foam insulation fully adhered to the existing metal deck.

Included in the project are the following restoration measures for Roof Areas A, B, F, I, K, M, N and O:

1. Replace deteriorated neoprene closure at roof area K. (Approximately 329 LF) refer to photo 1 on PH1.0.
2. Remove deteriorated sealant from composite panels, clean joint and recaulk. (approximately 10 LF) refer to photo 2 on PH1.0.
3. Remove existing deteriorated mortar from the perimeter of the window frames, clean and install new backer rod and high-grade polyurethane sealant. Typical at (8) 4'x6' windows. (160 LF). See photo 3 on PH1.0.
4. Clean and prepare existing crack and mortar joints for tuckpointing. Tuckpoint with mortar to match existing. (3 areas, approximately 10 LF). See photos 4 and 5 on PH1.0.
5. Remove defective boot and install new Dektite flashing boot for positive seal. (26 ea) refer to photos 6 and 7 on PH1.0.
6. Replace Deteriorated rivets on Area K with new Stainless Steel Rivets. (allowance of 1000 ea)
7. Remove deteriorated sealant from joint, clean joint and recaulk. (approximately 15 LF) refer to photo 10 on PH1.0.
8. Remove existing coping and metal parapet cladding. Reinstall metal parapet cladding engaged on a securement cleat and refasten at top. Reinstall metal coping (approximately 76 LF). See photo 11 on PH1.0.
9. Resecure coping lap joint with properly sized fasteners. See photo 12 on PH1.0.
10. Replace missing coping end cap with new to match existing. See photo 1 on PH1.1.
11. Gutter damage: remove damaged section of existing gutter. Fabricate and install new box type gutter from matching materials and profiles in both color and thickness. Gutter to be properly sloped to existing downspouts and installed with the back leg behind the existing fascia / drip edge. Gutter supports to be 3/16" x 1" 300 series stainless bar fabricated to match the profile of the gutter. Spacing to be 24" O.C. gutter straps to be spaced evenly in between the hangers at 24" O.C. gutter straps to be fabricated using .025" series 302 / 304 stainless steel, double hemmed, and spaced at each rib and fastened with grommeted fasteners. (1) refer to photo 2 on PH1.0.
12. Remove existing damaged lightning protection system, replace with new on S-5 clamps attached to the existing standing seam panel and recertify. See photo 3 on PH1.1
13. Remove deteriorated sealant and recaulk zee closure with silicone sealant to existing panel and seams. (approximately 440 LF). See photo 4 on PH1.1.
14. Patch roof panel with reinforced liquid flashing product and paint to closely match existing panel. See Photo 5 on PH1.1.
15. Clean Gutter of debris. See Photo 6 on PH1.1.
16. Remove and replace loose / missing / corroded fasteners with new proper sized grommeted fasteners. 1 (87 lf) refer to photo 7 on PH1.1.
17. Remove deteriorated rivets and reinstall new rivets to secure panel. Install reinforced liquid flashing repair over seam and paint to closely match existing panel. See Photos 8 and 9 on PH1.1.
18. Fabricate and install sheet metal counter flashing to complete installation and seal. Typical of 1. See photo 10 on PH1.1.
19. Remove existing sealants, clean joint and properly install new backer rod and high-grade polyurethane sealant. (approximately 14 LF). See photos 11 and 12 on PH1.1

Coded notes are not intended to be strictly limited to the areas identified and shall apply elsewhere as applicable.

Reference architectural symbols and abbreviations, see legend.

It shall be the responsibility of the contractor to locate all existing utilities whether shown herein or not, and to protect utilities from damage. The contractor shall bear all expenses of repair or replacement of utilities or other property damaged by operations in conjunction with the execution of the work

It is the responsibility of the contractor to protect building occupants and passers-by from falling debris or equipment. Do not throw materials from the roof.

Contractor is responsible for verifying all dimensions and conditions of the project, including verification of existing roof system construction and materials.

Contractor staging and storage areas shall be as directed by the owner's representative at the pre-construction meeting. Contractor shall assume a reasonable amount of storage and staging space will be made available.

Contractor is responsible for knowing the roof deck loading capacity of the existing building for storage of materials on the existing structure.

Contractor shall be responsible for protecting building surfaces, finishes, and systems from damage, discoloration, etc. during the course of all construction activities.

Personal fall protection devices are not, nor will be, provided by the owner on any roof area designated to receive work. Personal fall protection is the responsibility of the contractor.

GENERAL PROJECT CONSTRUCTION NOTES CONT.

Existing materials and construction are noted on the drawings as existing. All other notations indicate new materials, products, and construction unless otherwise stated or indicated.
The base roof design system will provide a 20-25 year manufacturer's warranty with an ERSL of 30 years. The new roof system will incorporate low-no-odor adhesives in the application in accordance with current OSHA regulations.

The new roof system is to incorporate insulation attachment to incorporate wind pressure enhancements at the perimeter, corners and mid roof sections in accordance with ASCE 7-16 as defined by local codes. Premanufactured tapered insulation units are to be used at roof sumps, crickets and saddles to promote positive water flow to the roof drains and scuppers. Field fabricated tapered units may be used if approved during the submittal process. This system will be installed in accordance with the manufacturers specifications and seam detailing required for a 30-year application with a 20 NDL year warranty.

Tapered insulation layout plan: the contractor is responsible for providing a tapered insulation system layout that eliminates ponding, and moves water to roof drains, scuppers, gutters, or other drainage accessories accounting for existing rooftop obstructions. The contractor shall provide a tapered insulation layout plan in accordance with the specifications and local doe energy requirements, reviewed and designed by the insulation manufacturer, for approval by the owner / designer. Existing flashing height conditions may require modifications to the minimum and maximum design for each roof section. Contractor is to take all precautions to maintain a minimum flashing height to achieve the full coverage of the special project manufacturer's warranty.

The roofing contractor is to place evenly distributed manufacturers recommended weights across the newly adhered insulation sheets to promote adhesion. Contractor is to also place four fasteners and plates, one at each corner of the insulation board to help hold the insulation in place while the adhesive is setting. Fasteners must not penetrate the roof deck. Provide screws and plates supplied and approved by the roof manufacturer on pitched roof areas greater than 2 in 12.

New no-hub roof Z-100 drains or equal will be designed to replace the existing aged roof drains. The current adopted IBC is 2015 which exempts overflow scuppers from being required for new roof installations.

See construction plans and specifications for insulation type, R-value, and number of layers. Add new wood nailers, as required, to match new insulation thickness as designed by the insulation manufacturer for tapered applications at existing perimeters, penetrations, and rising wall conditions as designed. All roof curbs greater than 24" wide and set perpendicular to the roof slope shall be required to receive a tapered saddle to promote positive water flow. New wood nailers must be a set 1/4" below the finished roof surface at all gutter edges and primary scupper escutcheons.

All lumber to be pressure treated except for plywood, U.O.N.

The wood blocking shown in the details and sections are graphic representations only. Solid continuous blocking shall be provided to match roof insulation at the thickest point and maintain the same elevation for the entire perimeter of the roof unless otherwise indicated.

Do not install wood nailers ahead of new roofing work. Only install nailers that can be covered the same day.
Counter sink all fasteners for wood blocking.

All existing wood blocking to remain is to be fastened with additional screws as per FM 1-49 placement. Pre-drill and set new securement using epoxy shields in masonry units and TEK fasteners in steel as required for positive attachment. Consult with professional fastener companies like Hilti, Triangle fasteners, etc. For additional guidance.

Secure top edge or termination of all membrane flashing using an aluminum termination bar secured 12-inches o.c., max. (detail shown on the project plans), and within 2-inches of each end. Prior to termination bar installation, install manufacturers recommended compression sealant behind flashing where termination bar will be placed. Apply manufacturers' approved sealant to the top edge of flashing and termination bar after proper mechanical attachment.

All roof membrane details are to follow roof manufacturer's details for a 30-year warranty whether or not a 30-year warranty is required.

Install manufacturers pre-fabricated inside and outside flashing corners following the recommendations and requirements of the roofing membrane manufacturer. Provide "t-joint covers" at the base of all vertical flashing / field seam intersections.
The use of "penetration pans" or penetration pockets is not permitted unless the geometry of multiple penetrations is not sufficient for field wrapping and without prior owner approval.

Extend all new membrane flashing up and over perimeter parapet wall under metal edge cleat to cover beyond the exterior of the wood nailer / parapet transition by 1 ½" minimum.

Extend all new membrane flashing under roof metal edge to cover beyond the exterior of the wood nailer / parapet transition by 1 ½" minimum.
Provide walkpads at the base and top of ladders, stairs, at roof access doors, at other roof access points, and at all serviceable mechanical unit doors or access panels.
All roof deck penetrations and perimeter edges of the roof section will be required to receive a reinforced fire-stop sealant to prevent air and moisture drive into the new roof system.
All wood supports for electrical conduit and gas line supports must be replaced with new Caddy, Miro, or equal premanufactured units to accommodate the new roof system.

All new metal flashings for RTU counterflashing, cool stack base flashings, rain hoods, miscellaneous vertical wall flashing terminations, perimeter wall counterflashing, reglet metal, through wall and overflow wall scuppers are to be fabricated from 302 / 304 stainless unless indicated differently in the contract plans.

All dissimilar metals to be separated by paint coat to avoid electrolytic reaction.

All stainless and copper metal field fabricated seams are to be soldered unless seam is indicated to be an expansion joint. Pre-finished galvanized or aluminum metals are to be sealed using approved sealant joints. All metal fabrications are to be completed using the latest SMACNA or copper and common-sense methods to resemble the construction details. Hem all metal edges.

All roof curbs are to meet the minimum flashing height requirements pre-approved by the new roof system manufacturer for the special project warranty. All required disconnections, reconnections and capping of mechanical, electrical, and plumbing equipment is to be completed in a safe working condition and shall be performed by a contractor licensed to perform the specified or indicated work.

All mechanical, electrical and plumbing work to be performed by a licensed trade contractor within the jurisdiction of the contract facility's address.

Temporarily remove all roof top equipment resting on roof surface or on existing equipment pads. Reinstall over walkpads, or raised to an alternative support curb, as shown in the contract plans when roofing work is complete.

All security cameras must remain operational during the new roof installation.

All lightning protection must remain intact during construction. Any dismantling of the cabling may require the contractor to re-certify the LP loop. Contractor is required to provide a photo catalogue of the existing conditions prior to commencement of work.

All roof drains, wall drains, exterior ground leaders and scuppers must be water tested prior to commencement or mobilization for roof construction. The owner / consultant must be notified immediately of any drains or ground leaders found to be clogged. Contractor must document all testing and provide confirmation that all drains are clear prior to commencement of the new roof contract work.

Inspect all heater stacks (b-vents) and replace defective / rusted piping above the roof with new 302/304 stainless steel insulated units to fit existing extensions.
All roof top condenser units are to be secured to the existing or new roof curbs in accordance with new FM Global requirements for roof top wind securement.

All HVAC and RTU curbs, ductwork, electrical penetrations and gas supports shall be adjusted to accommodate the new roof insulation thickness. All roof curbs shall meet a min. 12" vertical height above finished roof, unless approved in writing by roofing manufacturer and design consultant.

REVISIONS

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BUILD MAINTAIN SUSTAIN
DGS DEPARTMENT OF GENERAL SERVICES

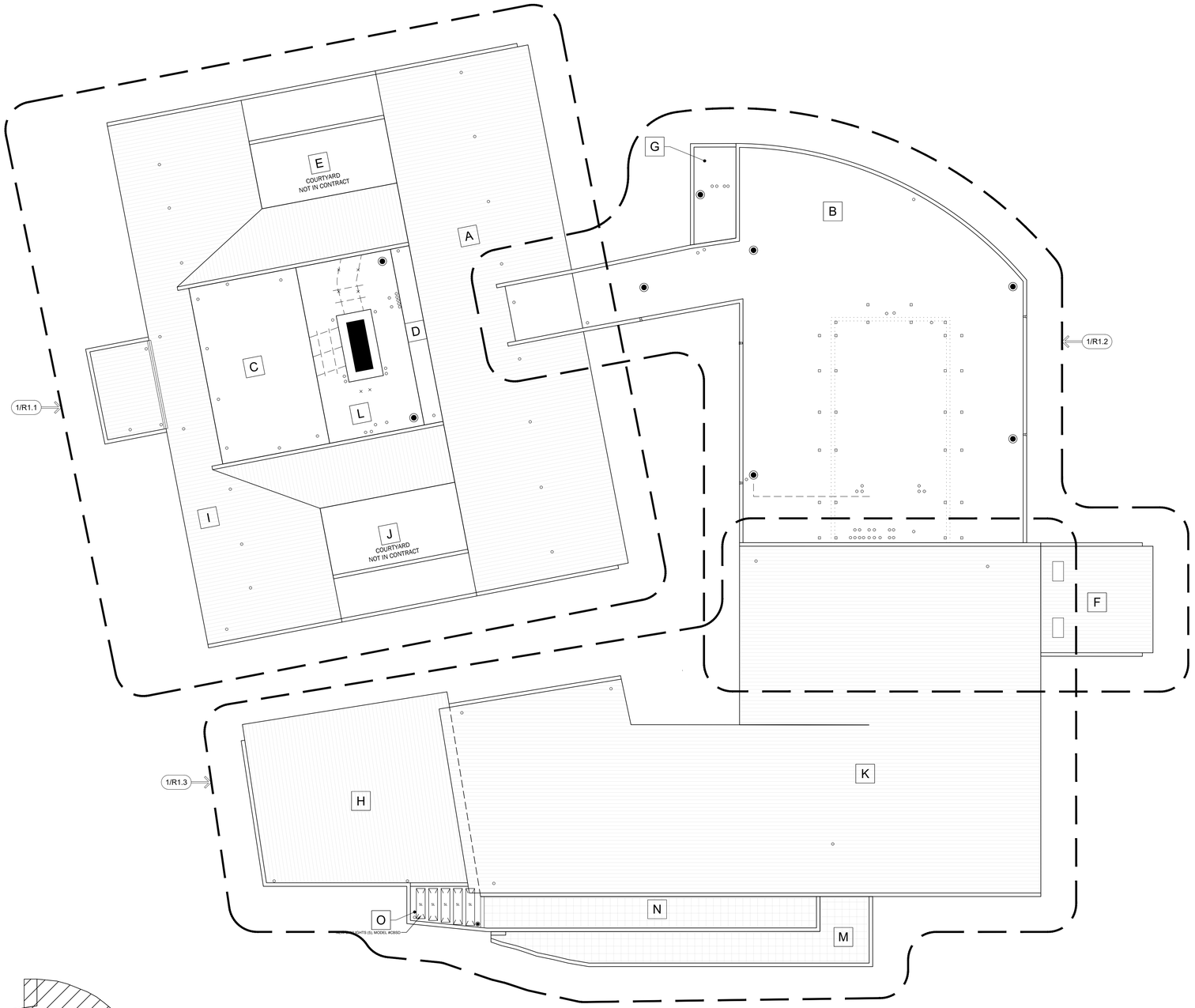
Lightbox
BLUEFIN Improving Facility Performance
ROOFS | WALLS | PAVEMENT
1701 Rhode Island Avenue NW
Washington, DC 20036

FACILITIES:
Department of Youth YSC
1000 Mt. Olivet Road NE
Washington, DC 20002

ROOF REPLACEMENT PROJECT
GENERAL NOTES

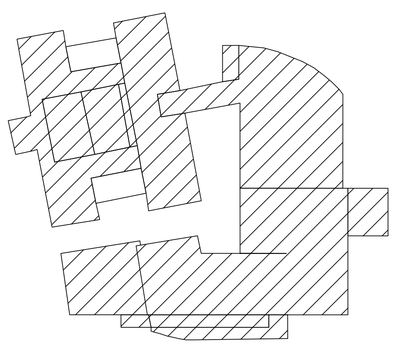
JOB NO: 50696
DATE: 10/24/2022
DRAWN: C.A.M.P.
FILENAME: DYRS_YSC
PLOTSCALE: 1:1
SHEET 2 of 12

N1.0



1 R1.0 DGS DEPARTMENT OF YOUTH YSC: KEY ROOF PLAN

SCALE 1/16" = 1'-0"



Key Plan
N.T.S.

AREA OF WORK

AREA SIZES

AREA NO.	SQ. FT.
A	6,094
B	9,599
C	1,640
D	282
E	829
F	1,217
G	363
H	3,526
I	6,372
J	832
K	13,026
L	1,509
M	1,116
N	951
O	231
TOTAL	47,587

ROOF PLAN LEGEND

- ABANDONED CURB
- ABANDONED ROUND PEN.
- ANTENNA
- ATTIC VENT
- ATTIC VENT CURBED
- CHIMNEY
- CONDENSING UNIT
- CORE LOCATION
- CORE LOCATION TO DIM.
- CURBED PENETRATION
- EQUIP CURB 2
- EQUIP CURB CRICKET
- EQUIP ON PITCH PANS
- EQUIP ON SLEEPERS
- EQUIP ON SUPPORTS
- EXISTING ROOF DRAIN
- FLOOD LIGHT
- FRESH AIR IN-EX
- GOOSENECK ROUND
- GOOSENECK SQUARE
- GUTTER DOWNSPOUT 2
- GUY WIRE ANCHOR
- HOT STACK
- HVAC UNIT ON SLEEPERS
- DUCT PENETRATION RD
- LOUVERED VENT
- LADDER
- HVAC UNIT ON CURB
- LADDER W/ CAGE
- PIPE SUPPORT
- PIPE SUPPORT ROLLER
- PITCH PAN
- PLUMBING VENT
- POWERED VENT
- ROOF AREA DESIGNATION
- ROOF DRAIN
- ROOF DRAIN OVERFLOW
- ROOF DRAIN WALL
- ROOF DRAIN SUMPED
- ROOF DRAIN SUMPED 02
- ROOF HATCH
- ROUND PENETRATION
- SATELLITE DISH
- SATELLITE LARGE
- SCUPPER
- SCUPPER DOWNSPOUT
- SKYLIGHT
- SLOPE (STRUCTURAL)
- SLOPE (TAPERED INSULATION)
- SMOKE HATCH
- SPLASHBLOCK
- TURBINE
- VENT
- VENT STACK CURBED
- WALKPAD
- WALK PAVER

REVISIONS

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BUILD MAINTAIN SUSTAIN
DGS DEPARTMENT OF GENERAL SERVICES

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Washington, DC 20036

Lightbox

FACILITIES:
Department of Youth YSC
1000 Mt. Olivet Road NE
Washington, DC 20002

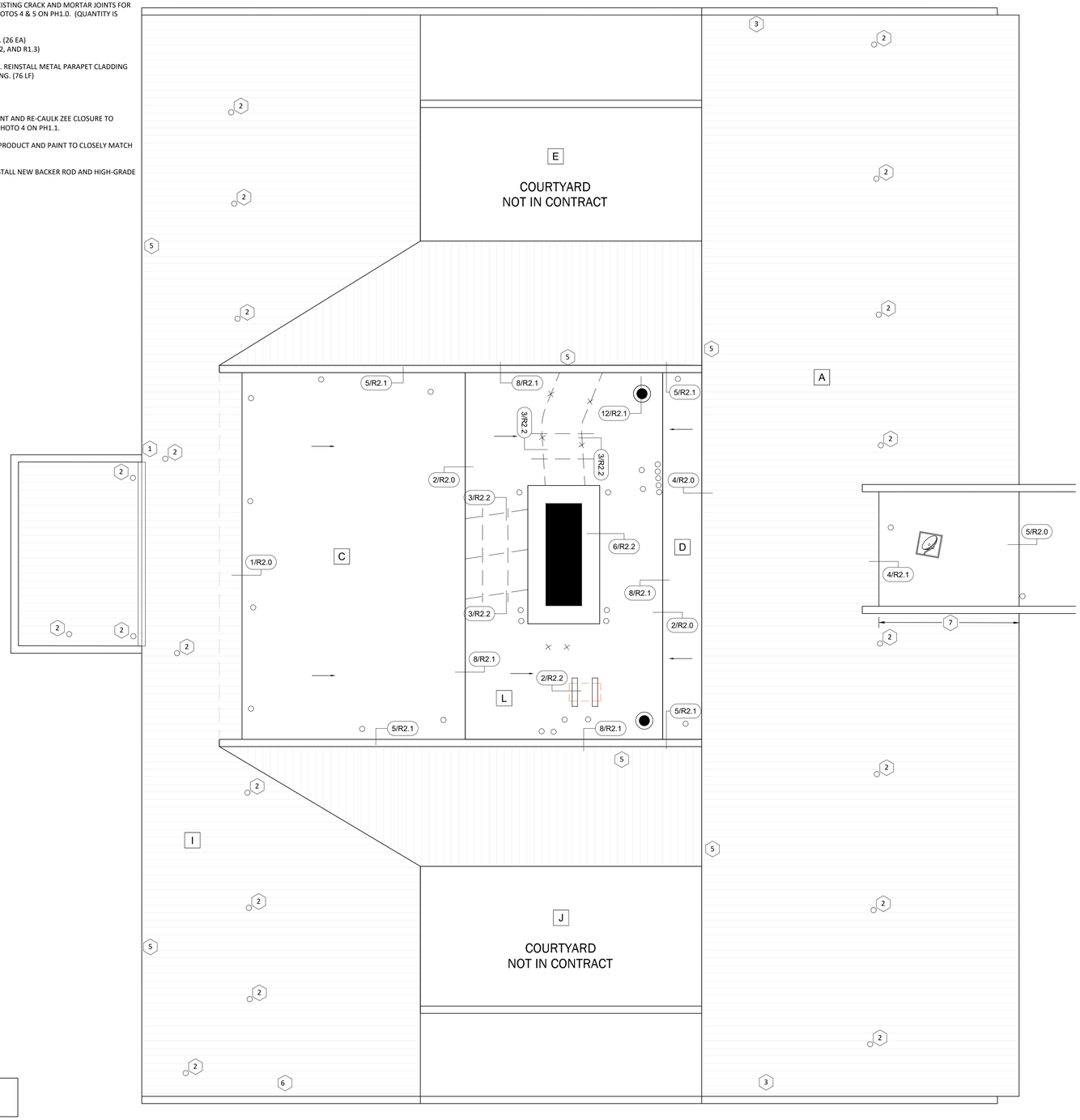
ROOF UPGRADE PROJECT
KEY ROOF PLAN

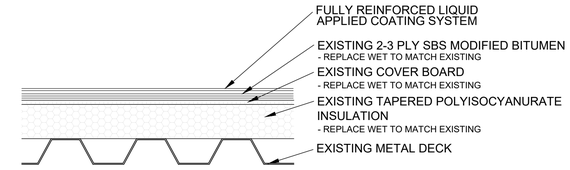
JOB NO: 50696
DATE: 10/24/2022
DRAWN: C.A.M.P.
FILENAME: DYRS_YSC
PLOTSCALE: 1:1
SHEET 3 of 12

R1.0

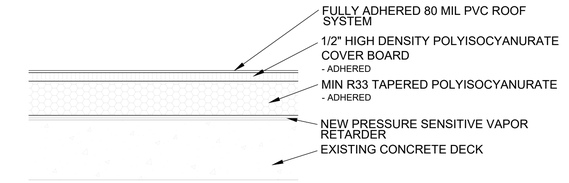
BASE BID ROOF UPGRADES - SCOPE OF WORK:

1. STEP CRACKING AND DETERIORATED MORTAR JOINTS IN MASONRY: RAKE AND CLEAN EXISTING CRACK AND MORTAR JOINTS FOR TUCKPOINTING. TUCKPOINT WITH MORTAR TO MATCH EXISTING. 1 (10 LF) REFER TO PHOTOS 4 & 5 ON PH1.0. (QUANTITY IS ANTICIPATED TOTAL ACROSS R1.1, R1.2, AND R1.3)
2. PIPE BOOT DETERIORATION: REMOVE OLD BOOT AND INSTALL NEW DEK-TITE PIPE BOOT. (26 EA) REFER TO PHOTOS 6 & 7 ON PH1.0. (QUANTITY IS ANTICIPATED TOTAL ACROSS R1.1, R1.2, AND R1.3)
3. LOOSE PARAPET CLADDING: REMOVE EXISTING COPING AND METAL PARAPET CLADDING. REINSTALL METAL PARAPET CLADDING ENGAGED ON NEW SECUREMENT CLEAT AND REFASTEN AT TOP. REINSTALL METAL COPING. (76 LF) REFER TO PHOTO 11 ON PH1.0.
4. DELETED.
5. DETERIORATED SEALANT AT HEAD CLOSURE CONDITION: REMOVE DETERIORATED SEALANT AND RE-CAULK ZEE CLOSURE TO EXISTING PANEL AND SEAMS WITH HIGH GRADE SILICONE SEALANT. (440 LF) REFER TO PHOTO 4 ON PH1.1.
6. HOLE IN METAL ROOF PANEL: PATCH ROOF PANEL WITH REINFORCED LIQUID FLASHING PRODUCT AND PAINT TO CLOSELY MATCH EXISTING PANEL. (1 EA) REFER TO PHOTO 5 ON PH1.1.
7. DETERIORATED SEALANT: REMOVE EXISTING SEALANTS, CLEAN JOINT AND PROPERLY INSTALL NEW BACKER ROD AND HIGH-GRADE POLYURETHANE SEALANT. (14 LF) REFER TO PHOTOS 11 & 12 ON PH1.1.

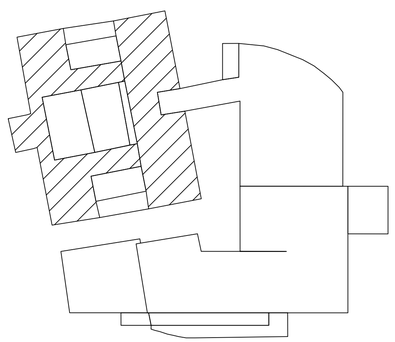




PROPOSED ROOF ASSEMBLY @ ROOF AREAS: C AND D



PROPOSED ROOF ASSEMBLY @ ROOF AREAS: L AND O



Key Plan
N.T.S.

AREA OF WORK

1 / R1.1 DGS DEPARTMENT OF YOUTH YSC: ROOF PLAN

SCALE 1/8" = 1'-0"

AREA SIZES

AREA NO.	SQ. FT.
A	6,094
C	1,640
D	282
E	NIC
I	6,372
J	NIC
L	1,509
TOTAL	15,897

ROOF PLAN LEGEND

- ABANDONED CURB
- ABANDONED ROUND PEN.
- ANTENNA
- ATTIC VENT
- ATTIC VENT CURBED
- CHIMNEY
- CONDENSING UNIT
- CORE LOCATION
- CORE LOCATION TO DIM.
- CURBED PENETRATION
- EQUIP CURB 2
- EQUIP CURB CRICKET
- EQUIP ON PITCH PANS
- EQUIP ON SLEEPERS
- EQUIP ON SUPPORTS
- EXISTING ROOF DRAIN
- FLOOD LIGHT
- FRESH AIR IN-EX
- GOOSENECK ROUND
- GOOSENECK SQUARE
- GUTTER DOWNSPOUT 2
- GUY WIRE ANCHOR
- HOT STACK
- HVAC UNIT ON SLEEPERS
- DUCT PENETRATION RD
- LOUVERED VENT
- LADDER
- HVAC UNIT ON CURB
- LADDER W/ CAGE
- PIPE SUPPORT
- PIPE SUPPORT ROLLER
- PITCH PAN
- PLUMBING VENT
- POWERED VENT
- ROOF AREA DESIGNATION
- ROOF DRAIN
- ROOF DRAIN OVERFLOW
- ROOF DRAIN WALL
- ROOF DRAIN SUMPED
- ROOF DRAIN SUMPED 02
- ROOF HATCH
- ROUND PENETRATION
- SATELLITE DISH
- SATELLITE LARGE
- SCUPPER
- SCUPPER DOWNSPOUT
- SKYLIGHT
- SLOPE (STRUCTURAL)
- SLOPE (TAPERED INSULATION)
- SMOKE HATCH
- SPLASHBLOCK
- TURBINE
- VENT
- VENT STACK CURBED
- WALKPAD
- WALK PAVER

REVISIONS

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BUILD MAINTAIN SUSTAIN
DGS DEPARTMENT OF GENERAL SERVICES

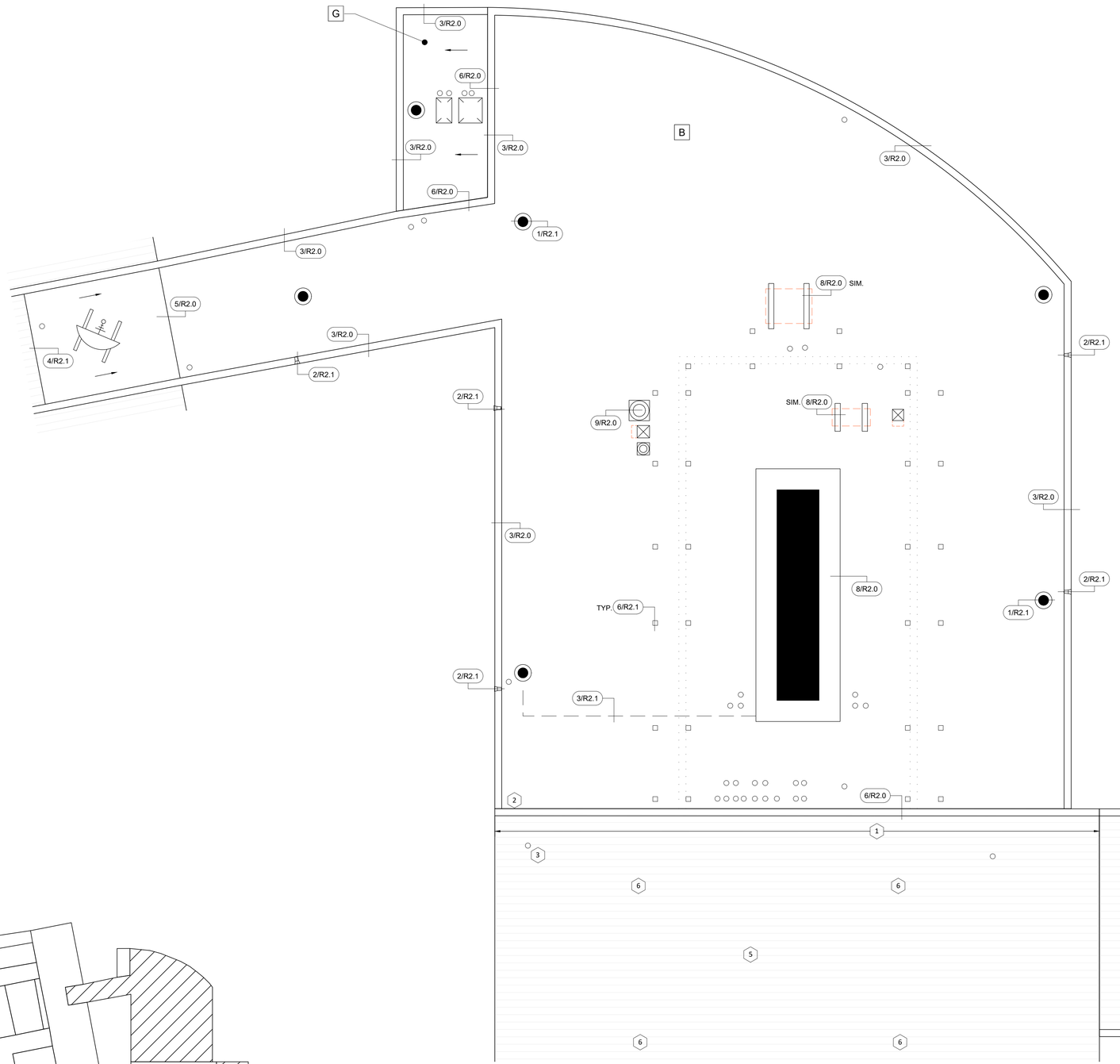
Lightbox
BLUEFIN Improving Facility Performance
ROOFS | WALLS | PAVEMENT
1701 Rhode Island Avenue NW
Washington, DC 20036

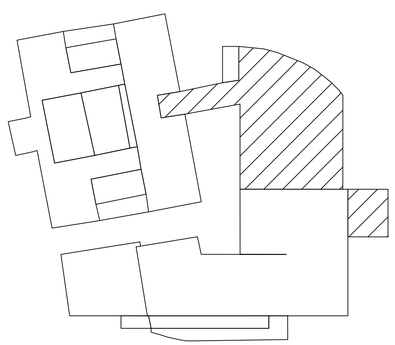
FACILITIES:
Department of Youth YSC
1000 Mt. Olivet Road NE
Washington, DC 20002

ROOF UPGRADE PROJECT
ENLARGED ROOF PLAN

JOB NO: 50696
DATE: 10/24/2022
DRAWN: C.A.M.P.
FILENAME: DYRS_YSC
PLOTSCALE: 1:1
SHEET 4 of 12

R1.1



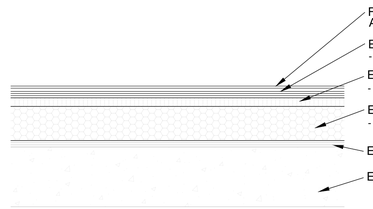


Key Plan
N.T.S.

AREA OF WORK

BASE BID ROOF UPGRADES - SCOPE OF WORK:

1. DETERIORATED NEOPRENE CLOSURE: REPLACE DETERIORATED NEOPRENE CLOSURE WITH NEW. 4 (329 LF) REFER TO PHOTO 1 ON PH1.0. (QUANTITY IS ANTICIPATED TOTAL ACROSS R1.2 AND R1.3)
2. STEP CRACKING AND DETERIORATED MORTAR JOINTS IN MASONRY: CLEAN AND PERFECT EXISTING CRACK AND MORTAR JOINTS FOR TUCKPOINTING. TUCKPOINT WITH MORTAR TO MATCH EXISTING. 3 (10 LF) REFER TO PHOTOS 4 & 5 ON PH1.0. (QUANTITY IS ANTICIPATED TOTAL ACROSS R1.1, R1.2, AND R1.3)
3. BOOT DEFECT: REMOVE OLD BOOT AND INSTALL NEW DEK-TITE PIPE BOOT SET IN HIGH GRADE POLYURETHANE SEALANT AND FASTEN WITH FASTENERS WITH SEALING WASHERS. (26 EA) REFER TO PHOTOS 6 & 7 ON PH1.0. (QUANTITY IS ANTICIPATED TOTAL ACROSS R1.1, R1.2, AND R1.3)
4. MISSING COPING END CAP: REPLACE WITH NEW COPING END CAP FABRICATED TO MATCH EXISTING AND PROPERLY SECURE. (1 EA) REFER TO PHOTO 1 ON PH1.1.
5. LIGHTNING PROTECTION SYSTEM DAMAGE: REMOVE DAMAGED LIGHTNING PROTECTION AND REPLACE WITH NEW ON S-5 CLAMPS ATTACHED TO THE PANEL SEAMS. (1,000 LF) REFER TO PHOTO 3 ON PH1.1. (QUANTITY IS ANTICIPATED TOTAL ACROSS R1.2 AND R1.3)
6. REPLACE DETERIORATED RIVETS WITH NEW STAINLESS STEEL RIVETS. (INCLUDE AN ALLOWANCE OF 1,000 EA) (QUANTITY IS ANTICIPATED TOTAL ACROSS (R1.1, R1.2 AND R1.3)



PROPOSED ROOF ASSEMBLY @ ROOF AREAS: B AND G

ROOF PLAN LEGEND

- ABANDONED CURB
- ABANDONED ROUND PEN.
- ANTENNA
- ATTIC VENT
- ATTIC VENT CURBED
- CHIMNEY
- CONDENSING UNIT
- CORE LOCATION
- CORE LOCATION TO DIM.
- CURBED PENETRATION
- EQUIP CURB 2
- EQUIP CURB CRICKET
- EQUIP ON PITCH PANS
- EQUIP ON SLEEPERS
- EQUIP ON SUPPORTS
- EXISTING ROOF DRAIN
- FLOOD LIGHT
- FRESH AIR IN-EX
- GOOSENECK ROUND
- GOOSENECK SQUARE
- GUTTER DOWNSPOUT 2
- GUY WIRE ANCHOR
- HOT STACK
- HVAC UNIT ON SLEEPERS
- DUCT PENETRATION RD
- LOUVERED VENT
- LADDER
- HVAC UNIT ON CURB
- LADDER W/ CAGE
- PIPE SUPPORT
- PIPE SUPPORT ROLLER
- PITCH PAN
- PLUMBING VENT
- POWERED VENT
- ROOF AREA DESIGNATION
- ROOF DRAIN
- ROOF DRAIN OVERFLOW
- ROOF DRAIN WALL
- ROOF DRAIN SUMPED
- ROOF DRAIN SUMPED 02
- ROOF HATCH
- ROUND PENETRATION
- SATELLITE DISH
- SATELLITE LARGE
- SCUPPER
- SCUPPER DOWNSPOUT
- SKYLIGHT
- SLOPE (STRUCTURAL)
- SLOPE (TAPERED INSULATION)
- SMOKE HATCH
- SPLASHBLOCK
- TURBINE
- VENT
- VENT STACK CURBED
- WALKPAD
- WALK PAVER

AREA SIZES

AREA NO.	SQ. FT.
B	9,599
F	1,217
G	363
TOTAL	11,179

1 / R1.2 DGS DEPARTMENT OF YOUTH YSC: ROOF PLAN
(SCOPE: ROOF UPGRADE PROJECT)

SCALE 1/8" = 1'-0"

REVISIONS

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BUILD MAINTAIN SUSTAIN
DGS DEPARTMENT OF GENERAL SERVICES

BLUEFIN Improving Facility Performance
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1701 Rhode Island Avenue NW
Washington, DC 20036

Lightbox

FACILITIES:
Department of Youth YSC
1000 Mt. Olivet Road NE
Washington, DC 20002

ROOF UPGRADE PROJECT
ENLARGED ROOF PLAN

JOB NO: 50696
DATE: 10/24/2022
DRAWN: C.A.M.P.
FILENAME: DYRS_YSC
PLOTSCALE: 1:1
SHEET 5 of 12

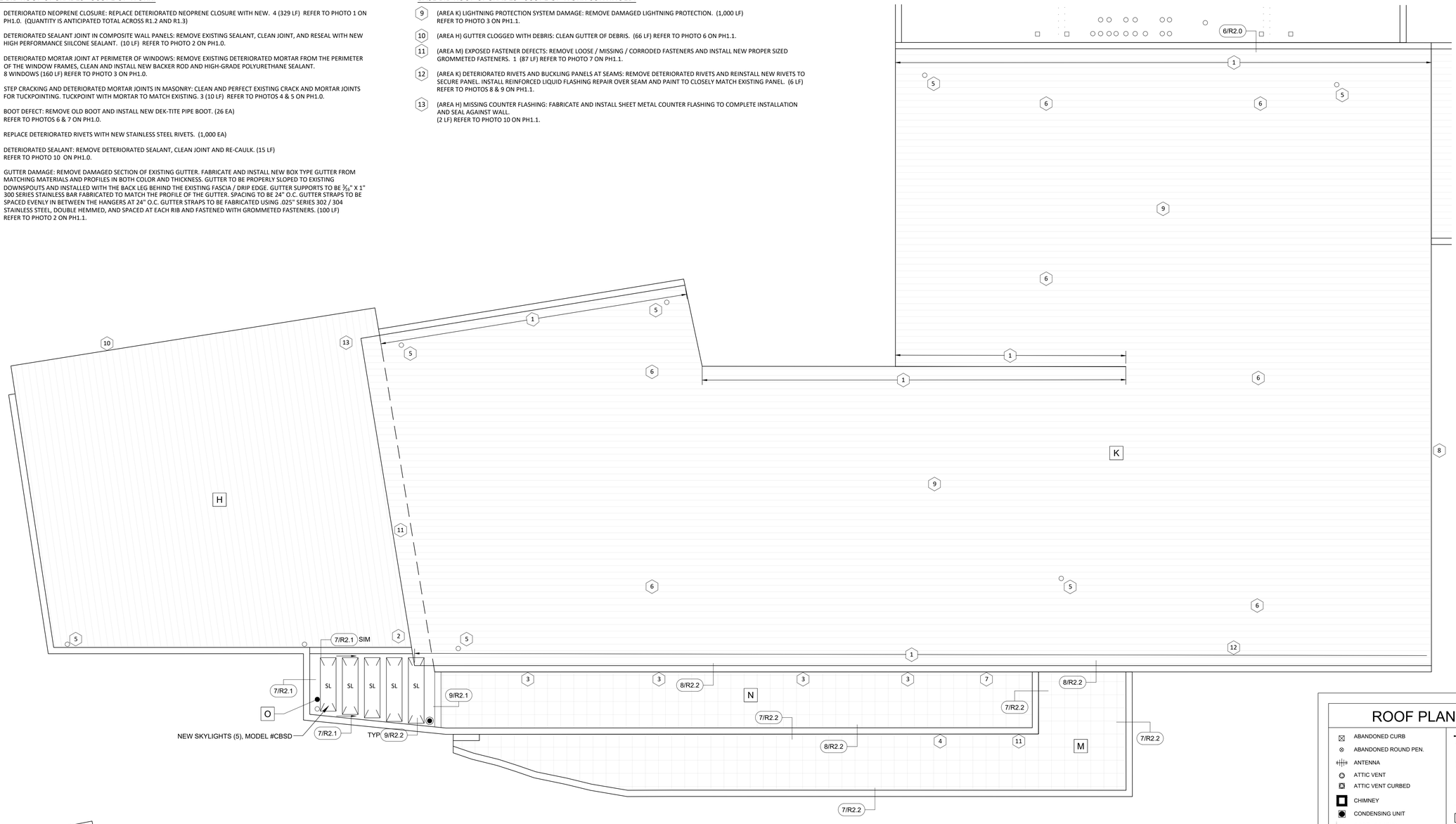
R1.2

BASE BID ROOF UPGRADES - SCOPE OF WORK:

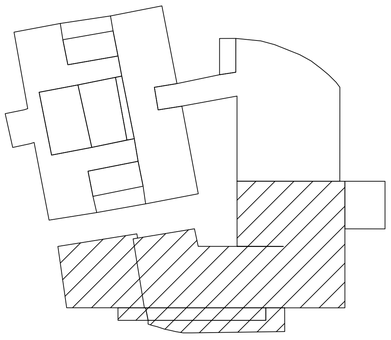
1. DETERIORATED NEOPRENE CLOSURE: REPLACE DETERIORATED NEOPRENE CLOSURE WITH NEW. 4 (329 LF) REFER TO PHOTO 1 ON PH1.0. (QUANTITY IS ANTICIPATED TOTAL ACROSS R1.2 AND R1.3)
2. DETERIORATED SEALANT JOINT IN COMPOSITE WALL PANELS: REMOVE EXISTING SEALANT, CLEAN JOINT, AND RESEAL WITH NEW HIGH PERFORMANCE SIILCONE SEALANT. (10 LF) REFER TO PHOTO 2 ON PH1.0.
3. DETERIORATED MORTAR JOINT AT PERIMETER OF WINDOWS: REMOVE EXISTING DETERIORATED MORTAR FROM THE PERIMETER OF THE WINDOW FRAMES, CLEAN AND INSTALL NEW BACKER ROD AND HIGH-GRADE POLYURETHANE SEALANT. 8 WINDOWS (160 LF) REFER TO PHOTO 3 ON PH1.0.
4. STEP CRACKING AND DETERIORATED MORTAR JOINTS IN MASONRY: CLEAN AND PERFECT EXISTING CRACK AND MORTAR JOINTS FOR TUCKPOINTING. TUCKPOINT WITH MORTAR TO MATCH EXISTING. 3 (10 LF) REFER TO PHOTOS 4 & 5 ON PH1.0.
5. BOOT DEFECT: REMOVE OLD BOOT AND INSTALL NEW DEK-TITE PIPE BOOT. (26 EA) REFER TO PHOTOS 6 & 7 ON PH1.0.
6. REPLACE DETERIORATED RIVETS WITH NEW STAINLESS STEEL RIVETS. (1,000 EA)
7. DETERIORATED SEALANT: REMOVE DETERIORATED SEALANT, CLEAN JOINT AND RE-CAULK. (15 LF) REFER TO PHOTO 10 ON PH1.0.
8. GUTTER DAMAGE: REMOVE DAMAGED SECTION OF EXISTING GUTTER. FABRICATE AND INSTALL NEW BOX TYPE GUTTER FROM MATCHING MATERIALS AND PROFILES IN BOTH COLOR AND THICKNESS. GUTTER TO BE PROPERLY SLOPED TO EXISTING DOWNSPOUTS AND INSTALLED WITH THE BACK LEG BEHIND THE EXISTING FASCIA / DRIP EDGE. GUTTER SUPPORTS TO BE 3/16" X 1" 300 SERIES STAINLESS BAR FABRICATED TO MATCH THE PROFILE OF THE GUTTER. SPACING TO BE 24" O.C. GUTTER STRAPS TO BE SPACED EVENLY IN BETWEEN THE HANGERS AT 24" O.C. GUTTER STRAPS TO BE FABRICATED USING .025" SERIES 302 / 304 STAINLESS STEEL, DOUBLE HEMMED, AND SPACED AT EACH RIB AND FASTENED WITH GROMMETED FASTENERS. (100 LF) REFER TO PHOTO 2 ON PH1.1.

BASE BID ROOF UPGRADES - SCOPE OF WORK CONTINUED:

9. (AREA K) LIGHTNING PROTECTION SYSTEM DAMAGE: REMOVE DAMAGED LIGHTNING PROTECTION. (1,000 LF) REFER TO PHOTO 3 ON PH1.1.
10. (AREA H) GUTTER CLOGGED WITH DEBRIS: CLEAN GUTTER OF DEBRIS. (66 LF) REFER TO PHOTO 6 ON PH1.1.
11. (AREA M) EXPOSED FASTENER DEFECTS: REMOVE LOOSE / MISSING / CORRODED FASTENERS AND INSTALL NEW PROPER SIZED GROMMETED FASTENERS. 1 (87 LF) REFER TO PHOTO 7 ON PH1.1.
12. (AREA K) DETERIORATED RIVETS AND BUCKLING PANELS AT SEAMS: REMOVE DETERIORATED RIVETS AND REINSTALL NEW RIVETS TO SECURE PANEL. INSTALL REINFORCED LIQUID FLASHING REPAIR OVER SEAM AND PAINT TO CLOSELY MATCH EXISTING PANEL. (6 LF) REFER TO PHOTOS 8 & 9 ON PH1.1.
13. (AREA H) MISSING COUNTER FLASHING: FABRICATE AND INSTALL SHEET METAL COUNTER FLASHING TO COMPLETE INSTALLATION AND SEAL AGAINST WALL. (2 LF) REFER TO PHOTO 10 ON PH1.1.

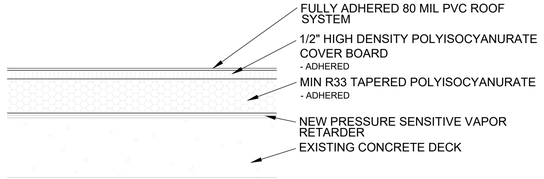


1 R1.3 DGS DEPARTMENT OF YOUTH YSC: ROOF PLAN
(SCOPE: ROOF UPGRADE PROJECT)
SCALE 1/8" = 1'-0"

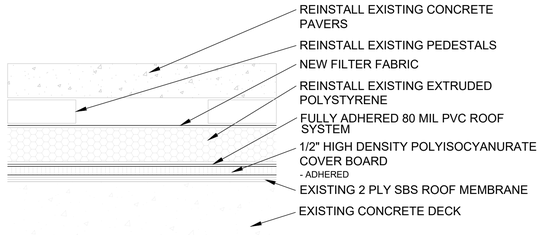


Key Plan
N.T.S.

AREA OF WORK



PROPOSED ROOF ASSEMBLY @ ROOF AREAS: L AND O



PROPOSED ROOF ASSEMBLY @ ROOF AREAS: M AND N

AREA SIZES

AREA NO.	SQ. FT.
H	3,526
K	13,026
M	1,116
N	951
O	231
TOTAL	18,850

ROOF PLAN LEGEND

- ABANDONED CURB
- ABANDONED ROUND PEN.
- ANTENNA
- ATTIC VENT
- ATTIC VENT CURBED
- CHIMNEY
- CONDENSING UNIT
- CORE LOCATION
- CORE LOCATION TO DIM.
- CURBED PENETRATION
- EQUIP CURB 2
- EQUIP CURB CRICKET
- EQUIP ON PITCH PANS
- EQUIP ON SLEEPERS
- EQUIP ON SUPPORTS
- EXISTING ROOF DRAIN
- FLOOD LIGHT
- FRESH AIR IN-EX
- GOOSENECK ROUND
- GOOSENECK SQUARE
- GUTTER DOWNSPOUT 2
- GUY WIRE ANCHOR
- HOT STACK
- HVAC UNIT ON SLEEPERS
- DUCT PENETRATION RD
- LOUVERED VENT
- LADDER
- HVAC UNIT ON CURB
- LADDER W/ CAGE
- PIPE SUPPORT
- PIPE SUPPORT ROLLER
- PITCH PAN
- PLUMBING VENT
- POWERED VENT
- ROOF AREA DESIGNATION
- ROOF DRAIN
- ROOF DRAIN OVERFLOW
- ROOF DRAIN WALL
- ROOF DRAIN SUMPED
- ROOF DRAIN SUMPED 02
- ROOF HATCH
- ROUND PENETRATION
- SATELLITE DISH
- SATELLITE LARGE
- SCUPPER
- SCUPPER DOWNSPOUT
- SKYLIGHT
- SLOPE (STRUCTURAL)
- SLOPE (TAPERED INSULATION)
- SMOKE HATCH
- SPLASHBLOCK
- TURBINE
- VENT
- VENT STACK CURBED
- WALKPAD
- WALK PAVER

PLOT DATE: October 24, 2022 8:20 PM E:\BLUEFIN\50696 - DYRS YSC\Drawings\DGS DYRS YSC DS_Plans and Details.dwg

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BUILD MAINTAIN SUSTAIN
DGS DEPARTMENT OF GENERAL SERVICES

Lightbox
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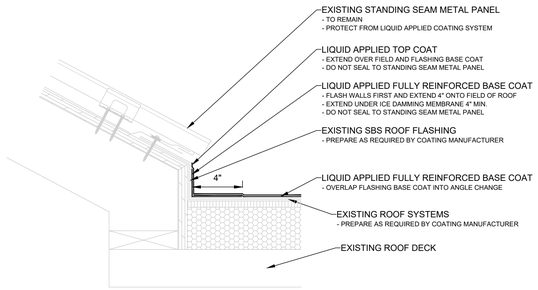
ROOFS | WALLS | PAVEMENT
1701 Rhode Island Avenue NW
Washington, DC 20036

FACILITIES:
Department of Youth YSC
1000 Mt. Olivet Road NE
Washington, DC 20002

ROOF UPGRADE PROJECT
ENLARGED ROOF PLAN

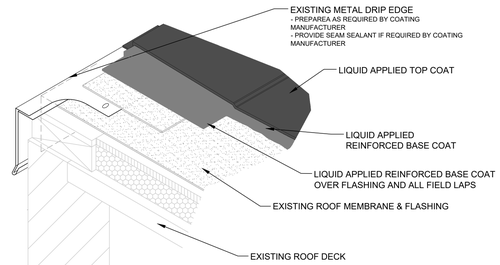
JOB NO: 50696
DATE: 10/24/2022
DRAWN: C.A.M.P.
FILENAME: DYRS_YSC
PLOTSCALE: 1:1
SHEET 6 of 12

R1.3



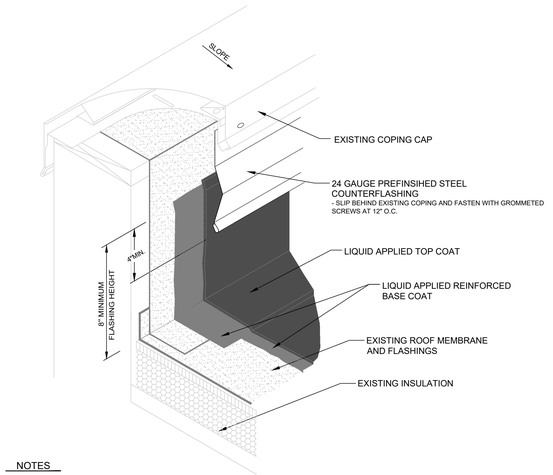
SCALE : N.T.S.

Roof Transition @ SS Metal Panels — 1



SCALE : N.T.S.

Roof Edge Flashing — 2



NOTES

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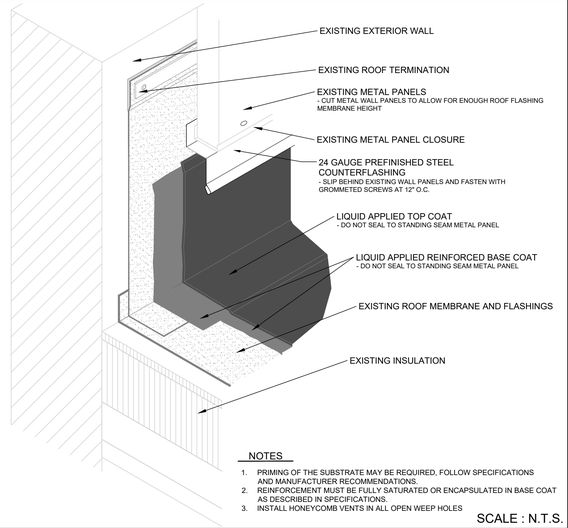
SCALE : N.T.S.

Parapet Flashing — 3



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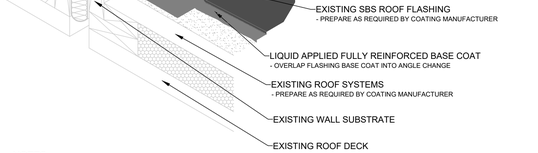
3. INSTALL HONEYCOMB VENTS IN ALL OPEN WEEP HOLES

SCALE : N.T.S.

Wall Flashing @ Metal Panels — 4



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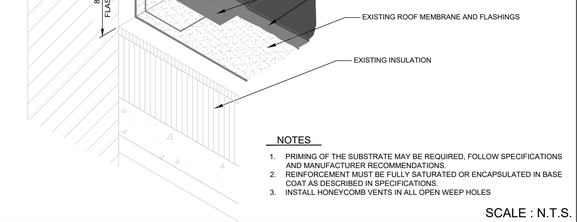
SCALE : N.T.S.

Flashing @ Expansion Joint — 5



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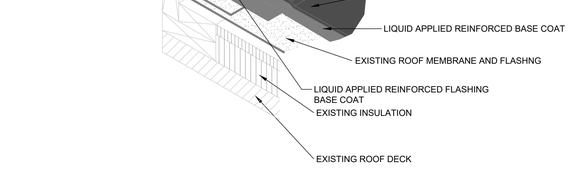
SCALE : N.T.S.

Counter Flashing — 6

SCALE : N.T.S.

NOT USED — 7



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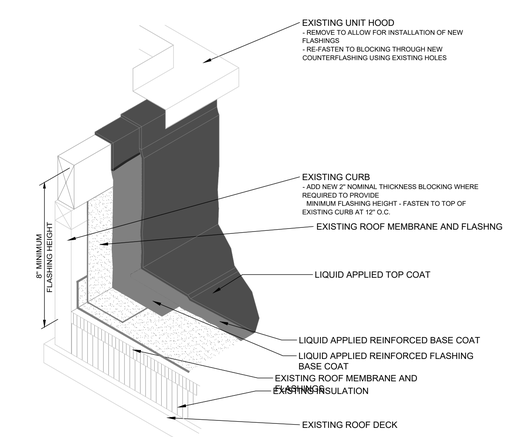
Typical Unit Curb — 8



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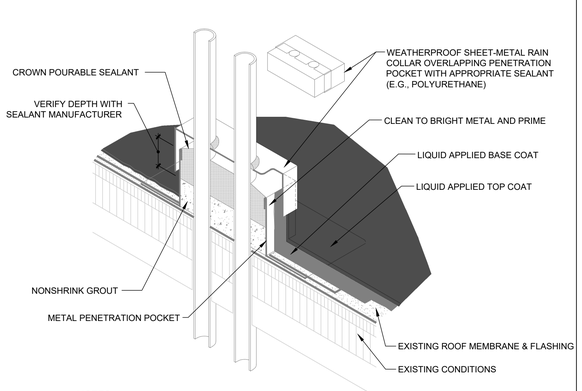
Typical Hood Curb — 9



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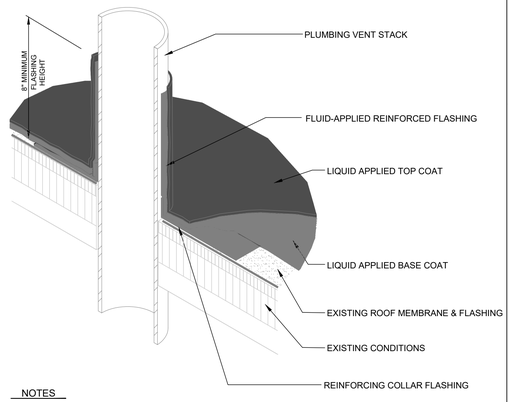
SCALE : N.T.S.

Typical Penetration Pocket — 10



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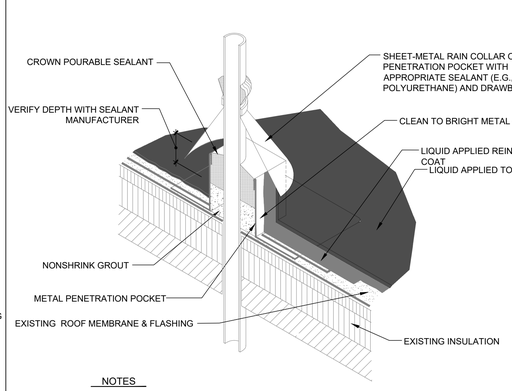
SCALE : N.T.S.

Typical Plumbing Vent Stack — 11



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SCALE : N.T.S.

Typical Penetration Pocket — 12

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BUILD MAINTAIN SUSTAIN

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Department of Youth YSC
1000 Mt. Olivet Road NE
Washington, DC 20002

ROOF UPGRADE PROJECT
ROOF COATING DETAILS

JOB NO: 50696
DATE: 10/24/2022
DRAWN: C.A.M.P.
FILENAME: DYRS_YSC
PLOTSCALE: 1:1
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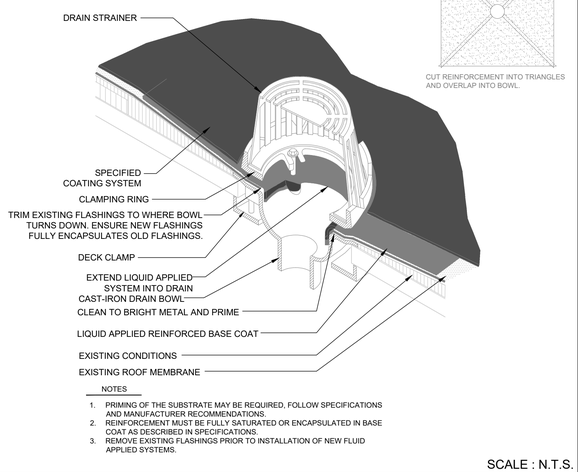
PLOT DATE: October 24, 2022 8:20 PM E:\BLUEFIN\50696 - DYRS YSC\Drawings\DGS DYRS YSC DS_Plans and Details.dwg



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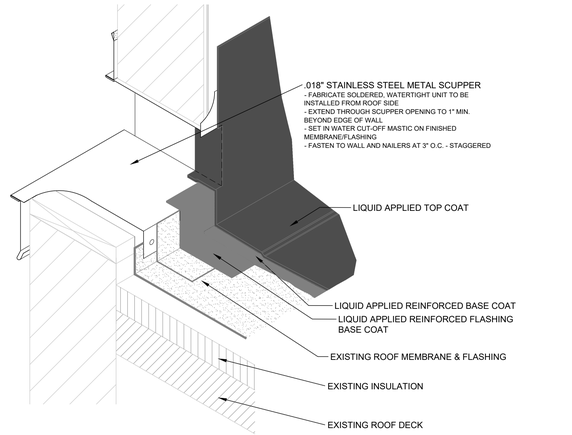
2. REINFORCEMENT MUST BE FULLY SATURATED OR ENCAPSULATED IN BASE COAT AS DESCRIBED IN SPECIFICATIONS.
3. REMOVE EXISTING FLASHINGS PRIOR TO INSTALLATION OF NEW FLUID APPLIED SYSTEMS.

SCALE : N.T.S.

Roof Drain 1



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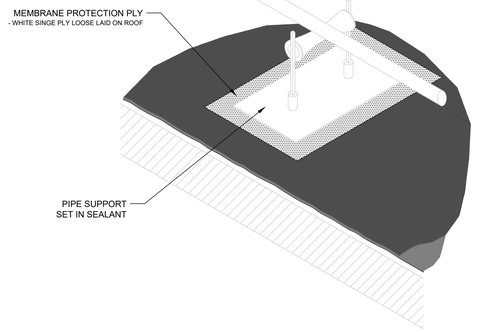
Overflow Scupper 2

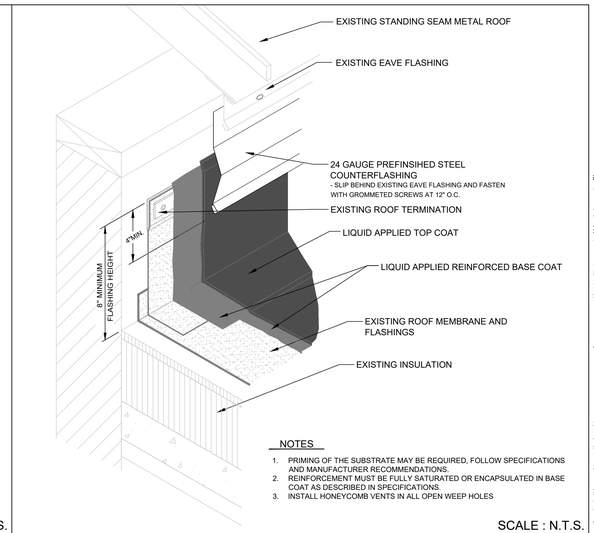


NOTES

1. THIS DETAIL IS DESIGNED TO ELIMINATE ROOF DAMAGE DUE TO EXPANSION AND CONTRACTION OF PIPES.
2. PIPE SUPPORT PROFILES VARY. REFER TO THE MANUFACTURER FOR LOAD CAPACITY AND RECOMMENDED SPACING OF SUPPORTS.
3. PRIMING OF THE SUBSTRATE MAY BE REQUIRED, FOLLOW SPECIFICATIONS AND MANUFACTURER RECOMMENDATIONS.
4. REINFORCEMENT MUST BE FULLY SATURATED OR ENCAPSULATED IN BASE COAT AS DESCRIBED IN SPECIFICATIONS.

SCALE : N.T.S.

Pipe Supports 3



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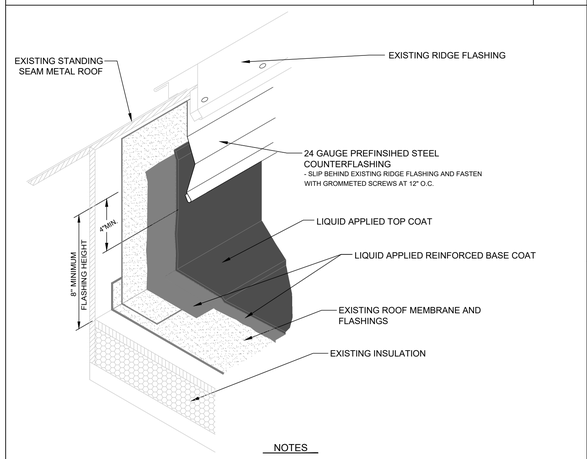
3. INSTALL HONEYCOMB VENTS IN ALL OPEN WEEP HOLES

SCALE : N.T.S.

Base Flashing 4



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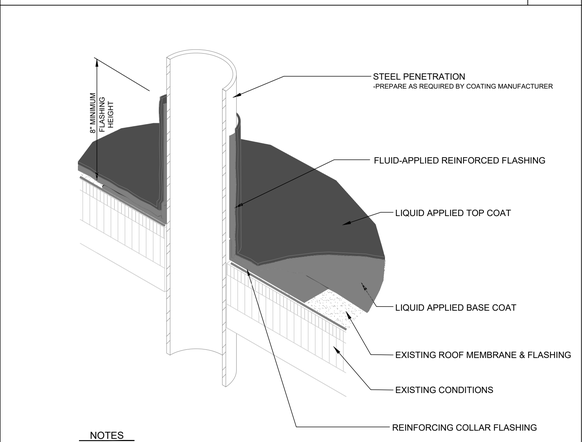
SCALE : N.T.S.

Base Flashing 5



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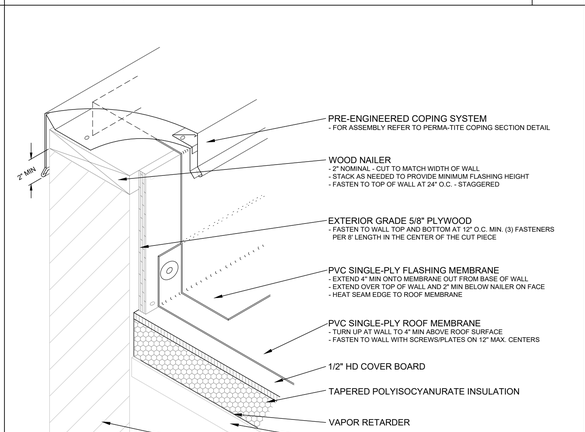
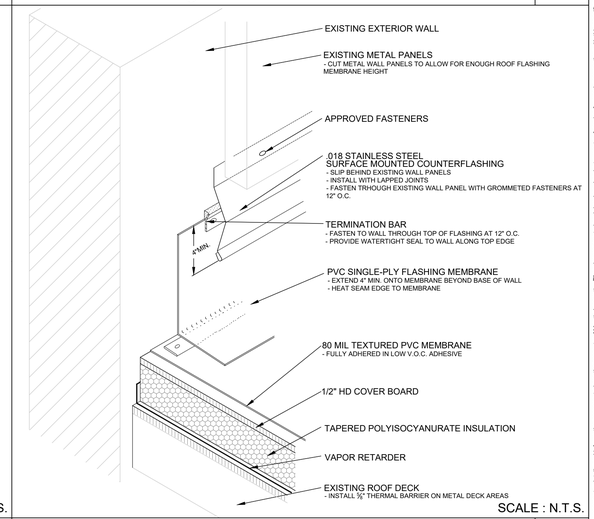
SCALE : N.T.S.

Steel Penetration 6



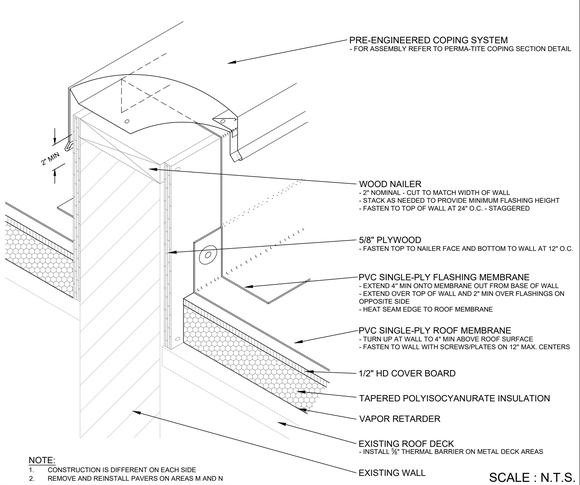
SCALE : N.T.S.

Parapet Flashing 7



SCALE : N.T.S.

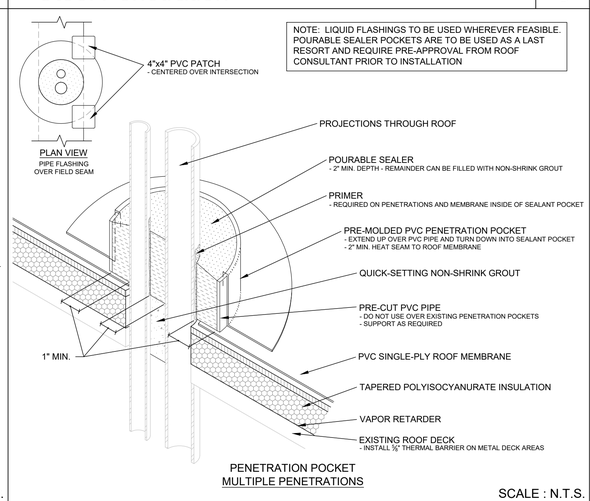
Wall Flashing @ Metal Panels 8



NOTE:
1. CONSTRUCTION IS DIFFERENT ON EACH SIDE
2. REMOVE AND REINSTALL PAVERS ON AREAS M AND N

SCALE : N.T.S.

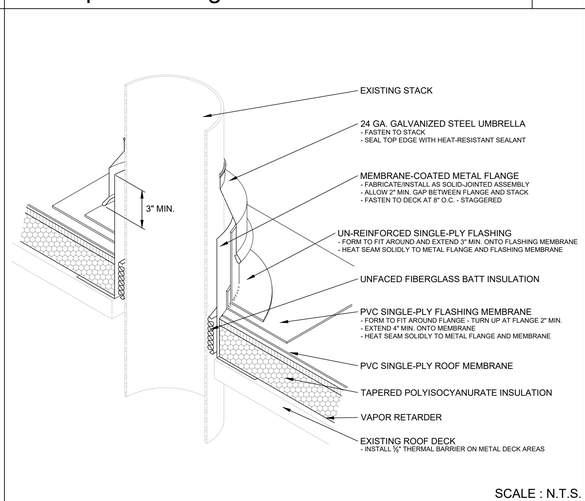
Area Divider 9



PENETRATION POCKET
MULTIPLE PENETRATIONS

SCALE : N.T.S.

Penetration Pocket Multiple 10



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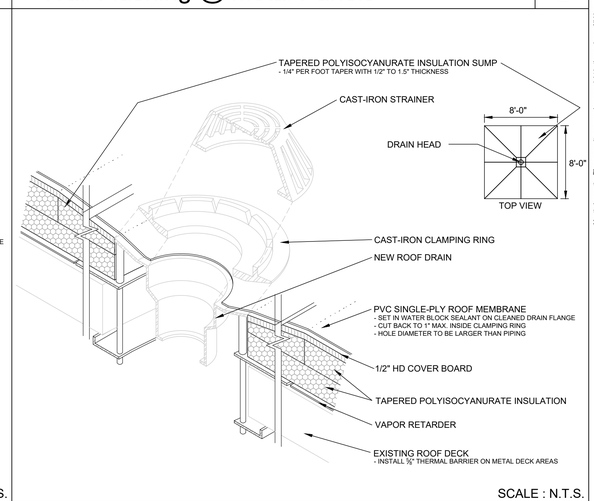
Plumbing Hot Stack 11



SCALE : N.T.S.

Roof Drain 12

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BUILD MAINTAIN SUSTAIN

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FACILITIES:
Department of Youth YSC
1000 Mt. Olivet Road NE
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ROOF UPGRADE PROJECT
ROOF COATING DETAILS

JOB NO: 50696
DATE: 10/24/2022
DRAWN: C.A.M.P.
FILENAME: DYRS_YSC
PLOTSCALE: 1:1
SHEET 8 of 12

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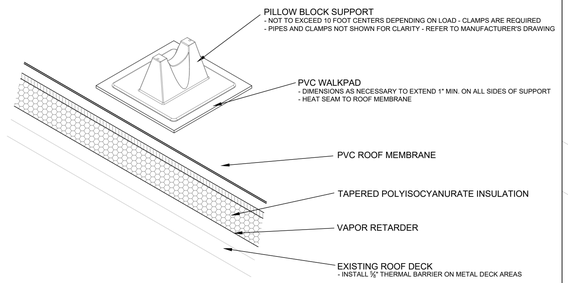
PLOT DATE: October 24, 2022 8:20 PM E:\BLUEFIN\50696 - DYRS YSC\Drawings\DGS DYRS YSC DS_Plans and Details.dwg



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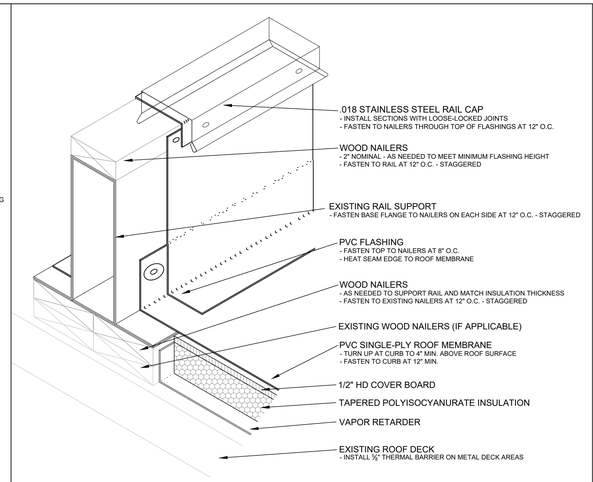
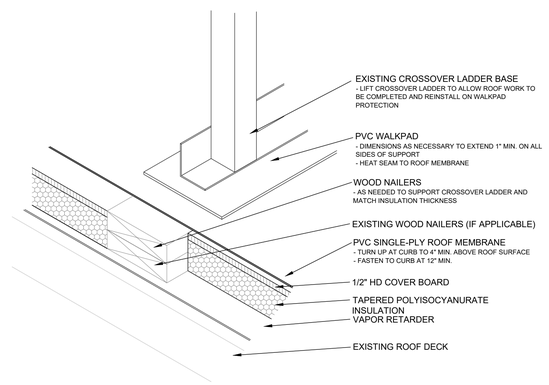
Pipe Supports | 1



NOTE:
CONSTRUCTION IS SIMILAR ON EACH SIDE

SCALE : N.T.S.

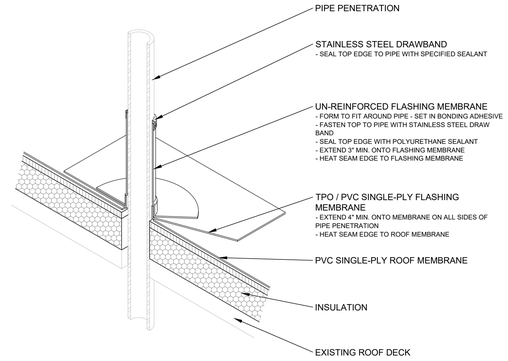
Equipment Rail Support | 2



NOTE:
CONSTRUCTION IS SIMILAR ON EACH SIDE

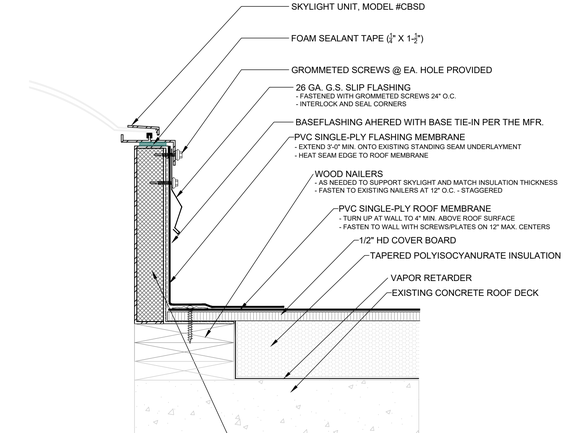
SCALE : N.T.S.

Crossover Ladder | 3



SCALE : N.T.S.

Typical Field Wrap | 4



SCALE : N.T.S.

Typical Vent Pipe | 5

SCALE : N.T.S.

AHU Curb at Area L | 6

SCALE : N.T.S.

Parapet | 7

SCALE : N.T.S.

Base Flashing | 8

SCALE : N.T.S.

Skylight | 9

SCALE : N.T.S.

Detail: | 10

SCALE : N.T.S.

Detail: | 11

SCALE : N.T.S.

Detail: | 12

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BUILD MAINTAIN SUSTAIN

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ROOF UPGRADE PROJECT
ROOF REPLACEMENT DETAILS

JOB NO: 50696
DATE: 10/24/2022
DRAWN: C.A.M.P.
FILENAME: DYRS_YSC
PLOTSCALE: 1:1
SHEET 9 of 12

R2.2

WOOD NAILER SECUREMENT CRITERIA

REQUIREMENTS BASED ON FACTORY MUTUAL LOSS PREVENTION DATA BULLETIN WITH MODIFICATIONS

ONE OF THE MOST OFTEN OVERLOOKED DETAILS ON A ROOFING SYSTEM IS THE ATTACHMENT METHOD FOR WOOD NAILERS AT THE PERIMETER OF THE ROOF. FACTORY MUTUAL (FM) PUBLISHES DESIGN RECOMMENDATIONS FOR THE ATTACHMENT OF WOOD NAILERS TO VARIOUS SUBSTRATES AND FOR THE ATTACHMENT OF PERIMETER FLASHING DETAILS TO WOOD NAILERS. THIS INFORMATION IS CONTAINED IN FACTORY MUTUAL'S LOSS PREVENTION DATA BULLETIN 1-49. IN ACCORDANCE WITH THAT BULLETIN, THE INFORMATION LISTED BELOW SHOULD BE REFERENCED WHEN SELECTING AN APPROPRIATE PERIMETER ATTACHMENT METHOD.

GENERAL CRITERIA

- WOOD NAILERS THAT ARE ANCHORED TO STEEL, WOOD OF MASONRY DECKING SHOULD NOT BE LESS THAN 2" X 6" NOMINAL (MINIMUM 1-1/2" X 5-1/2").
- WOOD NAILERS SHOULD BE DOUGLAS FIR, SOUTHERN YELLOW PINE OR OF WOOD HAVING SIMILAR DECAY RESISTANCE PROPERTIES.

ATTACHMENT TO MASONRY WALLS

WHEN FASTENING TO A MASONRY WALL, A 1/2 INCH BOLT IS PLACED 48 INCHES ON CENTER AT AN 8 INCH MINIMUM DEPTH (12 INCHES MINIMUM WHEN MASONRY WALLS ARE COMPOSED OF LIGHTWEIGHT AGGREGATE OR CINDER) AS SHOWN IN FIGURE 1. EACH ANCHOR BOLT IS POSITIONED (STAGGERED IF THE WOOD NAILER IS WIDER THAN 6 INCHES) IN A BLOCK CORE OR AIR SPACE AND TIGHTLY FILLED WITH CONCRETE TO THE DEPTH OF THE BOLT.

NOTE: PLASTIC PARTS MUST NOT BE USED WITH MASONRY ANCHORS

FACTORY MUTUAL HAS SPECIFIC REQUIREMENTS CONCERNING FILLING OF CORES OR VOIDS IN THE TOP COURSE OF CINDER BLOCKS

FOR EXAMPLE:
PROJECTS LOCATED IN ZONE 2 (FM 1-90 SECUREMENT) - FILL THE ENTIRE TOP COURSE.
PROJECTS LOCATED IN ZONE 1 (FM 1-60 SECUREMENT) - FILL ONLY REQUIRED WHERE ANCHOR BOLTS ARE POSITIONED (48 INCHES ON CENTER IN THE FIELD, 24 INCHES ON CENTER AT ROOF CORNERS)

AT OUTSIDE CORNERS, THE FASTENING DENSITY MUST BE INCREASED WITHIN THE FIRST 8 FEET IN EACH DIRECTION BY POSITIONING ANCHOR BOLTS 24 INCHES ON CENTER

AN ALTERNATE METHOD MAY BE USED BY INSTALLING 3/8 INCH DIAMETER ANCHOR BOLTS SPACED 32 INCHES APART. FOR OUTSIDE CORNERS, BOLTS ARE FASTENED 16 INCHES APART, 8 FEET FROM EACH SIDE OF THE CORNER. IF ADDITIONAL WOOD NAILERS ARE NEEDED, REFER TO FIGURE 5 FOR ATTACHMENT OF ADDITIONAL WOOD NAILERS.

ATTACHMENT TO STEEL AND WOOD DECKING
PENETRATION OF THE FASTENERS SHOULD BE TO THE TOP FLUTES ONLY. THE FASTENERS MUST BE STAGGERED AS SHOWN IN FIGURE 2

CAUTION: ATTENTION SHOULD BE PAID TO THE FACTORY MUTUAL REQUIREMENT WHICH CALLS FOR GALVANIZED STEEL WASHERS (MINIMUM 5/8 INCH OUTSIDE DIAMETER) TO BE USED IN CONJUNCTION WITH GALVANIZED SCREWS. THIS REQUIREMENT IS NOT RECOGNIZED IN MOST CASES AND MOST OFTEN FORGOTTEN.
THE STAGGERED FASTENING PATTERN SHOULD BE INCREASED WITHIN 8 FEET FROM THE OUTSIDE CORNERS AS SHOWN IN FIGURE 3

IF THE PERIMETER NAILER IS TO BE SECURED TO A STEEL ANGLE, ANCHOR BOLTS MUST BE POSITIONED AT 48 INCH CENTERS AS SHOWN IN FIGURE 4.

ON WOOD DECKS, THE STAGGERED FASTENING PATTERN WITH GALVANIZED STEEL SCREWS SHOULD BE UTILIZED AS SHOWN IN FIGURE 2

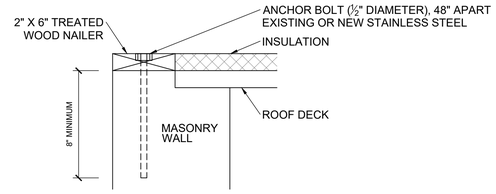
ATTACHMENT OF ADDITIONAL WOOD NAILERS
WHEN ADDITIONAL WOOD NAILERS ARE REQUIRED, THEY MUST BE ATTACHED WITH GALVANIZED NAILS OR LAG SCREWS THAT PENETRATE INTO THE BOTTOM NAILER AT 1-1/4 INCHES USING A STAGGERED FASTENING PATTERN IN TWO ROWS AT 24 INCHES APART AS SHOWN IN FIGURE 5.

THE INCREASED FASTENING DENSITY WITHIN 8 FEET FROM THE OUTSIDE CORNERS IS STILL REQUIRED AND MUST COMPLY WITH FIGURE 3

EVEN THOUGH NOT EMPHASIZED IN THE BULLETIN, CONTRACTORS SHOULD EXAMINE OR QUESTION EXISTING CONDITIONS TO DETERMINE IF EXISTING WOOD NAILERS ARE ATTACHED IN COMPLIANCE WITH THE ABOVE CRITERIA. IF NOT, EXISTING WOOD NAILERS SHOULD BE REFASTENED USING ONE OF THESE OPTIONS AND ADDITIONAL WOOD NAILERS MUST BE SECURED FOLLOWING FIGURE 5.

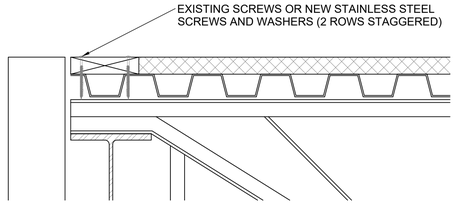
WOOD NAILERS PLAY A MAJOR ROLE IN THE PERFORMANCE OF THE ROOFING SYSTEM AND CONTRIBUTE TO THE WIND UPLIFT RESISTANCE OF THE ROOF EDGE WHICH IS THE FIRST LINE OF DEFENSE DURING WIND STORMS. IT IS IMPORTANT TO COMPLY WITH THE ABOVE REQUIREMENTS AND PERIODICALLY CHECK VARIOUS UPDATES PUBLISHED BY FACTORY MUTUAL NOT ONLY FOR THE ATTACHMENT OF WOOD NAILERS, BUT ALSO FOR THE SECUREMENT OF METAL EDGING: ESPECIALLY THOSE WHICH ARE SHOP FABRICATED.

ATTACHMENT TO STEEL AND WOOD DECKING



- 1/2" ANCHOR BOLTS SPACED 48" ON CENTER
- 3/8" ANCHOR BOLTS SPACED 32" ON CENTER
- MINIMUM 8" PENETRATION (MINIMUM 12" INTO LIGHTWEIGHT AGGREGATE OR CINDER)
- BLOCK CORE OR AIR SPACE TIGHTLY FILLED WITH CONCRETE
  - 1-60: CONCRETE FILL AT FASTENERS
  - 1-90: CONCRETE FILL ENTIRE TOP COURSE

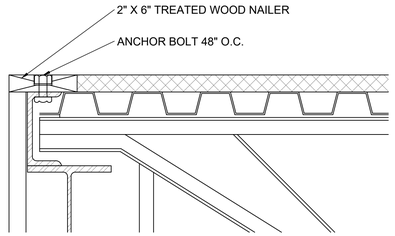
FIGURE 1



- WOOD NAILERS ATTACHED WITH 2 ROWS OF NO. 10 STAINLESS STEEL SCREWS
- SPACING OF FASTENERS IN EACH ROW SHALL NOT EXCEED 24 INCHES
- AT 8' CORNERS, FASTENERS DOUBLED (MAXIMUM 12" ON CENTER IN EACH ROW)
- PROVIDE ⅝" STAINLESS STEEL WASHERS UNDER SCREW HEADS OR PANCAKE SCREWS

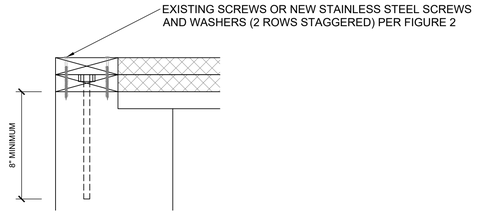
FIGURE 2

FASTENING ENHANCEMENT AT 8'-0" CORNERS



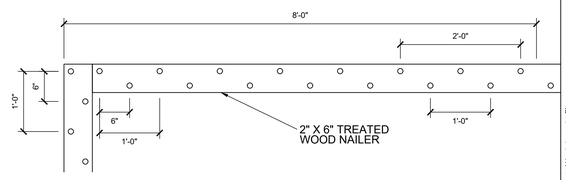
- 3/4" ANCHOR BOTS SPACED 48" ON CENTER
- AT 8'-0" CORNERS:
  FASTENING DOUBLED (24" MAX.)

FIGURE 4



- SECURE ADDITIONAL NAILERS WITH 2 ROWS OF STAINLESS STEEL NAILS OR LAG SCREWS
- SPACING OF FASTENERS IN EACH ROW 24" MAXIMUM
- AT 8-0"' CORNERS, FASTENING DOUBLED (12" O.C. MAXIMUM)
- MINIMUM FASTENER PENETRATION INTO BOTTOM NAILER 1¼"

FIGURE 5



FASTENERS SPACED 24" O.C. OUTSIDE CORNER AREA

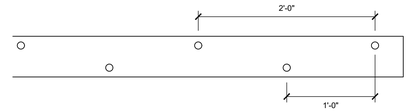
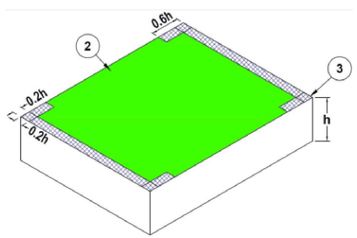


FIGURE 3

ROOF AREAS - L & N

Roof Area Dimensions (feet):	51 x 32
Mean Roof Height (feet):	40.0
Roof Slope:	Flat: 1½:12 or less
Parapet(s) (minimum 36 inches high):	No
Building Configuration	Enclosed
Exposure:	B
Risk Category:	II
Basic Wind Speed (three-second peak gust, mph):	115 from ASCE 7-16, Figure 26.5-1B Basic Wind Speed
Roof Deck Type:	Steel Deck
Roof Covering Type:	PVC

Graphically, the strength design values are depicted as follows:

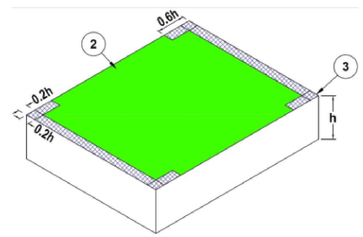


Zone1'	23.8 pounds per square foot	***h*:**	40.0 feet
Zone1	41.3 pounds per square foot	***0.2h*:**	8.0 feet
Zone2	54.5 pounds per square foot	***0.6h*:**	24.0 feet
Zone3	74.2 pounds per square foot		

ROOF AREA - M

Roof Area Dimensions (feet):	108 x 20
Mean Roof Height (feet):	30.0
Roof Slope:	Flat: 1½:12 or less
Parapet(s) (minimum 36 inches high):	No
Building Configuration	Enclosed
Exposure:	B
Risk Category:	II
Basic Wind Speed (three-second peak gust, mph):	115 from ASCE 7-16, Figure 26.5-1B Basic Wind Speed
Roof Deck Type:	Structural Concrete
Roof Covering Type:	PVC

Graphically, the strength design values are depicted as follows:

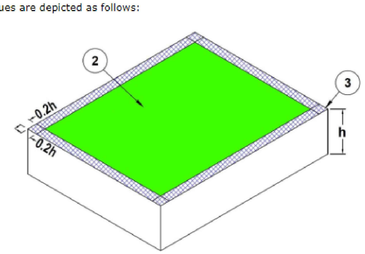


Zone1'	21.8 pounds per square foot	***h*:**	30.0 feet
Zone1	37.9 pounds per square foot	***0.2h*:**	6.0 feet
Zone2	50.0 pounds per square foot	***0.6h*:**	18.0 feet
Zone3	68.1 pounds per square foot		

ROOF AREA - O

Roof Area Dimensions (feet):	21 x 12
Mean Roof Height (feet):	40.0
Roof Slope:	Flat: 1½:12 or less
Parapet(s) (minimum 36 inches high):	No
Building Configuration	Enclosed
Exposure:	B
Risk Category:	II
Basic Wind Speed (three-second peak gust, mph):	115 from ASCE 7-16, Figure 26.5-1B Basic Wind Speed
Roof Deck Type:	Structural Concrete
Roof Covering Type:	PVC

Graphically, the strength design values are depicted as follows:



Zone1'	23.8 pounds per square foot	***h*:**	40.0 feet
Zone1	41.3 pounds per square foot	***0.2h*:**	8.0 feet
Zone2	54.5 pounds per square foot	***0.6h*:**	24.0 feet
Zone3	74.2 pounds per square foot		

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1000 Mt. Olivet Road NE
Washington, DC 20002

ROOF UPGRADE PROJECT
DESIGN CRITERIA

JOB NO: 50696
DATE: 10/24/2022
DRAWN: C.A.M.P.
FILENAME: DYRS_YSC
PLOTSCALE: 1:1
SHEET 10 of 12

R3.0

(AREA K) FLASHING DETERIORATION: REPLACE DETERIORATED NEOPRENE CLOSURE. 4 (329 SF) REFER TO DEFECT MARKER 1 ON R1.0.

SCALE : N.T.S.

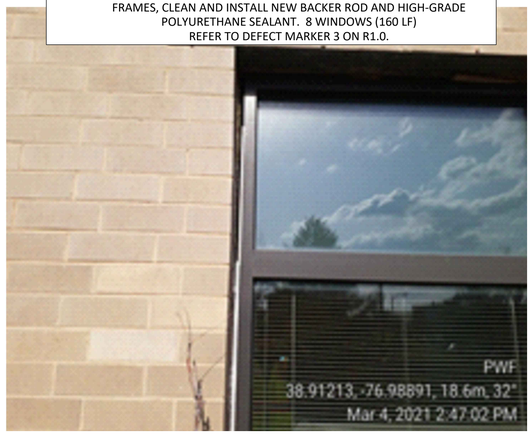
Defect Group #1: Flashing Deterioration | 1

(AREA H) DETERIORATED SEALANT JOINT IN COMPOSITE WALL PANELS: REMOVE EXISTING SEALANT, CLEAN JOINT, AND RESEAL WITH APPROPRIATE SEALANT. (8 LF) REFER TO DEFECT MARKER 2 ON R1.0.

SCALE : N.T.S.

Defect Group #2: Deteriorated Sealant Joint | 2

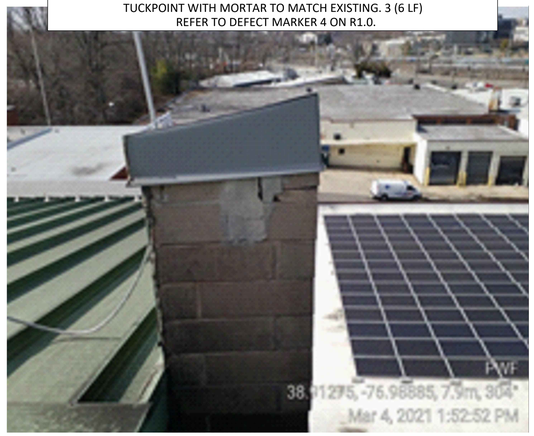
(AREA N) DETERIORATED MORTAR JOINT AT PERIMETER OF WINDOWS: REMOVE EXISTING DETERIORATED MORTAR FROM THE PERIMETER OF THE WINDOW FRAMES, CLEAN AND INSTALL NEW BACKER ROD AND HIGH-GRADE POLYURETHANE SEALANT. 8 WINDOWS (160 LF) REFER TO DEFECT MARKER 3 ON R1.0.



SCALE : N.T.S.

Defect Group #3: Deteriorated Mortar Joint | 3

(AREAS B, I, M) STEP CRACKING AND DETERIORATED MORTAR JOINTS IN MASONRY: CLEAN AND PERFECT EXISTING CRACK AND MORTAR JOINTS FOR TUCKPOINTING. TUCKPOINT WITH MORTAR TO MATCH EXISTING. 3 (6 LF) REFER TO DEFECT MARKER 4 ON R1.0.



SCALE : N.T.S.

Defect Group #4: Step Cracking | 4

(AREAS B, I, M) STEP CRACKING AND DETERIORATED MORTAR JOINTS IN MASONRY: CLEAN AND PERFECT EXISTING CRACK AND MORTAR JOINTS FOR TUCKPOINTING. TUCKPOINT WITH MORTAR TO MATCH EXISTING. 3 (6 LF) REFER TO DEFECT MARKER 4 ON R1.0.

SCALE : N.T.S.

Defect Group #4: Step Cracking | 5

(AREAS A, I, K, H) BOOT DEFECT: REMOVE OLD BOOT AND INSTALL NEW DEK-TITE PIPE BOOT. (26 EA) REFER TO DEFECT MARKER 5 ON R1.0.

SCALE : N.T.S.

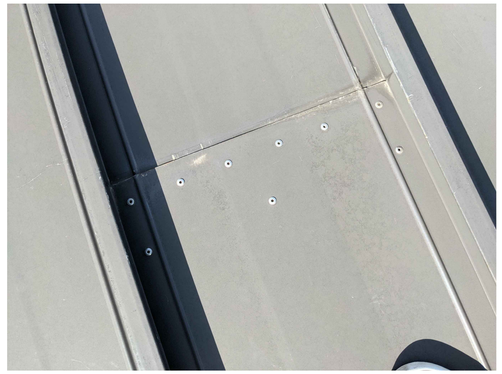
Defect Group #5: Boot Defect | 6

(AREAS A, I, K, H) BOOT DEFECT: REMOVE OLD BOOT AND INSTALL NEW DEK-TITE PIPE BOOT. (26 EA) REFER TO DEFECT MARKER 5 ON R1.0.

SCALE : N.T.S.

Defect Group #5: Boot Defect | 7

REPLACE DETERIORATED RIVETS WITH NEW STAINLESS STEEL RIVETS. (INCLUDE AN ALLOWANCE OF 1,000 EA)



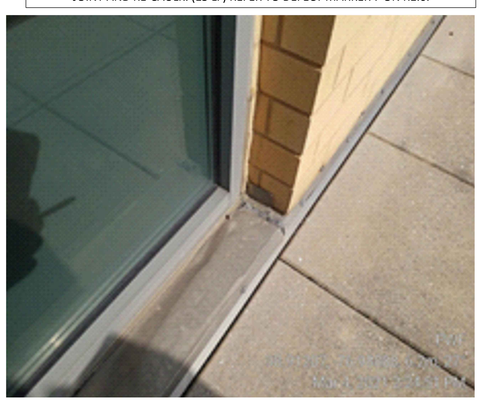
SCALE : N.T.S.

Defect Group #6: Remove Trees / Roots | 8

SCALE : N.T.S.

NOT USED | 9

(AREA N) DETERIORATED SEALANT: REMOVE DETERIORATED SEALANT, CLEAN JOINT AND RE-CAULK. (15 LF) REFER TO DEFECT MARKER 7 ON R1.0.



SCALE : N.T.S.

Defect Group #7: Deteriorated Sealant | 10

(AREA A) LOOSE PARAPET CLADDING: REMOVE EXISTING COPING AND METAL PARAPET CLADDING. REINSTALL METAL PARAPET CLADDING ENGAGED ON SECUREMENT CLEAT AND REFASTEN AT TOP. REINSTALL METAL COPING. (76 LF) REFER TO DEFECT MARKER 8 ON R1.0.

SCALE : N.T.S.

Defect Group #8: Loose Parapet Cladding | 11

(AREA A) METAL FLASHING DEFECTS: RE-SECURE COPING LAP JOINT WITH PROPERLY SIZED FASTENERS. (1 EA) REFER TO DEFECT MARKER 9 ON R1.0.

SCALE : N.T.S.

Defect Group #9: Metal Flashing Defects | 12

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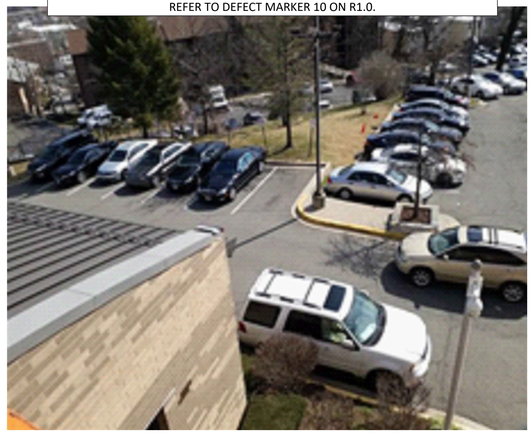
ROOF UPGRADE PROJECT
ROOF PHOTOS

JOB NO: 50696
DATE: 10/24/2022
DRAWN: C.A.M.P.
FILENAME: DYRS_YSC
PLOTSCALE: 1:1
SHEET 11 of 12

PH1.0

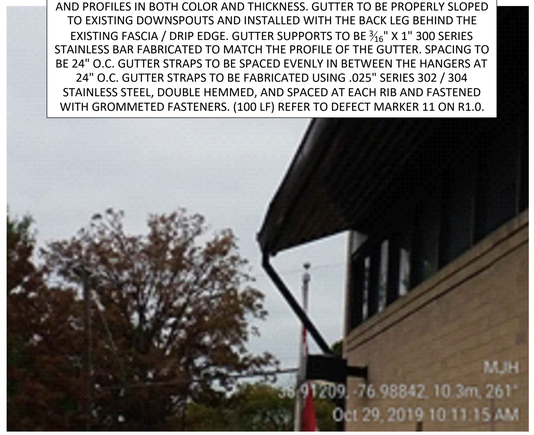
(AREAS A, F) METAL FLASHING DEFECTS: REPLACE WITH NEW COPING END CAP FABRICATED TO MATCH EXISTING AND PROPERLY SECURE. (1 EA) REFER TO DEFECT MARKER 10 ON R1.0.



SCALE : N.T.S.

Defect Group #10: Metal Flashing Defect | 1

(AREA K) GUTTER DAMAGE: REMOVE DAMAGED SECTION OF EXISTING GUTTER. FABRICATE AND INSTALL NEW BOX TYPE GUTTER FROM MATCHING MATERIALS AND PROFILES IN BOTH COLOR AND THICKNESS. GUTTER TO BE PROPERLY SLOPED TO EXISTING DOWNSPOUTS AND INSTALLED WITH THE BACK LEG BEHIND THE EXISTING FASCIA / DRIP EDGE. GUTTER SUPPORTS TO BE 3/16" X 1" 300 SERIES STAINLESS BAR FABRICATED TO MATCH THE PROFILE OF THE GUTTER. SPACING TO BE 24" O.C. GUTTER STRAPS TO BE SPACED EVENLY IN BETWEEN THE HANGERS AT 24" O.C. GUTTER STRAPS TO BE FABRICATED USING .025" SERIES 302 / 304 STAINLESS STEEL, DOUBLE HEMMED, AND SPACED AT EACH RIB AND FASTENED WITH GROMMETED FASTENERS. (100 LF) REFER TO DEFECT MARKER 11 ON R1.0.



SCALE : N.T.S.

Defect Group #11: Gutter Damage | 2

(AREA K) LIGHTNING PROTECTION SYSTEM DAMAGE: REMOVE DAMAGED LIGHTNING PROTECTION AND INSTALL NEW ON S-5 CLAMPS ON PANEL SEAMS. (1,000 LF) REFER TO DEFECT MARKER 12 ON R1.0.

SCALE : N.T.S.

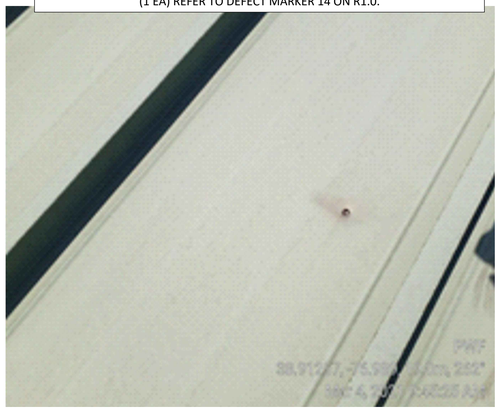
Defect Group #12: L'tning System Damage | 3

(AREAS A, I) DETERIORATED SEALANT AT HEAD CLOSURE CONDITION: REMOVE DETERIORATED SEALANT AND RE-CAULK ZEE CLOSURE TO EXISTING PANEL AND SEAMS. (440 LF) REFER TO DEFECT MARKER 13 ON R1.0.

SCALE : N.T.S.

Defect Group #13: Deteriorated Sealant | 4

(AREA I) HOLE IN METAL ROOF PANEL: PATCH ROOF PANEL WITH REINFORCED LIQUID FLASHING PRODUCT AND PAINT TO CLOSELY MATCH EXISTING PANEL. (1 EA) REFER TO DEFECT MARKER 14 ON R1.0.



SCALE : N.T.S.

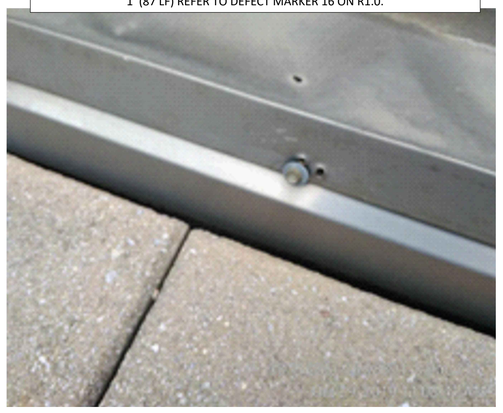
Defect Group #14: Hole in Metal Roof Panel | 5

(AREA H) GUTTER CLOGGED WITH DEBRIS: CLEAN GUTTER OF DEBRIS. (66 LF) REFER TO DEFECT MARKER 15 ON R1.0.

SCALE : N.T.S.

Defect Group #15: Gutter Clogged | 6

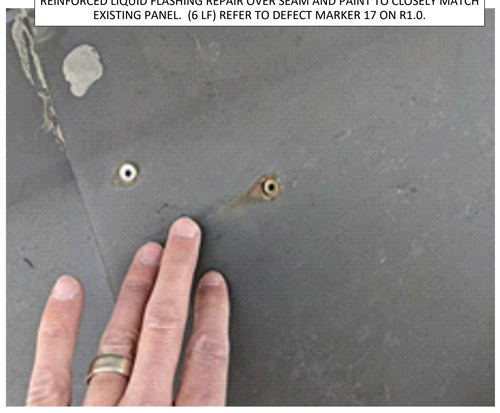
(AREA M) EXPOSED FASTENER DEFECTS: REMOVE LOOSE / MISSING / CORRODED FASTENERS AND INSTALL NEW PROPER SIZED GROMMETED FASTENERS. 1 (87 LF) REFER TO DEFECT MARKER 16 ON R1.0.



SCALE : N.T.S.

Defect Group #16: Exposed Fasteners | 7

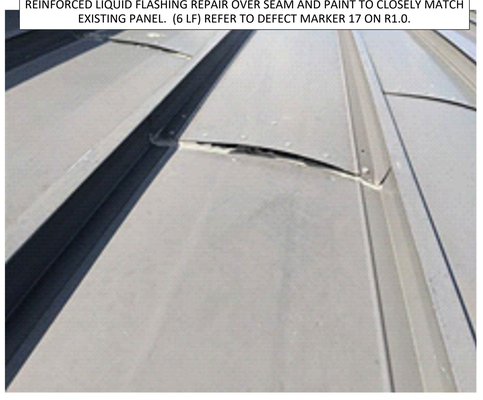
(AREA K) DETERIORATED RIVETS AND BUCKLING PANELS AT SEAMS: REMOVE DETERIORATED RIVETS AND REINSTALL NEW RIVETS TO SECURE PANEL. INSTALL REINFORCED LIQUID FLASHING REPAIR OVER SEAM AND PAINT TO CLOSELY MATCH EXISTING PANEL. (6 LF) REFER TO DEFECT MARKER 17 ON R1.0.



SCALE : N.T.S.

Defect Group #17: Deteriorated Rivets | 8

(AREA K) DETERIORATED RIVETS AND BUCKLING PANELS AT SEAMS: REMOVE DETERIORATED RIVETS AND REINSTALL NEW RIVETS TO SECURE PANEL. INSTALL REINFORCED LIQUID FLASHING REPAIR OVER SEAM AND PAINT TO CLOSELY MATCH EXISTING PANEL. (6 LF) REFER TO DEFECT MARKER 17 ON R1.0.



SCALE : N.T.S.

Defect Group #17: Buckling Panels | 9

(AREA H) LEAK LOCATION: FABRICATE AND INSTALL SHEET METAL COUNTER FLASHING TO COMPLETE INSTALLATION AND SEAL. (1 EA) REFER TO DEFECT MARKER 18 ON R1.0.

SCALE : N.T.S.

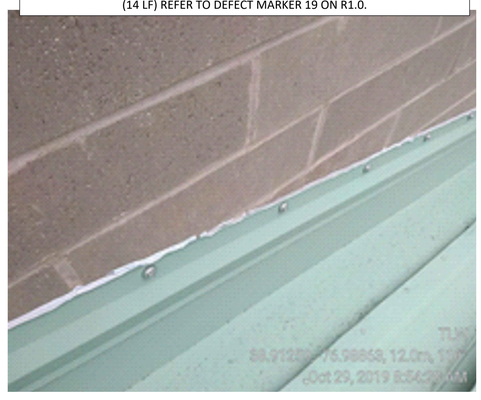
Defect Group #18: Leak Location | 10

(AREA A) DETERIORATED SEALANT: REMOVE EXISTING SEALANTS, CLEAN JOINT AND PROPERLY INSTALL NEW BACKER ROD AND HIGH-GRADE POLYURETHANE SEALANT. (14 LF) REFER TO DEFECT MARKER 19 ON R1.0.

SCALE : N.T.S.

Defect Group #19: Deteriorated Sealant | 11

(AREA A) DETERIORATED SEALANT: REMOVE EXISTING SEALANTS, CLEAN JOINT AND PROPERLY INSTALL NEW BACKER ROD AND HIGH-GRADE POLYURETHANE SEALANT. (14 LF) REFER TO DEFECT MARKER 19 ON R1.0.



SCALE : N.T.S.

Defect Group #19: Deteriorated Sealant | 12

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PLOTSCALE: 1:1
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