Appendix C

2019 CANTON
WATER RECLAMATION FACILITY
ROOF REPLACEMENT SPECIFICATIONS

for

FOUR BUILDINGS

at

THE CITY OF CANTON, OHIO
WATER RECLAMATION FACILITY
3530 CENTRAL AVENUE SOUTHEAST
CANTON, OHIO 44707

Prepared for

THE CITY OF CANTON, OHIO
WATER RECLAMATION FACILITY

Prepared by

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PSI Project No.: 0232742

June 14, 2019

For Bidding

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DRAWING INDEX

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SECTION 01 1000
SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Project: 2017 Water Reclamation Facility Roof Replacements
3530 Central Avenue Southeast
Canton, Ohio 44707

B. Owner: City of Canton, Ohio
218 Cleveland Avenue SW
Canton, Ohio 44702

C. Consultant: Intertek-PSI
5555 Canal Road
Cleveland, Ohio 44125

D. Section Includes:

1. Project Information
2. Work Covered by Contract Documents
3. Work by Owner
4. Owner-Furnished Products
5. Access to Site
6. Coordination with Occupants
7. Work Restrictions
8. Specification and Drawing Conventions

E. Related Sections:

1. Division 01 Section 01 2200 Unit Prices

2. Division 01 Section 01 2300 Alternates
3. Division 01 Section 01 5000 Temporary Facilities and Controls
4. Division 02 Section 02 4119 Selective Demolition
5. Division 03 Section 03 4100 Structural Concrete Deck
6. Division 05 Section 05 3100 Steel Decking
7. Division 06 Section 06 1053 Miscellaneous Rough Carpentry
8. Division 07 Section 07 5216 SBS Modified Bituminous Membrane Roofing
9. Division 07 Section 07 6200 Sheet Metal Flashing and Trim
10. Division 07 Section 07 7200 Roof Accessories
11. Division 07 Section 07 9200 Joint Sealants
12. Division 22 Section 22 1423 Storm Drainage Piping Specialties

SECTION 01 1000
SUMMARY

1.3 PROJECT INFORMATION

A. The following three (4) roofs are included in this project with approximate square footages listed for each building. Square footages are approximate and MUST be verified by contractor prior to submitting proposals. Square footages listed below are not to be used or relied upon for bidding purposes or material quantities. No change orders or allowances will be allowed for additional square footage or material required to complete the project.

1. Emergency Sludge Storage Building Roof – approximately 430 sq. ft.
2. Oil Storage Building Roofs – approximately 1,042 sq. ft.
3. Pre-Aeration Building Roof – approximately 430 sq. ft.
4. Post Aeration Facilities Building Roof – approximately 4,060 sq. ft.

1.4 BASE BID: WORK COVERED BY CONTRACT DOCUMENTS

A. **At All Buildings** - The Work is defined by the Contract Documents and consists of the following. Contractor shall:

1. Prior to any work, the Contractor shall test all existing roof drains to confirm that they are flowing freely. The Contractor shall make a reasonable attempt to clear the drain using either a mechanical auger or hydro jet. Any non-clearable drains shall be brought to the attention of the Roofing Consultant within 24-hours.
2. Provide and maintain all enclosures, fencing of construction areas, interior protection, exterior protection, and ground protection as necessary and as required by Division 01 Section 5000 Temporary Facilities and Controls.
3. Remove all existing sheet metal flashings, base flashings, built up roofing, insulation materials; including all Lightweight Insulating Concrete (LWIC); and loose and deteriorated vapor barrier down to the structural roof decks. All demolition materials shall be properly disposed of off the roof on a daily basis as required by Division 02 Section 4119 Selective Demolition.
    a. Laboratory testing for the presence of asbestos has revealed asbestos containing materials in the Emergency Sludge Storage Building and the Pre-Aeration Building roof and flashing assemblies. Please refer to the Roofing Material Asbestos Survey Report and roof plans for core and flashing sample locations and findings.
4. Repair all areas of damaged structural concrete roof decking per Division 03 Section 4100 Structural Concrete Deck. Work shall be performed on a unit price basis per Division 01 Section 2200 Unit Prices.
    a. Include 50 square feet of concrete deck repair in the Base Bid.
5. Install covers over all openings through existing roof deck where abandoned penetrations are observed per Division 03 Section 4100 Structural Concrete Deck. This work shall be included as part of the Base Bid.
6. Prepare and paint, overlay, or replace deteriorated steel deck as directed by consultant per Division 05 Section 3100. Work shall be performed on a unit price basis per Division 01 Section 2200 Unit Prices.

a. Include 200 square feet of steel deck preparation and painting in the Base Bid.
b. Include 50 square feet of steel deck overlay in the Base Bid.
c. Include 200 square feet of steel deck replacement in the Base Bid.

7. Where existing curbs shall remain, the contractor shall raise curbs as needed to provide a minimum of 8” of membrane base flashing above finished roof height. The raising of curbs may require some electrical modifications. This work shall be included as part of the Base Bid.

8. All interior roof drains shall receive either retrofit inserts or be replaced with new drain assemblies. Reference the respective roof Slope Plans with Detail Callouts. This work shall be performed as part of the base bid per Division 22 Section 1423 Storm Drainage Piping Specialties.

9. Replace all deteriorated wood nailers scheduled to remain per Division 06 Section 1053 Miscellaneous Rough Carpentry. Work shall be performed on a unit price basis per Division 01 Section 2200 Unit Prices.

   a. Include 200 board feet of deteriorated wood nailer replacement in the Base Bid.

10. Install one layer of new 1.5” (actual dimension) wood nailers (blocking) at tops or the perimeter parapets per Division 06 Section 1053 Miscellaneous Rough Carpentry and Project Drawings. Include all associated costs in the base bid.

11. The Contractor shall inspect the roof decks after removal of the existing roof system assemblies to determine if there is slope in the roof decks that could adversely affect the tapered insulation assemblies.

11. After confirming that proper concrete roof deck conditions exist and completing required repairs, clean and prime the concrete roof decks, and torch apply one ply of SBS modified bitumen roofing. To serve as a vapor barrier, and temporary roofing.

12. After confirming that proper steel roof deck conditions exist and completing required repairs, install one layer of ½” DensDeck Prime mechanically fastened per the specified FM uplift requirements. Torch apply one ply of SBS modified bitumen roofing to serve as a vapor barrier, and temporary roofing.

13. Construct expansion joint curbs to provide for minimum 8” membrane flashing height above finished roof height as shown on Drawings. Include all associated costs in the base bid.

14. Provide and install all layers of flat stock polyisocyanurate insulation in ribbons of low-rise foam adhesive per the rates indicated in Division 07 Section 5216 SBS Modified Bituminous Membrane Roofing.

15. Provide and install the specified tapered polyisocyanurate insulation assemblies set in low-rise foam adhesive.

16. Provide and install new 1/4" thick nominal cover board set in low-rise adhesive.

17. Provide and install new perlite cant strips adhered with roof cement per Division 07 Section 5216 SBS Modified Bituminous Membrane Roofing and as shown on Drawings.

18. Provide and install new smooth surfaced torch applied SBS modified bitumen base sheet. Extend new modified membrane base sheet up the walls to above the head of the cant. Offset side and head laps between layers. Complete this work per manufacturer's installation requirements and per Division 07 Section 5216 SBS Modified Bituminous Membrane Roofing.
19. Provide and install new granule surfaced torch applied SBS modified bitumen cap sheet per manufacturer's installation requirements, per Division 07 Section 5216 SBS Modified Bituminous Membrane Roofing, and as shown on Drawings. Offset the side and head laps from the underlying side and head laps.
20. Provide and install new, 2-ply, modified bitumen base flashings per manufacturer's installation requirements and per Division 07 Section 5216 SBS Modified Bituminous Membrane Roofing and as shown on Drawings. It should be noted that the exact membrane flashing assembly and installation may vary slightly to meet the requirements of the specific manufacturer's system.
21. Provide and install new fluid applied flashings as needed per manufacturer's installation requirements per Division 07 Section 5216 SBS Modified Bituminous Membrane Roofing.
22. Provide and install new termination bars, sheet metal counterflashings and miscellaneous roofing components per Division 07 Section 5216 SBS Modified Bituminous Membrane Roofing and as shown on Drawings.
23. Provide and install new sealants at roof penetrations and wall flashings per Division 07 Section 9200 Joint Sealants and as shown on Drawings.
24. Provide and install new galvanized steel (Kynar Coated) copings per Division 07 Section 6200 Sheet Metal Flashing and Trim and as shown on Drawings.

B. **At the Emergency Sludge Holding Building –** Work specific to the Emergency Sludge Holding Building Roof is defined by the Contract Documents and consists of the following. Contractor shall:

1. Remove the obsolete equipment mounted to the east adjoining wall and repair the resulting openings in the cast in place wall.
2. Fabricate and install the specified through-wall drainage scuppers

C. **At the Oil Storage Building -** Work specific to the Oil Storage Building Roof is defined by the Contract Documents and consists of the following. Contractor shall:

1. None.

D. **At Pre-Aeration Building -** Work specific to the Pre-Aeration Building Roof is defined by the Contract Documents and consists of the following. Contractor shall:

1. None.

E. **At Post Aeration Facility Building -** Work specific to the Post Aeration Facility Building Roof is defined by the Contract Documents and consists of the following. Contractor shall:

1. Modify the existing wall mounted ladder to accommodate the new parapet height per Division 07 Section 7200 “Roof Accessories”.

F. Type of Contract

1. Project will be constructed under a single prime contract.

G. Time of Completion of Work:

1. The total project shall be completed within 60 days of the date of the Owner’s “Notice to Proceed”. The Contractor will be expected to utilize whatever manpower is required to meet the completion date and maintain the project schedule at all times.

1.5 WORK BY OWNER

A. Preceding Work: None.

B. Concurrent Work None.

C. Subsequent Work: None

1.6 OWNER-FURNISHED PRODUCTS

A. Owner-Furnished Products: None

1.7 ACCESS TO SITE

A. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.

B. Use of Site: Limit use of Project site to work in within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

1. Limits: Confine construction operations to the buildings identified on the Site Plan.

a. Contractor shall repair any damage caused to the other buildings or roofs during their operations.

2. Driveways, Walkways and Entrances: Keep driveways, loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials unless approved in writing by Owner.

a. Schedule deliveries to minimize use of driveways and entrances by construction operations.

b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

C. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weather-tight condition throughout construction period. Repair damage caused by construction operations.

1.8 COORDINATION WITH OCCUPANTS

A. Full Owner Occupancy: Owner will occupy site and existing building during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits unless otherwise indicated.

1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and approval of authorities having jurisdiction.
2. Notify the Owner not less than **72** hours in advance of activities that will affect Owner's operations.

1.9 WORK RESTRICTIONS

A. Work Restrictions, General: Comply with restrictions on construction operations.

1. Comply with limitations on use of public streets and other requirements of authorities having jurisdiction.

B. On-Site Work Hours: Limit work in the existing building to normal business working hours of 8:00 a.m. to 5:00 p.m., Monday through Friday, except as otherwise indicated.

1. Weekend Hours: As allowed by management with 72-hour notice.
2. Early Morning Hours: As allowed by management with 72-hour notice.
3. Hours for Utility Shutdowns: To be determined during Pre-Construction Conference, and as agreed to by Owner in writing.

C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:

1. Notify Owner not less than five **(5) business days** in advance of proposed utility interruptions.
2. Obtain Owner's written permission before proceeding with utility interruptions.

D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.

1. Notify Owner not less than **three (3) business days** in advance of proposed disruptive operations.
2. Obtain Owner's written permission before proceeding with disruptive operations.

E. Non-Smoking Building: Smoking is not permitted on the roof, within the building, or on Owner’s property.

F. Controlled Substances: Use of tobacco products and other controlled substances on the Project site is not permitted.

G. Employee Identification: Provide identification tags for Contractor personnel working on Project site. Require personnel to use identification tags at all times.

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

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

1.10 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

C. Drawing Coordination: Requirements for materials and products identified on the Drawings are described in detail in the Specifications. One or more of the following are used on the Drawings to identify materials and products:

1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
2. Abbreviations: Materials and products are identified by abbreviations published as part of the U.S. National CAD Standard and scheduled on Drawings.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 1000

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SECTION 01 2100
ALLOWANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements governing allowances.

1. Certain work maybe specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when additional information is available for evaluation. Any work identified herein is work that is not part of the base bid or unit price specifications of this solicitation.

B. Allowances include all necessary but not limited to material, labor, delivery costs, equipment rental costs, installation, insurance, overhead, and profit.

C. Purchase products and systems as approved by Consultant.

D. Types of Allowances include the following:

1. Unforeseen Conditions – General Allowance

1.3 SUBMITTALS

A. Submit proposals for purchase of products or systems included in allowances, in the form specified by the Owner.

1.4 ALLOWANCES

A. Unforeseen Conditions

1. Use the allowances only as directed by the Owner and only by written orders that indicate amounts to be charged to each designated allowance. These allowances are not part of the base bid and are the explicit property of the Owner to be dispersed during the contract or retained at the completion of the contract.

2. Contractor’s related costs for products and equipment ordered by Owner under the allowances are included in the allowances and are not part of the base bid contract sum. These costs are inclusive and include but not limited to delivery, installation, insurance, equipment rental costs, mobilization, staging, labor, materials and all similar and related costs.

3. At Project close out, a reconciliation of allowances shall be conducted to account for all monies used under the allowances. Any unused amounts remaining in the allowances shall be unilaterally deducted from the total contract amount.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

A. **Allowance 1 - Unforeseen Conditions Allowance**

1. Include the sum of **$15,000.00**.

END OF SECTION 01 2100

SECTION 01 2200
UNIT PRICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

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

1. Certain materials and equipment are specified in the Contract Documents by unit prices. Work to be performed under unit price section is not included in the base bid. Specifications are included for work under this section, but the actual work may or may not be performed by the Contractor based on site conditions.

B. Related Sections:

1. Section 02 4119 – Selective Demolition
2. Section 03 4100 – Structural Concrete Deck
3. Section 05 3100 – Steel Decking
4. Section 06 1053 – Miscellaneous Rough Carpentry

1.3 DEFINITIONS

A. Unit price is an amount proposed by Bidders, stated in Section 01 1000 Summary of Work and on the bid form, as a price per unit of measurement for materials or services added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

1.4 PROCEDURES

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

B. Refer to individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections. Contractor is required to submit measurements to Owner for verification prior to Work.

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

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

PART 2 - PRODUCTS (Not Used)

SECTION 01 2200
UNIT PRICES

PART 3 - EXECUTION

3.1 SCHEDULE OF UNIT PRICES

A. Unit Price 1: Concrete Deck Repair

1. Repair areas of damaged concrete deck as noted in Section 01 1000 Summary, and as required by Section 03 4100 “Structural Concrete Deck.”
2. Unit of Measurement shall be **square feet** based on volume of repair reported by Contractor and verified by Owner or Consultant.
3. **Structural Concrete Deck Repair per square foot - Unit Price: $_____**
4. **200 square feet x Unit Price: $ _____ = Total Price: $_____**

B. Unit Price 2: Steel Deck Preparation & Painting

1. Repair areas of lightly rusted metal deck as noted in Section 01 1000 Summary, and as required by Section 05 3100 “Steel Decking.”
2. Unit of Measurement shall be **square feet** based on volume of repair reported by Contractor and verified by Owner or Consultant.
3. **Steel Deck Preparation & Painting per square foot - Unit Price: $_____**
4. **200 square feet x Unit Price: $ _____ = Total Price: $_____**

C. Unit Price 3: Steel Deck Overlay (Repair)

1. Overlay slightly compromised steel decking as noted in Section 01 1000 Summary, and as required by Section 05 3100 “Steel Decking.”
2. Unit of Measurement shall be **square feet** based on volume of repair reported by Contractor and verified by Owner or Consultant.
3. **Steel Deck Overlay - Unit Price: $_____**
4. **50 square feet x Unit Price: $ _____ = Total Price: $_____**

D. Unit Price 4: Steel Deck Replacement

1. Remove and replace deteriorated steel decking as noted in Section 01 1000 Summary, and as required by Section 05 3100 “Steel Decking.”
2. Unit of Measurement shall be **square feet** based on volume of repair reported by Contractor and verified by Owner or Consultant.
3. **Removed and Replace Deteriorated Steel Decking - Unit Price: $_____**
4. **200 square feet x Unit Price: $ _____ = Total Price: $_____**

E. Unit Price 5: Remove and Replace Deteriorated Wood Nailers

1. Remove and replace deteriorated wood nailers as noted in Section 01 1000 Summary, and as required by Section 06 1053 “Miscellaneous Rough Carpentry”.
2. Unit of Measurement shall be **board feet** based on volume of repair reported by Contractor and verified by Owner or Consultant.
3. **Removed and Replace Deteriorated Wood Nailers - Unit Price: $_____**
4. **200 board feet x Unit Price: $ _____ = Total Price: $_____**

END OF SECTION 01 2200

SECTION 01 2300
ALTERNATES

SECTION 012300 - ALTERNATES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for alternates.

1.2 DEFINITIONS

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if the Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternates into the Work. No other adjustments are made to the Contract Sum.

1.3 PROCEDURES

A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.

1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

B. Execute accepted alternates under the same conditions as other work of the Contract.

C. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

SECTION 01 2300
ALTERNATES

PART 3 -

PART 4 - EXECUTION

4.1 SCHEDULE OF ALTERNATES

A. Alternate No. 1: Replace all steel roof decking on the Post Aeration Facility, approximately 1,470 square feet, contractor MUST verify.

1. Base Bid: Repair/replace decking as **specified in Section 05 3100.**

2. Alternate: Based on the condition of the existing steel roof decking at the Post Aeration Facility when exposed, the WRF may elect to replace steel roof deck in its entirety.

END OF SECTION 01 2300

SECTION 01 3300
SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Submit complete, bound sets of the submittals required by all Sections of these Specifications.

B. Substitutions will not be permitted after completion of the bidding process.

1.2 GENERAL

A. Review of submittals by Consultant or Owner does not relieve Contractor from responsibility for compliance with the Contract Documents, or for errors that may exist in submitted information.

B. Submittals processed by Consultant do not become Contract Documents. The purpose of submittals is to establish a reporting procedure for Consultant to monitor Contractor's compliance with the Contract Documents. If deviations, discrepancies, or conflicts between submittals and the Contract Documents are discovered (before or after processing by Consultant), the Contract Documents shall control.

C. Carefully review and coordinate all aspects of each item being submitted. Verify that each item and its appropriate submittal conform in all respects with the specified requirements.

D. Make submittals far enough in advance of scheduled dates of commencement, execution or installation to provide time required for reviews, for securing necessary approvals, for possible revisions and resubmittals, and for placing orders and securing delivery.

E. In scheduling, allow at least 6 working days for review by Consultant following receipt of Submittals. Also, allow at least 1 week in schedule for color selection(s) by Owner.

F. Make revisions when required by Owner and/or Consultant and resubmit for review within 3 days after receipt. If submittals are rejected, submit corrected submittals before commencing any portion of the Work related to those submittals.

G. Accept responsibility for delays resulting from incomplete or rejected submittals.

H. Owner will pay for Consultant's first review and, if necessary, 1 subsequent review of each submittal. The cost of additional reviews, if required, may be back charged to Contractor at Consultant's prevailing unit rates and deducted from payments to be made to Contractor.

SECTION 01 3300
SUBMITTAL PROCEDURES

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 SUBMITTAL PREPARATION

A. Number consecutively and clearly identify all submittals, including the Specification Section requiring the submittal. Show identification on at least the first page of each submittal, and elsewhere as necessary for positive identification of the submittal.

B. Submit one copy of each submittal item specified herein, unless indicated otherwise. Consultant will review each submittal and return to Contractor. Contractor shall provide Owner with up to three additional copies of reviewed submittals with Consultant's notations.

C. Issue each submittal on 8-1/2-inch by 11-inch copy paper, whenever practicable.

D. Accompany each submittal package with a letter of transmittal showing all information required for identification and checking along with specification section number submittal is being submitted for. Where contents of submitted literature from a manufacturer includes data not pertinent to the submittal, clearly show which portions of contents are being submitted for review.

E. Partial submittals may be rejected for non-compliance with the Contract Documents.

F. All review comments of the Consultant will be shown on the original submittal (one copy) when returned to the Contractor. Contractor shall make and distribute all necessary additional copies.

3.2 PRE-CONSTRUCTION SUBMITTALS

A. Submit "Pre-Construction Submittals" electronically to Consultant for review prior to the pre-construction meeting. Do not mobilize to the site until the complete pre-job submittal package has been reviewed by Consultant and approved by Owner.

B. For each material intended to be used, submit:

1. Latest edition of pertinent manufacturer's published literature, including installation instructions.
2. Samples of materials as requested by Consultant. Manufacturer's color charts for Owner's color selection.
3. Latest edition of safety data sheets (SDS).

    a. Contractor's agreeing to fulfill this request for submittal of SDS, as evidenced by the executed Contract Documents, shall constitute an incontrovertible representation by Contractor that Contractor is familiar with the safe use and handling of the products intended to be used; therefore, Contractor is encouraged to study the SDS and provide copies to all persons that may be affected by the products.
    b. Maintain a copy of the SDS at the site, in an organized fashion, readily accessible in case of emergency.

c. DO NOT BRING ANY MATERIALS OR PRODUCTS TO THE SITE BEFORE RECEIVING APPROVAL OF THE SUBMITTED SDS.

C. Submit a letter from each manufacturer stating that:

1. Manufacturer's technical department has reviewed the Specifications and Drawings.
2. Manufacturer's products are suitable for the intended purpose and can be installed as required by the Specifications and Drawings.
3. Manufacturer's representative will visit the site to observe compliance with their installation requirements.

    a. Manufacturer's representative shall be on site for the Pre-Construction Conference
    b. Manufacturer's representative shall perform a minimum of one site visit during construction.
    c. Manufacturer's technical representative shall perform site visit at substantial completion to verify compliance with the Specifications and Drawings, and the manufacturer's installation requirements.

4. Manufacturer intends to issue a guarantee in accordance with the requirements of these Specifications.
5. Contractor is an approved applicator or installer of manufacturer's guaranteed system as herein specified.
6. Their products are compatible with all materials that they will contact, as disclosed in these Specifications and Drawings, including materials not produced by the manufacturer.
7. Fastening pattern required to meet the specified FM 1A-60 in the field of the roof, FM 1A-90 at the perimeters of the roof, and FM 1A-105 at the corners of the roof, and ASCE 7-10 wind uplift resistance.

D. Submit shop drawings for any details that will deviate from Drawings, for which no detail is provided in Drawings, or which are required by other Sections of these Specifications.

1. Make all shop drawings accurately to a scale sufficiently large to show all pertinent aspects of the item, preferably using isometric views.
2. Where practicable, submit shop drawings on 8-1/2-inch by 11-inch copy paper; if necessary, increase size to 11-inch by 17-inch copy paper. If it is necessary to use larger paper, submit all shop drawings over 11-inches by 17-inches in triplicate black line prints of each sheet.

E. Submit the following additional items:

1. Any permits required by the local municipality. If Contractor believes that no permits are required, Contractor shall submit a letter from the local building department stating that no permits are required. Contractor is solely responsible for paying for and obtaining any necessary permits.
2. Preliminary project schedule.
3. Designation of Superintendent.
4. Sample copies of the specified warranties and guarantees.
5. Copies of all executed subcontracts.

6. Emergency action plan, including:

    a. Emergency contact names and phone numbers at Contractor's office and Contractor's key personnel pagers, cellular phones, and home numbers.
    b. Emergency contact names and phone numbers for supplier of scaffolding or other major equipment, if rented.
    c. General Building Evacuation: Contractor's means of egress from building and construction areas.
    d. Procedures and responsibilities for each of the following situations:

        1) Equipment malfunction
        2) Power outage
        3) Life-threatening situation
        4) Personal injury or medical emergency
        5) Severe Weather

7. Barricading plan.
8. Letter of Assurance for powered platform.
9. Other items required in other Sections of these Specifications or the General Conditions.

3.3 POST CONSTRUCTION SUBMITTALS

A. Submit "Post-Construction Submittals" to Consultant for review with request for designation of Substantial Completion. Include the following:

1. Letter requesting that Substantial Completion be designated.
2. One reproducible and two copies of as-built drawings and records showing work performed.
3. Final Application for Payment for the Work, not including retainage.
4. Completed warranties.

3.4 PROPOSED SUBSTITUTIONS

A. Not permitted.

END OF SECTION 01 3300

SECTION 01 5000
TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

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

B. Related Requirements:

1. Section 01 1000 "Summary" for work restrictions and limitations on utility interruptions.

1.3 USE CHARGES

A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Consultant, occupants of Project, testing agencies, and authorities having jurisdiction.

B. Sewer Service: Owner will pay sewer-service use charges for sewer usage by all entities for construction operations.

C. Water Service: Owner will pay water-service use charges for water used by all entities for construction operations.

D. Electric Power Service: Owner will pay electric-power-service use charges for electricity used by all entities for construction operations.

E. Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

F. Electric Power Service from Existing System: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

SECTION 01 5000
TEMPORARY FACILITIES AND CONTROLS

1.4 INFORMATIONAL SUBMITTALS

A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.

B. Moisture-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage.

1. Describe delivery, handling, and storage provisions for materials subject to water absorption or water damage.
2. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water-damaged Work.

PART 2 - PRODUCTS

2.1 EQUIPMENT

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

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

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

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

3.2 TEMPORARY UTILITY INSTALLATION

A. Water Service: Connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.

B. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

C. Electric Power Service: Connect to Owner's existing electric power service. Maintain equipment in a condition acceptable to Owner.

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

E. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.

1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

3.3 SECURITY AND PROTECTION FACILITIES INSTALLATION

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

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

C. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.

D. Covered Walkway: Erect protective, covered walkway for passage of individuals through or adjacent to Project site. Coordinate with entrance gates, other facilities, and obstructions. Comply with regulations of authorities having jurisdiction.

1. Construct covered walkways using scaffold or shoring framing.
2. Provide overhead decking, protective enclosure walls, handrails, barricades, warning signs, exit signs, lights, safe and well-drained walkways, and similar provisions for protection and safe passage.
3. Maintain appearance of walkway for duration of the Work.

3.4 MOISTURE AND MOLD CONTROL

A. Contractor's Moisture-Protection Plan: Avoid trapping water in finished work. Document visible signs of mold that may appear during construction.

B. Exposed Construction Phase: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect as follows:

1. Protect porous materials from water damage.
2. Protect stored and installed material from flowing or standing water.
3. Keep porous and organic materials from coming into prolonged contact with concrete.
4. Remove standing water from decks.
5. Keep deck openings covered or dammed.

3.5 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

C. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
2. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 01 77 00 "Closeout Procedures."

END OF SECTION 01 5000

SECTION 01 7700
CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and all Division 01 Specification Sections, apply to this Section.
   1. Division 01 - General Requirement Sections.
   2. Section 03 41 00 – Structural Concrete Deck
   3. Section 05 31 00 – Steel Decking
   4. Section 06 10 53 – Miscellaneous Rough Carpentry
   5. Section 07 52 16 – SBS Modified Bituminous Membrane Roofing
   6. Section 07 62 00 – Sheet metal Flashing & Sheet Metal
   7. Section 07 72 00 - Roof Accessories
   8. Section 07 92 00 - Joint Sealants
   9. Section 22 14 23 - Roof Drainage Piping Specialties

1.3 SUMMARY

A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

   1. Substantial Completion procedures.

   2. Final completion procedures.

   3. Warranties.

   4. Final cleaning.

   5. Repair of the Work.

1.4 ACTION SUBMITTALS

A. Product Data: For cleaning agents.

B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.5 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

B. Certificate of Insurance: For continuing coverage.

1.6 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.

B. Submittals Prior to Substantial Completion: Complete the following a minimum of ten days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.

2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.

3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.

C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.

2. Complete final cleaning requirements, including touchup painting.

3. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the work will be completed and ready for final inspection. On receipt of request, Consultant and Construction Manager will either proceed with inspection or notify Contractor of unfulfilled requirements. Consultant will prepare the Documentation of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Consultant, that must be completed or corrected before certificate will be issued.

1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.

2. Results of completed inspection will form the basis of requirements for final completion.

1.7 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:

1. Submit a final Application for Payment.

2. Certified List of Incomplete Items: Submit certified copy of Consultant’s Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Consultant. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.

3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.

B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final inspection. On receipt of request, Consultant and Construction Manager will either proceed with inspection or notify Contractor of unfulfilled requirements. Consultant will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.8 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Consultant for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.

B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.

C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.

1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (215-by-280-mm) paper.

2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.

3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:

a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.

b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.

c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.

d. Remove tools, construction equipment, machinery, and surplus material from Project site.

e. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.

f. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.

g. Sweep concrete floors broom clean in unoccupied spaces.

h. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.

i. Remove labels that are not permanent.

j. Leave Project clean and ready for occupancy.

C. Construction Waste Disposal: Comply with waste disposal requirements in Specification Section 01 50 00 "Temporary Facilities and Controls”.

3.2 REPAIR OF THE WORK

A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.

B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to a condition acceptable to the owner.

END OF SECTION 01 7700

SECTION 02 4119
SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:

1. Demolition and removal of selected building roof components.

B. Related Sections include the following:

1. Section 06 1053 – Miscellaneous Rough Carpentry
2. Section 07 5216 – SBS Modified Bituminous Membrane Roofing
3. Section 07 6200 – Sheet Metal Flashing and Trim
4. Section 22 1423 – Storm Drainage Piping Specialties

1.3 PROJECT CONDITIONS

A. Owner will occupy building during selective roof demolition activities. Conduct selective demolition so Owner's operations will not be disrupted in building.

1. Comply with requirements specified in Specification Section 01 10 00 Summary.

B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

C. Notify Owner and Consultant of discrepancies between existing building conditions and Drawings before proceeding with selective demolition.

D. Laboratory testing for the presence of asbestos fibers in the existing roof system, did identify asbestos containing roofing materials in the existing flashing.

1. Provide a licensed Abatement Contractor to properly dispose of the asbestos containing materials and comply with all regulations required by the authorities having jurisdiction and the Ohio Environmental Protection Agency (EPA).

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

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

G. Contractor shall be responsible for repair of all site damage as a result of demolition activities to building, adjacent buildings, and landscaping to the satisfaction of Owner at no additional costs.

H. Contractor shall perform all work in a safe manner so as to prevent damage to building, adjacent building, and areas surrounding building, and to prevent harm to building occupants and tenants.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

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

B. Comply with all Federal, State and Local regulations for removal of asbestos containing roofing materials, as required.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped as required.

B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required. Commencement of Work confirms Contractor accepts the existing conditions.

C. Inventory and record the condition of items to be removed and reinstalled.

D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Owner and Consultant.

E. Record existing conditions by use of pre-construction photographs.

F. Perform all Work according to accepted industry standards, and in accordance with all applicable regulations.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Maintain services/systems indicated to remain and protect them against damage during selective demolition operations.

B. Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.

1. Owner will arrange to shut off indicated services/systems when requested by Contractor.

3.3 PREPARATION

A. Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Comply with requirements for access and protection specified in Specification Section 01 50 00 Temporary Facilities and Controls.

B. Provide temporary barricades and other protection required to prevent injury to people and damage to building, adjacent buildings, and facilities to remain.

1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.

C. Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse during selective demolition.

D. Provide dust control for demolition activities.

3.4 SELECTIVE DEMOLITION, GENERAL

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

1. Proceed with selective demolition systematically from areas farthest from the staging area to areas closest to staging. Reduce traffic over newly installed roof system.
2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
3. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, roofing, or framing.
4. Dispose of demolished items and materials promptly. Remove from site on a daily basis.

B. Removed and Reinstalled Items:

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

Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Owner or Consultant, items may be removed to a suitable, protected storage location during selective demolition and reinstalled in their specified locations after selective demolition operations are complete.

SECTION 02 4119
SELECTIVE DEMOLITION

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. Remove no more existing roofing than can be covered in one day by new roofing and so that building interior remains watertight and weather tight. Refer to Specification Section 075216 SBS Modified Bituminous Membrane Roofing for new roofing requirements.

1. Remove existing roof membranes, insulations, base flashings, penetration flashings, sheet metal flashings, and flashing accessories.
2. Remove fasteners in masonry substrates by cutting fastener heads. Pulling masonry fasteners out by force shall not be permitted.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

A. Except for items or materials indicated to be reinstalled or otherwise indicated to remain Owner's property, remove demolished materials from Owner’s property and legally dispose of them in an EPA-approved landfill.

1. Do not allow demolished materials to accumulate on-site. Remove from site on a daily basis.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

3.7 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 02 4119

SECTION 03 4100
STRUCTURAL CONCRETE DECK

PART 1 - GENERAL

1.1 DESCRIPTION

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

1.2 UNIT PRICE ADD / DEDUCT 1: CONCRETE DECK REPAIR

A. Repair areas of damaged structural concrete deck as required by this Section.

B. Unit of Measurement shall be square feet based on quantities of repair reported by Contractor and verified by Owner or Consultant.

1.3 RELATED SECTIONS

A. Section 01 2200 “Unit Prices”

B. Section 02 4119 “Selective Demolition”

C. Section 07 5216 “SBS Modified Bituminous Membrane Roofing”

1.4 REFERENCES

A. American Society for Testing and Materials (ASTM) *Book of Standards*

B. National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual and Handbook of Accepted Roofing Knowledge (HARK)

C. American Concrete Institute (ACI)

1.5 SUBMITTALS

A. As provided in Section 01 3323.

1.6 QUALITY ASSURANCE

A. Qualifications of Manufacturer

1. Products used in the work included in this Section shall be produced by manufacturers regularly engaged in the manufacturing of similar items and with a history of successful production and product installations.

B. Qualifications of Contractor

1. Contractor shall be thoroughly trained and experienced in the necessary crafts. Installers shall be made familiar with any unique requirements specified for proper performance of the work in this section.

C. Rejection

1. In the acceptance or rejection of Work under this Section, no allowance will be made for lack of skill or specification understanding on the part of the workmen. It shall be incumbent upon the contractor to use adequate numbers of skilled installers and to instruct them in the requirements of the project specifications as well as maintaining a set of the project specifications and drawings on the roof at all times.

D. Replacement

1. In the event inadequate or improper installation is determined, contractor shall make all repairs and replacements required to render the installation compliant with the project specifications. Replacements, due to improper performance, shall be at the sole cost of the contractor.

1.7 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Coordinate delivery with Consultant.

1. Prevent wrappers and packaging materials from inclusion in the roofing system.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Concrete deck repair shall not commence during inclement weather.

B. Work shall not be performed under this section if the ambient temperature is below 40 degrees Fahrenheit, without prior written approval of Consultant.

C. When ambient temperatures are anticipated or forecast to drop below 40 degrees Fahrenheit during the course of the work, a manufacturer approved Cold Weather Application Specification shall be submitted for review and approval.

D. Submission of a Cold Weather Application Specification does not constitute approval for application of work under this section. No work shall be performed until written approval and authorization has been received.

PART 2 - PRODUCTS

2.1 CONCRETE DECK REPAIR MATERIALS

A. Grout for repair of minor surface deficiencies in concrete plank decking shall meet the following requirements:

1. Early Volume Change (ASTM C827) - 0% shrinkage
2. Hardened Volume Change (Federal Specification CRD-C621[588] - 0% shrinkage, 0% expansion after set
3. Compressive Strength (ASTM C109) - 5000 PSI/7 days

SECTION 03 4100
STRUCTURAL CONCRETE DECK

PART 3 - EXECUTION

3.1 GENERAL

A. All irregularities in the existing concrete plank deck including high spots, low spots, projections and minor cracking shall be repaired with high strength grout.

B. If cracks greater than hairline or other significant deterioration of the concrete plank decking is uncovered during the roof demolition process, notify Owner immediately.

C. Former penetrations shall be covered as noted below.

1. Openings in concrete plank less than 2-inches in any direction shall be spanned by the polyisocyanurate insulation

2. Opening between 2-inches and 24-inches in any direction shall be spanned by 1/8” thick steel plate constructed of galvanized 36 ksi steel overlapping opening by a minimum of 3 inches on all sides and fastened to roof deck with a minimum of four (4) 1” power actuated fasteners equally spaced around opening.

3. Opening between 24-inches and 36-inches in any direction shall be spanned by 1/4” thick steel plate constructed of galvanized 36 ksi steel overlapping opening by a minimum of 6 inches on all sides and fastened to roof deck with a minimum of eight (8) 1” power actuated fasteners equally spaced around opening.

4. Any openings larger than 36” shall be reported to the consultant for design by a structural engineer.

3.2 DEMOLITION

A. Contractor shall provide protection to building exterior, building interior, contents, and occupants to assure that debris does not enter building and to prevent harm to occupants.

B. Areas to receive grout repairs shall be roughened and wire brushed to remove all loose materials, oil, grease, laitance, bitumen or other foreign substances.

3.3 REPAIRS TO CONCRETE PLANK DECKING

A. The areas to receive grout repairs shall be pre-moistened with a fine spray of water. Precautions shall be taken to prevent water from entering the building space below.

B. The grout shall be poured, flowed into cracks and troweled into low or uneven areas.

C. The repair areas shall be coated with a curing compound, approved by the grout manufacturer.

D. High areas and projections shall be chipped and ground down to a smooth level surface.

SECTION 03 4100
STRUCTURAL CONCRETE DECK

3.4 COORDINATION

A. Coordinate all work closely with owner's representative.

1. Work cannot disrupt owner’s activities. Care shall be taken that no work is done without owner's approval on a daily basis.

3.5 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.

END OF SECTION 03 4100

SECTION 05 3100
STEEL DECKING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:

1. Steel roof deck preparation & painting.
2. Steel roof deck overlay (repair).
3. Steel roof deck replacement.

1.3 UNIT PRICE ADD/DECUCT NO. 2 STEEL DECK PREPARATION & PAINTING:

A. Prepare and paint areas of steel deck as required by this Section.

B. Unit of Measurement shall be square feet based on quantities of repair reported by Contractor and verified by Owner or Consultant.

1.4 UNIT PRICE ADD/DECUCT NO. 3 STEEL DECK OVERLAY (REPAIR):

A. Repair areas of steel deck as required by this Section.

B. Unit of Measurement shall be square feet based on quantities of repair reported by Contractor and verified by Owner or Consultant.

1.5 UNIT PRICE ADD/DECUCT NO. 3 STEEL DECK REPLACEMENT:

A. Replace areas of steel deck as required by this Section.

B. Unit of Measurement shall be square feet based on quantities of repair reported by Contractor and verified by Owner or Consultant.

1.6 RELATED SECTIONS:

A. Division 01 Section 2200 Unit Prices.

B. Division 02 Section 4119 Selective Demolition.

SECTION 05 3100
STEEL DECKING

1.7 SUBMITTALS

A. Product Data: For each type of deck, accessory, and product indicated.

B. Galvanizing repair paint products.

C. Field quality-control test and inspection reports.

D. Evidence that submitted steel roof decking complies with FM Global and Ohio Building Code.

1.8 QUALITY ASSURANCE

A. FMG Listing: Provide steel roof deck evaluated by FMG and listed in its "Approval Guide, Building Materials" for Class 1 fire rating and Class 1-90 windstorm ratings.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.

B. Stack steel deck on platforms or pallets and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Steel Deck:

a. ASC Profiles, Inc.
b. Canam Steel Corp.; The Canam Manac Group.
c. Consolidated Systems, Inc.
d. DACS, Inc.
e. D-Mac Industries Inc.
f. Epic Metals Corporation.
g. Marlyn Steel Decks, Inc.
h. New Millennium Building Systems, LLC.
i. Nucor Corp.; Vulcraft Division.
j. Roof Deck, Inc.
k. United Steel Deck, Inc.
l. Valley Joist; Division of EBSCO Industries, Inc.
m. Verco Manufacturing Co.

n. Wheeling Corrugating Company; Div. of Wheeling-Pittsburgh Steel Corporation.
o. Consultant approved equal.

2.2 ROOF DECK REPLACEMENT & REPAIR

A. Steel Roof Deck Repair: Fabricate panels, without top-flange stiffening grooves, to comply with "SDI Specifications and Commentary for Steel Roof Deck," in SDI Publication No. 30, and with the following:

1. Galvanized Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade 33, G60 zinc coating.
2. Deck Profile: Match Existing.
3. Profile Depth: 1-1/2 inches.
4. Design Uncoated-Steel Thickness: .0478 inch
5. Span Condition: Double span.
6. Side Laps: Overlapped by one rib; side laps fastened 12” O.C.

2.3 ACCESSORIES

A. General: Provide manufacturer's standard accessory materials for deck that comply with requirements indicated.

B. Mechanical Fasteners: Corrosion-resistant, low-velocity, power-actuated or pneumatically driven carbon-steel fasteners; or self-drilling, self-threading screws.

C. Side-Lap Fasteners: Corrosion-resistant, hexagonal washer head; self-drilling, carbon-steel screws, No. 10 minimum diameter.

D. Miscellaneous Sheet Metal Deck Accessories: Steel sheet, minimum yield strength of 33,000 psi, not less than 0.0478-inch (18 gauge) design uncoated thickness, of same material and finish as deck; of profile indicated or required for application.

E. Galvanizing Repair Paint: ASTM A 780 SSPC-Paint 20 or DOD-P-21035, with dry film containing a minimum of 94 percent zinc dust by weight.

1. Z.R.C. Galvalite Galvanizing Repair Protection Paint, or Consultant approved equal.

2. Primer, galvanized: As recommended in writing by topcoat manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine supporting frame and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance.

3.2 STEEL ROOF DECK PREPARATION AND PAINTING

A. Where rust has formed, but not penetrated more than 10 mils into the steel roof deck, perform all preparation and cleaning procedures in strict accordance with the paint manufacturer's recommendations.

A. Prepare and repair damaged galvanized coatings on both surfaces of deck with galvanized repair paint according to A780/A780M - 09(2015).

B. Remove all loose rust, mill scale and other loose contaminates from the surface of the steel roof deck with either a hand-held wire brush or with an electrically powered wire wheel.

C. Sweep and remove all loose rust, mill scale and other loose contaminants from the surfaces of the steel roof deck.

D. Remove all remaining loose dust and dirt from the steel roof deck surfaces with a power vacuum or blower.

E. Ensure all steel roof deck surfaces are thoroughly dry prior to the application of the galvanizing paint. Install one coat galvanizing paint uniformly over the properly prepared steel roof deck surfaces with a paintbrush, paint roller or paint sprayer.

F. Ensure all surfaces in the affected areas are completely covered with a smooth and even coats.

G. Allow the paint to dry to the touch prior to the installation of the base layer of new roof insulation.

3.3 STEEL DECK REPAIR

A. Install sheet steel over abandoned deck penetration opening as directed by Owner or Consultant.

1. Openings shall not exceed 36 square inches.
2. Fastener Spacing: Space fasteners not over 8" on center at perimeter of sheet steel overlay

3.4 ROOF-DECK REPLACEMENT INSTALLATION

A. Install repair deck panels and accessories according to applicable specifications and commentary in SDI Publication No. 30, manufacturer's written instructions, and requirements in this Section.

B. Install temporary shoring before placing repair deck panels, if required to meet deflection limitations.

C. Locate deck bundles to prevent overloading of supporting members.

D. Place deck panels on supporting frame and adjust to final position with ends accurately aligned and bearing on supporting frame before being permanently fastened. Do not stretch or contract side-lap interlocks.

E. Place deck panels flat and square and fasten to supporting frame without warp or deflection.

F. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to deck.

G. Mechanical fasteners shall be used in lieu of welding to fasten deck. Locate mechanical fasteners and install according to deck manufacturer's written instructions.

H. Fasten roof-deck repair panels to steel supporting members using mechanical fasteners. Space fasteners 12 inches apart in the field of roof and 6 inches apart in roof corners and perimeter, based on roof-area definitions in FMG Loss Prevention Data Sheet 1-28.

1. Mechanically fasten with #12-24 HWH Tek 5 Deck to Steel Screws.

I. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, at intervals not exceeding the lesser of 1/2 of the span or 12 inches**,** and as follows:

1. Mechanically fasten with self-drilling, No. 10 diameter or larger, carbon-steel screws.

J. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches, with end joints as follows:

1. End Joints: Lapped 2 inches minimum.

END OF SECTION 05 3100

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SECTION 06 1053
MISCELLANEOUS ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

B. Work Included: Removal and replacement of deteriorated wood nailers and blocking. Installation of wood nailers and blocking as indicated on the drawings.

1.2 UNIT PRICE 4: ADD / DEDUCT REMOVE AND REPLACE WOOD NAILERS

A. Remove and replace existing deteriorated wood nailers as required in this Section.

B. Unit of measurement shall be board feet based on quantities of replacement reported by Contractor and verified by Owner or Consultant.

1.3 RELATED SECTIONS

A. Section 01 22 00 Unit Prices

B. Section 07 52 16 SBS Modified Bituminous Membrane Roofing

C. Section 07 62 00 Sheet Metal Flashing and Trim

D. Section 22 14 23 Storm Drainage Piping Specialties

1.4 REFERENCES

A. "Quality Standards" of the Architectural Woodwork Institute; Premium, Custom or Economy Grade as defined in the latest edition.

B. Federal Specification tt-w-5711, "Wood Preservation: Treating Practices".

1.5 SUBMITTALS

A. As provided in Specification Section 01 33 00.

B. Product Data

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

1. Preservative-treated wood.
2. Power-driven fasteners.
3. Expansion anchors.

1.6 PRODUCT HANDLING

A. Protection:

1. Store all materials up, off the roof deck or ground, and covered with a loose, breathable, weatherproof covering anchored sufficiently so as to resist wind blow-off.
2. Keep all materials clearly identified with all grade marks in place and legible. Keep all damaged material clearly identified as damaged and stored separately to prevent its inadvertent use.
3. Do not allow installation of damaged or otherwise non-complying material.

B. REPLACEMENT: In the event of damage, immediately make all necessary repairs and replacements to the approval of the owner and at no additional cost to the owner.

1.7 PREFORMANCE REQUIREMENTS:

A. Installation of wood nailers, curbs, fasteners and other part of this Section shall comply with the recommendations of FMG Loss Prevention Data Sheets 1-28.1-29 and 1-49. All other requirements of FM shall be satisfied.

PART 2 - PRODUCTS

2.1 WOOD-PRESERVATIVE-TREATED MATERIALS

A. Preservative Treatment by Pressure Process: AWPA C2

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.

2.2 WOOD NAILERS

A. All nailers shall be #2, or better.

B. Sizes to be as indicated on the drawings. Minimum size to be 1” by 4” nominal.

C. Wood Species:

1. Wood species shall be one of the following:

a. White fir or Idaho white pine
b. Southern yellow pine, Douglas fir or Larch

2.3 FASTENERS

A. All fasteners must have corrosion-resistant coating.

B. Masonry/Concrete Fasteners:

1. Threaded Masonry/Concrete Fasteners

a. Corrosion-resistant, threaded fastener with a low-profile head.
b. Screw fastener to be Factory Mutual approved.
c. Approved products:

1) Dekfast #14 by Construction Fasteners
2) Hilti Fastener #14 by Hilti

3) King Con by ITW Buildex

C. Other Masonry/Concrete Fasteners:

1. Metal Hit Anchor by Hilti
2. Rawl-Drives by Rawl
3. Zamac Nailin by Rawl

D. Threaded Steel/Wood Fasteners:

1. Corrosion-resistant, self-tapping, self-drilling #14 screw with low profile head
2. Screw type fastener to be Factory Mutual approved.
3. Approved Products:

a. Dekfast #14 by Construction Fasteners
b. Hilti Fastener #14 by Hilti, Inc
c. Insul Fixx #14-10 by SFS Stadler

E. Wood to Wood Fasteners:

1. Nails:

a. 8D to 16D, hot-dipped, galvanized steel or 304 stainless steel ring shank. Size depending on thickness to wood to be fastened.
b. Nails to be sized to provide minimum embedment into base substrate of 1.25".

2. Screws:

a. #14 Phillips pan head galvanized steel sheet metal screws as minimum size.
b. Screw length to provide minimum embedment into base substrate of 1".

PART 3 - EXECUTION

3.1 NAILERS

A. Nailers shall be installed as shown on Drawings.

B. Nailers shall be anchored to resist a pull of 200 lbs./foot, minimum and as approved by local Building Codes.

C. Fasteners to be spaced as shown on drawing but no less than 12" o.c. staggered at roof corners, 18” o.c. staggered at roof perimeters and in field of roof.

D. Nailers shall be installed with joints true and tight.

3.2 PROTECTION

A. Protect miscellaneous rough carpentry from weather. If, despite protection, miscellaneous rough carpentry becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

3.3 CLEANING

A. Premises shall be kept in a neat and orderly condition.

B. After installation of all rough carpentry, contractor shall remove all construction debris and equipment from job site.

END OF SECTION 06 5300

SECTION 07 5216
SBS MODIFIED BITUMINOUS MEMBRANE ROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

B. Soprema materials were used as a basis for design. The successful bidder is free to provide materials from any of the three manufacturers listed in this section (2.1, A.).

C. Furnish and install a water and weather-tight cold applied modified bitumen roof system as shown on the drawings and as specified herein.

1.2 SUMMARY

A. Section Includes:

1. Vapor barrier.
2. Styrene-butadiene-styrene (SBS)-modified bituminous membrane roofing.
3. Roof insulation.
4. Roof cover board.

B. Related Requirements:

1. Section 02 4119 – Selective Demolition
2. Section 03 4100 – Structural Concrete Deck
3. Section 05 3100 – Steel Decking
4. Section 06 1053 – Miscellaneous Rough Carpentry
5. Section 07 6200 – Sheet Metal Flashing and Trim
6. Section 07 7200 – Roof Accessories
7. Section 07 9200 – Joint Sealants
8. Section 22 1423 – Storm Drainage Piping Specialties

1.3 DEFINITIONS

A. ASTM D-41, Specification for Asphalt Primer

B. ASTM D-173, Specification for Bitumen Saturated Cotton Fabrics

C. ASTM D-4586, Specification for Asphalt Roof Cement, Asbestos Free

D. ASTM D-6162, Specification for Styrene-Butadiene-Styrene (SBS) Modified Bituminous Sheet Materials reinforced with a combination of polyester fabric and glass fibers.

E. FM - Roof Assembly Classifications

F. UL - Fire Hazard Classifications.

G. National Roofing Contractors Association, Latest Edition

H. Architectural Sheet Metal Manual, Latest Edition.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other work, including:

C. Base flashings and membrane terminations.

D. Tapered insulation, including slopes.

E. Crickets, saddles, and tapered edge strips, including slopes.

F. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.

G. Samples for Verification: For the following products:

1. Cap sheet, of color required.
2. Flashing sheet, of color required.
3. Aggregate surfacing material in gradation and color required.

H. FM RoofNav # for the submitted system.

1.5 SYSTEM DESCRIPTION AT ALL BUILDINGS

A. FM Class Fire Classifications - 1A FM Class at All Buildings.

B. FM Wind Uplift Ratings at All Buildings

1. FM 1-60 system in the field of roof
2. FM 1-75 system at the perimeters of the roof
   a. Perimeter – A minimum of 6 feet from the roof edge
3. FM 1-105 system at corners of roof
   a. Corners – A minimum of 6 feet from the roof corners

C. Hail-Resistance Rating: SH

1.6 REGULATORY REQUIREMENTS

A. All products must be UL listed and labeled.

B. Perform all Work in accordance with FM Global requirements (FM Global Loss Prevention Data Sheet 1-33) *Safeguarding Torch-Applied Roof Installations*, as well as all applicable codes and local ordinances.

C. Roofing applicator's personnel responsible for work with open flame shall maintain and carry a valid Certified Roofing Torch Applicator "CERTA" card.

D. Contact and obtain permits where required from local fire officials for all work with open flames.

E. Comply with National Fire Protection Association (NFPA) 58 "Standard for the Storage and Handling of Liquefied Petroleum Gases.

1.7 SUBMITALS

A. Product Data: Submit the following most recent information for all Products specified:

1. Manufacturer's product data and material specifications.
2. Manufacturer's installation instructions.
3. Safety Data Sheet (SDS).

B. Shop Drawings: Submit drawings of the following:

1. Membrane manufacturer's detail drawings for each of the detail drawings presented in the contract documents.

C. Field quality-control reports.

D. Sample Warranties: For manufacturer's special warranties.

1.8 CLOSEOUT SUBMITTALS

A. Maintenance Data: For roofing system to include in maintenance manuals.

1.9 QUALITY CONTROL

A. Manufacturer's Inspection:

1. Coordinate no less than three site visits by manufacturer's technical representative throughout Work as required to meet manufacturer's warranty requirements.
   a. Manufacturer's technical representative shall attend minimum of two site progress inspections to occur at approximately 25% and 75% completion and conduct a Final inspection.
   b. Contractor shall provide copies of manufacturer's technical representative's field reports to Owner and Consultant.

B. Perform Work in accordance with Technical Specifications, Manufacturer's installation requirements, NRCA Roofing and Waterproofing Manual and Architectural Sheet Metal Manual.

SECTION 07 5216
SBS MODIFIED BITUMINOUS MEMBRANE ROOFING

1.10 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer that is UL Listed and FM Global approved for membrane roofing system identical to that used for this Project.

B. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty.

1.11 DELIVERY, STORAGE, AND HANDLING

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.

B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.

1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.

D. Handle and store roofing materials, and place equipment in a manner to avoid permanent deflection of deck.

1.12 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

1.13 WARRANTY

A. Manufacturer’s Warranty:

1. Contractor shall provide the Owner with the roof system manufacturer’s 20-Year “No Dollar Limit” warranty against defects in materials and workmanship.
   a. Provide a sample of warranty to Owner at Contract execution. Provide completed and approved warranty agreement to the Owner with final payment application.
   b. Warranty shall provide for repair and replacement of defective Work at no cost to the Owner.
   c. Warranty shall be transferable to future owners.

SECTION 07 5216
SBS MODIFIED BITUMINOUS MEMBRANE ROOFING

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Soprema
2. Johns Manville
3. Firestone Building Products

B. Source Limitations: Obtain components including roof insulation fasteners and adhesives for roofing system from same manufacturer as membrane roofing or manufacturer approved by membrane roofing manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. General Performance: Installed roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Roofing and base flashings shall remain watertight.

B. Accelerated Weathering: Roofing system shall withstand 2000 hours of exposure when tested according to ASTM G 152, ASTM G 154, or ASTM G 155.

C. Impact Resistance: Roofing system shall resist impact damage when tested according to ASTM D 3746 or ASTM D 4272.

D. Material Compatibility: Roofing materials shall be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roofing manufacturer based on testing and field experience.

E. FM Global Listing: Roofing, base flashings, and component materials shall comply with requirements in FM Global 4450 or FM Global 4470 as part of a roofing system and shall be listed in FM Global's "RoofNav" for Class 1 or noncombustible construction, as applicable. Identify materials with FM Global markings.

1. Fire/Windstorm Classification:
   a. Class 1A-60 for the field of the roof
   b. Class 1A-75 for the perimeters of the roof
   c. Class 1A-105 for the corners of the roof

2. Hail-Resistance Rating: SH

2.3 VAPOR RETARDER

A. Provide all of the rolled materials from the same manufacturer.

B. Smooth-Surfaced Vapor Retarder Sheet: ASTM D 6163, Grade S, Type II, SBS-modified asphalt sheet (fiber glass-reinforced); smooth surfaced; suitable for application method specified.

C. Provide SBS-modified asphalt roll goods from one of the following manufacturer's:

1. Soprema
2. Johns Manville
3. Firestone Building Products

2.4 ROOFING SHEET MATERIALS

A. Provide vapor barrier sheet, base sheet, and granule-surfaced cap sheet from the same manufacturer.

B. Vapor Barrier: Elastophene SP 2.2 - ASTM D 6163, Grade S, Type I, SBS-modified asphalt sheet (fiber glass-reinforced); smooth surfaced; suitable for application method specified.

C. Smooth-Surfaced Base Sheet: Elastophene Flam - ASTM D 6163, Grade S, Type I, SBS-modified asphalt sheet (fiber glass-reinforced); smooth surfaced; suitable for application method specified.

D. Granule-Surfaced Roofing Cap Sheet: Sopralene Flam 180 FR GR - ASTM D 6164, Grade G, Type I, SBS-modified asphalt sheet (polyester-reinforced); granule surfaced; suitable for application method specified, and as follows:

1. Granule Color: Gray.

2.5 BASE FLASHING SHEET MATERIALS

A. Smooth-Surfaced Flashing Base-Ply Sheet: Sopralene Flam 180 - ASTM D 6164, Grade S, Type I, SBS-modified asphalt sheet (polyester reinforced); smooth surfaced; suitable for application method specified.

B. Granule-Surfaced Flashing Cap Sheet: Sopralene Flam 180 FR GR - ASTM D 6164, Grade G, Type I, SBS-modified asphalt sheet (polyester-reinforced); suitable for application method specified, and as follows:

1. Granule Color: Gray.

2.6 AUXILIARY ROOFING MATERIALS

A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with roofing.

B. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.

C. Asphalt Primer: Elastocol 500 - ASTM D 41.

D. Cold-Applied Adhesive: Roofing system manufacturer's standard asphalt-based, asbestos-free, cold-applied adhesive specially formulated for compatibility and use with specified field and flashing membranes.

E. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required by roofing system manufacturer for application.

F. Roofing Granules: Ceramic-coated roofing granules, No. 11 screen size with 100 percent passing No. 8 (2.36-mm) sieve and 98 percent of mass retained on No. 40 (0.425-mm) sieve, color to match roofing.

G. Miscellaneous Accessories: Provide those recommended by roofing system manufacturer.

2.7 ROOF INSULATION

A. General: Preformed roof insulation boards manufactured or approved by roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses indicated and that produce FM Global-approved roof insulation.

B. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Class 2, Grade 2, glass-fiber mat facer on both major surfaces.

C. Insulation Flat Board Stock Sizes. Insulation flat board stock polyisocyanurate insulation be installed in multiple layers where insulation is greater than 2 ½-inches in thickness, with a 1 1/2-inch minimum and 2 1/2-inch maximum thickness per layer.

D. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Soprema
2. Johns Manville
3. Firestone Building Products

E. Tapered insulation – Provide factory-tapered insulation boards fabricated to a final slope of 1/4 inch per 12 inches unless otherwise indicated.

F. Provide saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.

1. Saddle and cricket slopes shall be double the slope of the field (1/2 inches per 12 inches).

2.8 INSULATION ACCESSORIES

A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with roofing.

B. Insulation Adhesive: Insulation manufacturer's recommended adhesive formulated to attach roof insulation to substrate or to another insulation layer as follows:

1. Bead-applied, low-rise, one-component or multicomponent urethane adhesive.
   a. Products: OlyBond500
   b. Consultant approved equivalent.

C. Insulation Cant Strips: ASTM C 728, perlite insulation board.

2.9 COVER BOARD

A. Cover board to be installed under the Base Bid.

B. 1/4-inch-thich Sopraboard or ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum substrate, 1/4-inch-thick, factory primed.

C. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Soprema
2. DensDeck Prime as manufactured by Georgia-Pacific Building Products
3. Consultant approved equivalent

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work:

1. Verify that roof openings and penetrations are in place, curbs are set and braced, and roof-drain bodies are securely clamped in place.
2. Verify that wood cants, blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
3. Verify that concrete substrate is visibly dry and free of moisture and proceed with installation only after concrete substrate is determined to be ready to receive new roofing.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

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

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

C. Prime surface of concrete deck with asphalt primer at a rate of 3/4 gal./100 square foot. Allow primer to dry.

3.3 INSTALLATION, GENERAL

A. Comply with roofing system manufacturer's written instructions.

3.4 VAPOR-RETARDER INSTALLATION

A. Install modified bituminous vapor retarder sheet according to roofing manufacturer’s written instructions, starting at low point of roofing system. Extend roofing membrane sheets over and terminate beyond cants, installing as follows:

1. Unroll roofing sheets and allow them to relax for minimum time required by manufacturer.

B. Completely seal vapor retarder at terminations, obstructions, penetrations and perimeter conditions to prevent air movement into roofing system assembly. Vapor retarder shall extend approximately 2” above the top edge of the perimeter cants.

C. Vapor retarder may be used as a temporary roofing, providing it is protected during roof demolition and the other construction activities throughout the Work.

1. Repair vapor retarder in accordance with manufacturer’s recommendations prior to installing insulation.

3.5 INSULATION INSTALLATION

A. Install insulation with long joints of insulation in a continuous straight line, with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch with insulation.

B. Polyisocyanurate boards set in ribbons of low-rise adhesive foam shall be maximum 48” x 48” maximum in size.

C. Install tapered insulation to conform to slopes indicated on drawings.

D. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.

1. Insulation board gaps greater than 1/4 inch will not be accepted.

E. Install insulation to achieve required thickness. Where overall insulation thickness is greater than 2 ½ inches, install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 12 inches in each direction.

F. Insulation Cant Strips: Install and secure, preformed 45-degree insulation cant strips at junctures of roofing system with vertical surfaces or angle changes greater than 45 degrees.

G. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.

H. Adhered Insulation: Install each layer of insulation and adhere to substrate as follows:

1. Set each layer of insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.
   a. Space beads of low-rise foam in accordance with manufacturers requirements to ensure conformance with uplift pressures as follows:
      1) Field of roof: FM-1-60: Space ribbons at 12-inch on center.
      2) Perimeter of roof: FM-1-90: Space ribbons at 6-inch on center.
      3) Corners of roof: FM-1-120: Space ribbons at 4-inch on center.

I. Install 48” x 48” maximum in size cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 12 inches in each direction. Loosely butt cover boards together and adhere with low rise adhesive foam. Tape joints if required by roofing system manufacturer.

1. Cover boards in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.
   a. Space beads of low-rise foam in accordance with manufacturers requirements to ensure conformance with uplift pressures as follows:
      1) Field of roof: FM-1-60: Space ribbons at 12-inch on center.
      2) Perimeter of roof: FM-1-90: Space ribbons at 6-inch on center
      3) Corners of roof: FM-1-120: Space ribbons at 4-inch on center

3.6 WEIGHTING OF SUBSTRATE BOARDS DURING INSTALLATION

A. All insulation and cover boards shall be set in low-rise foam adhesive.

B. Bead enhancement shall be installed at perimeters and corners.

C. Proper weighting shall be provided on entire board surface.

D. The photo below depicts unacceptable weighting methods.

E. The center of the boards and all four corners must be weighted down until foam sets.

3.7 ROOFING INSTALLATION, GENERAL

J. Install roofing system according to roofing system manufacturer's written instructions and applicable recommendations in ARMA/NRCA's "Quality Control Guidelines for the Application of Polymer Modified Bitumen Roofing".

K. Start installation of roofing in presence of manufacturer's technical personnel.

L. Coordinate installation of roofing system so insulation and other components of the roofing system are not left uncovered at the end of the workday or when rain is forecast.

1. Provide night tie-ins at end of each day's work. Water shedding night tie-ins are not permitted.
2. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system.

3. Remove and discard temporary seals before beginning work on adjoining roofing.

3.7 SBS MODIFIED BITUMINOUS MEMBRANE INSTALLATION

M. General: Modified bituminous base sheet and intermediate sheet (Aerated Sludge Holding Building Only) are to be installed as 1-ply sheets.

N. Install modified bituminous base sheet according to roofing manufacturer's written instructions, starting at low point of roofing system. Extend roofing membrane sheets over and terminate beyond cants, installing as follows:

1. Unroll roofing sheets and allow them to relax for minimum time required by manufacturer.

O. Install modified bituminous intermediate sheet (Aerated Sludge Holding Building Only) according to roofing manufacturer's written instructions, starting at low point of roofing system. Extend roofing membrane sheets over and terminate beyond cants, installing as follows:

1. Unroll roofing sheets and allow them to relax for minimum time required by manufacturer.

P. Install modified bituminous cap sheet according to roofing manufacturer's written instructions, starting at low point of roofing system. Extend roofing membrane sheets over and terminate beyond cants, installing as follows:

1. Unroll roofing sheets and allow them to relax for minimum time required by manufacturer.

Q. Laps: Accurately align roofing sheets, without stretching, and maintain uniform side and end laps. Stagger end laps. Stagger side laps between plies/layers. Completely bond and seal laps, leaving no voids.

1. Weld laps per the roofing material manufacturer's requirements.

R. Install roofing sheets so side and end laps do not buck water.

3.6 FLASHING AND STRIPPING INSTALLATION

A. Sequence base flashing installation together with field membrane to comply with manufacturer’s installation requirements.

B. Install base flashing over cant strips and other sloped and vertical surfaces, at roof edges, and at penetrations through roof, and secure to substrates according to roofing system manufacturer's written instructions and as follows:

1. Prime substrates with asphalt primer as required by roofing system manufacturer.
2. Flashing-Sheet Application: Apply per the roofing system manufacturer’ requirements.
3. Extend base flashing up walls a minimum of 8 inches above roofing membrane and minimum 4 inches onto field of roofing membrane.

C. Extend base flashing up and over the top of the parapet, securing it to the exterior face approximately 1’ below the edge of the wood nailers and onto the building façade material in accordance with manufacturers specifications. Extend minimum 4 inches (100 mm) onto field of roofing membrane.

1. Mechanically fasten top of base flashing securely at terminations and perimeter of roofing.
2. Seal top termination of base flashing as shown on drawings.

D. Install roofing cap-sheet stripping where metal flanges and edgings are set on roofing according to roofing system manufacturer's written instructions.

E. Roof Drains: Install and flash the new drain assembly at the Administration Building Garage, per the roofing material manufacturer’s warrantable details. The existing roof drains at the Aerated Sludge Holding Buildings and at the EQ-2 Building are to receive new retrofit drain inserts flashed per the roofing material manufacturer’s warrantable details.

F. Install stripping according to roofing system manufacturer's written instructions.

3.8 FIELD QUALITY CONTROL

G. Testing Agency: Owner may engage a qualified testing agency to inspect substrate conditions, surface preparation, membrane application, flashings, protection, and drainage components, and to furnish reports to Owner.

H. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.

1. Notify Consultant and Owner 48 hours in advance of date and time of inspection.

I. Roofing system will be considered defective if it does not pass tests and inspections.

1. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

3.9 PROTECTING AND CLEANING

J. Protect roofing system from damage and wear during remainder of construction period. When remaining construction does not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Consultant and Owner.

K. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

L. Clean and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

SECTION 07 5216
SBS MODIFIED BITUMINOUS MEMBRANE ROOFING

3.10 ROOFING INSTALLER'S WARRANTY

WHEREAS _____ of _____, herein called the "Roofing Installer," has performed roofing and associated work ("work") on the following project:

Owner: City of Canton Water Reclamation Facility

Address: 3530 Central Avenue Southeast, Canton, Ohio 44707

Building Names: Administration Building Garage Roof, EQ-2 Building Roof, and the Aerated Sludge Holding Building Roof.

Acceptance Date: _____

Warranty Period: Two Years

Expiration Date: _____

AND WHEREAS Roofing Installer has contracted (either directly with Owner or indirectly as a subcontractor) to warrant said work against leaks and faulty or defective materials and workmanship for designated Warranty Period,

NOW THEREFORE Roofing Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period he will, at his own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work and as are necessary to maintain said work in a watertight condition.

This Warranty is made subject to the following terms and conditions:

Specifically excluded from this Warranty are damages to work and other parts of the building, and to building contents, caused by:

1. lightning;
2. peak gust wind speed exceeding 90 MPH;
3. fire;
4. failure of roofing system substrate, including cracking, settlement, excessive deflection, deterioration, and decomposition;
5. faulty construction of parapet walls, copings, chimneys, skylights, vents, equipment supports, and other edge conditions and penetrations of the work;
6. vapor condensation on bottom of roofing; and
7. activity on roofing by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner.

When work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Roofing Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.

SECTION 07 5216
SBS MODIFIED BITUMINOUS MEMBRANE ROOFING

Roofing Installer is responsible for damage to work covered by this Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of work.

During Warranty Period, if Owner allows alteration of work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations, attachment of other work, and positioning of anything on roof, this Warranty shall become null and void on date of said alterations, but only to the extent said alterations affect work covered by this Warranty. If Owner engages Roofing Installer to perform said alterations, Warranty shall not become null and void unless Roofing Installer, before starting said work, shall have notified Owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate work, thereby reasonably justifying a limitation or termination of this Warranty.

During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a promenade, work deck, spray-cooled surface, flooded basin, or other use or service more severe than originally specified, this Warranty shall become null and void on date of said change, but only to the extent said change affects work covered by this Warranty.

Owner shall promptly notify Roofing Installer of observed, known, or suspected leaks, defects, or deterioration and shall afford reasonable opportunity for Roofing Installer to inspect work and to examine evidence of such leaks, defects, or deterioration.

This Warranty is recognized to be the only warranty of Roofing Installer on said work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of roofing failure. Specifically, this Warranty shall not operate to relieve Roofing Installer of responsibility for performance of original work according to requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

IN WITNESS THEREOF, this instrument has been duly executed this _____ day of _____, _____.

Authorized Signature: _____

Name: _____

Title: _____

END OF SECTION 07 5216

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Section 07 6200
SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Formed low-slope roof sheet metal fabrications.
2. Formed wall sheet metal fabrications.
3. Formed roof-drainage sheet metal fabrications.
4. Expansion joint covers.

B. Related Requirements:

1. Section 06 1053 – Miscellaneous Rough Carpentry.
2. Section 07 5216 – SBS Modified Bituminous Membrane Roofing.
3. Section 07 7200 – Roof Accessories.
4. Section 07 9200 – Joint Sealants.
5. Section 22 1423 – Storm Drain Piping Specialties

1.3 COORDINATION

A. Coordinate sheet metal flashing and trim layout and seams with sizes and locations of penetrations to be flashed, and joints and seams in adjacent materials.

B. Coordinate sheet metal flashing and trim installation with adjoining roofing and wall materials, joints, and seams to provide leak-proof, secure, and noncorrosive installation.

1.4 PREINSTALLATION MEETINGS

A. Pre-installation Conference: Conduct conference at Project site.

1. Review construction schedule. Verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Review special roof details, roof drainage, roof-penetration flashing, equipment curbs, and condition of other construction that affect sheet metal flashing and trim.
3. Review requirements for insurance and certificates if applicable.
4. Review sheet metal flashing observation and repair procedures after flashing installation.

Section 07 6200
SHEET METAL FLASHING AND TRIM

1.5 PERFORMANCE REQUIREMENTS

A. General: Sheet metal flashing and trim assemblies as indicated shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.

B. Fabricate and install roof perimeter and penetration flashings capable of resisting forces according to recommendations in FM Global Property Loss Prevention Data Sheet 1-49.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each manufactured product and accessory.

B. Shop Drawings: Show fabrication and installation layouts of sheet metal flashing and trim, including plans, elevations, expansion-joint locations, and keyed details.

1. Identification of material, thickness, weight, and finish for each item and location in Project.
2. Details for forming sheet metal flashing and trim, including profiles, shapes, seams, and dimensions.
3. Details for joining, supporting, and securing sheet metal flashing and trim, including layout of fasteners, cleats, clips, and other attachments. Include pattern of seams.
4. Details of termination points and assemblies, including fixed points.
5. Details of expansion joints and expansion-joint covers, including showing direction of expansion and contraction.
6. Details of edge conditions, including eaves and counter flashing as applicable.
7. Details of special conditions.
8. Details of connections to adjoining work.
9. Detail formed flashing and trim at a scale of not less than 1-1/2 inches per 12 inches.

C. Samples for Initial Selection: For each type of sheet metal flashing, trim, and accessory indicated with factory-applied color finishes involving color selection.

D. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below:

1. Sheet Metal Flashing: 12 inches long by actual width of unit, including finished seam and in required profile. Include fasteners, cleats, clips, closures, and other attachments.
2. Trim, Metal Closures, Expansion Joints, Joint Intersections, and Miscellaneous Fabrications: 12 inches long and in required profile. Include fasteners and other exposed accessories.

3. Install approximate 6 feet of each type on project (during each building application) for examination by the owner and consultant as the basis for acceptance, prior to proceeding with the remainder of the work.

E. Maintenance Data: For sheet metal flashing, trim, and accessories to include in maintenance manuals.

F. Warranty: Sample of special warranty.

1.7 INFORMATIONAL SUBMITTALS

A. Qualification Data: For fabricator.

B. Sample Warranty: For special warranty.

1.8 CLOSEOUT SUBMITTALS

A. Maintenance Data: For sheet metal flashing and trim, and its accessories, to include in maintenance manuals.

1.9 QUALITY ASSURANCE

A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.

B. For roof edge flashings that are SPRI ES-1 tested and FM Approvals approved, shop shall be listed as able to fabricate required details as tested and approved.

C. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for fabrication and installation.

1. Build mockup of typical roof edge, including fascia and coping, approximately 10 feet long, including supporting construction cleats, seams, attachments and accessories.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Consultant specifically approves such deviations in writing.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage. Store sheet metal flashing and trim materials away from uncured concrete and masonry.

B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to extent necessary for period of sheet metal flashing and trim installation.

1.11 WARRANTY

A. Special Warranty on Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.

B. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:

1. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
2. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
3. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

C. Finish Warranty Period: Minimum 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General: Sheet metal flashing and trim assemblies shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.

B. Sheet Metal Standard for Flashing and Trim: Comply with NRCA's "The NRCA Roofing Manual" and SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.

C. FM Approvals Listing: Manufacture and install copings and roof edge flashings that are listed in FM Approvals' "RoofNav" and approved for windstorm classification, Class 1-105. Identify materials with name of fabricator and design approved by FM Approvals.

D. Roof edge flashing shall be installed in accordance with FM Global Property Loss Prevention Data Sheet 1-49 *Perimeter Flashing*.

E. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.2 SHEET MATERIALS

A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.

B. Metallic-Coated Steel Sheet (for wall coping caps): Provide zinc-coated (galvanized) steel sheet according to ASTM A 653/A 653M, G90 (Z275) coating designation; pre-painted by coil-coating process to comply with ASTM A 755/A 755M.

1. Exposed Coil-Coated Finish:

a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
b. Gauge: 22.
c. Color: As selected by Owner.

C. Metallic-Coated Steel Sheet (for perimeter edge metal): Provide zinc-coated (galvanized) steel sheet according to ASTM A 653/A 653M, G90 (Z275) coating designation; pre-painted by coil-coating process to comply with ASTM A 755/A 755M.

1. Exposed Coil-Coated Finish:

a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
b. Gauge: 24.
c. Color: As selected by Owner.

D. Lead Sheet: 4-pound lead conforming to Federal Specification QQ-L-201f, Grade C.

1. Weight: Minimum four pound and as noted on Drawings

2.3 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal or manufactured item unless otherwise indicated.

B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal or manufactured item.

1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.

a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM sealing

washers under heads of exposed fasteners bearing on weather side of metal.

b. Blind Fasteners: High-strength stainless-steel rivets suitable for metal being fastened.

2. Fasteners for Zinc-Coated (Galvanized) Steel Sheet: Series 300 stainless steel or hot-dip galvanized steel according to ASTM A 153/A 153M or ASTM F 2329.

C. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, non-sag, nontoxic, non-staining tape 1/2-inch-wide and 1/8 inch thick.

D. Elastomeric Sealant: ASTM C 920, elastomeric polyurethane polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

E. Pitch Pan Filler: Manufacturer's premium two-part polyurethane filler.

2.4 FABRICATION, GENERAL

A. General: Custom fabricate sheet metal flashing and trim to comply with details shown and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required. Fabricate sheet metal flashing and trim in shop to greatest extent possible.

1. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
2. Obtain field measurements for accurate fit before shop fabrication.
3. Form sheet metal flashing and trim to fit substrates without excessive oil canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
4. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.

B. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

C. Expansion Provisions: Form and fasten metal for thermal expansion of exposed flashing and trim.

D. Sealant Joints: Where movable, non-expansion type joints are required, form metal to provide for proper installation of elastomeric sealant according to cited sheet metal standard.

E. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.

F. Fabricate cleats and attachment devices of sizes as recommended by cited sheet metal standard and by FM Global Property Loss Prevention Data Sheet 1-49 for application, but not less than thickness of metal being secured.

G. Seams: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use. Rivet joints where necessary for strength.

2.5 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

A. Roof Edge Flashing (Gravel Stop/Fascia): **All roof perimeter metals must meet ANSI/SPRI/FM 4435/ES-1.**

1. Joint Style: Butted with expansion space and 6-inch-wide, concealed backup plate.
2. Fabricate from the Following Material:

a. Galvanized Steel (fascia): Pre-finished Kynar 500 coated, 24-gauge minimum.

1) Color: to be selected by Owner. Submit color samples for approval.

b. Galvanized Steel Cleat: 22-gauge minimum.

3. Basis of Design: Soprema Modified Drip Edge.

B. Counterflashing: Fabricate from the following material:

1. Galvanized Steel: Kynar 500 Coated 24-gauge.

C. Flashing Receivers: Fabricate from the following material:

1. Galvanized Steel: Kynar 500 Coated 24-gauge.

D. Roof-Penetration Flashing (Cone Flashings): Fabricate from the following material:

1. Galvanized Steel: 24-gauge.

E. Roof Penetration Flashing (Pitch Pan and Rain Bonnet): Fabricate from the following Material:

1. Stainless Steel: 24-gauge, Type 304. Pans to be fully soldered and watertight.

F. Expansion Joint Cover:

1. Expand-O-Flash, style CF, curb to curb as manufactured by Johns Manville

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, substrate, and other conditions affecting performance of the Work.

1. Verify compliance with requirements for installation tolerances of substrates.
2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.

1. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
3. Space cleats as required by manufacturer. Attach each cleat with at least two fasteners. Bend tabs over fasteners.
4. Install exposed sheet metal flashing and trim with limited oil canning, and free of buckling and tool marks.
5. Torch cutting of sheet metal flashing and trim is not permitted.

B. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at maximum of 10 feet with no joints within 24 inches of corner or intersection.

C. Fasteners: Use fastener sizes that penetrate substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.

D. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.

3.3 ROOF FLASHING INSTALLATION

A. General: Install sheet metal flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, and cited sheet metal standard. Provide concealed fasteners where possible, and set units true

to line, levels, and slopes. Install work with laps, joints, and seams that are permanently watertight and weather resistant.

B. Roof Edge Flashing: Anchor to resist uplift and outward forces according to recommendations in FM Global Property Loss Prevention Data Sheet 1-49 for FM Approvals' listing for required windstorm classification.

C. Copings: Anchor to resist uplift and outward forces according to recommendations in FM Global Property Loss Prevention Data Sheet 1-49 for specified FM Approvals' listing for required windstorm classification.

D. Pipe or Post Counterflashing: Install counterflashing umbrella with close-fitting collar with top edge flared for elastomeric sealant, extending minimum of 4 inches over base flashing. Install stainless-steel draw band and tighten.

E. Counterflashing: Coordinate installation of counterflashing with installation of base flashing. Surface mount counterflashing or receivers and fit tightly to base flashing. Extend counterflashing 4 inches over base flashing. Lap counterflashing joints a minimum of 4 inches and bed with sealant. Apply continuous bead of sealant along top edge of counterflashing and over the installed fasteners. Secure in a waterproof manner as shown on Drawings.

F. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Install as shown on Drawings.

3.4 WALL FLASHING INSTALLATION

A. Wall counterflashing to be set in a new saw-cut reglet and secured with lead wedges placed not over 12” on center.

3.5 ERECTION TOLERANCES

A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.6 CLEANING AND PROTECTION

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

B. Clean off excess sealants.

C. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of sheet metal flashing and trim installation, remove unused materials and clean finished surfaces as recommended by sheet metal flashing and trim manufacturer. Maintain sheet metal flashing and trim in clean condition during construction.

D. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 07 6200

SECTION 07 7200
ROOF ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Pitch Pans
2. Wall Mounted Ladder Alteration

B. Related Sections:

1. Section 07 5216 – SBS Modified Bituminous Membrane Roofing
2. Section 07 6200 – Sheet Metal Flashing and Trim

1.3 COORDINATION

A. Coordinate layout and installation of roof accessories with roofing membrane and base flashing and interfacing and adjoining construction to provide a leak-proof, weathertight, secure, and noncorrosive installation.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of roof accessory.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General Performance: Roof accessories shall withstand exposure to weather and resist thermally induced movement without failure, rattling, leaking, or fastener disengagement due to defective manufacture, fabrication, installation, or other defects in construction.

SECTION 07 7200
ROOF ACCESSORIES

2.2 PITCH PANS

A. Sheet metal pitch pan with soldered or welded joints.

B. Materials:

1. Metal: 24-gauge Stainless Steel, Type 304, soldered corners.
2. Height: 4-inch minimum.
3. Size: As required to provided minimum 2-inches (or as required by roofing manufacturer) around all sides of penetration.
   a. Minimum 4-inch flange.
4. Finish: 2B
5. Pourable Sealer: Roofing manufacturer’s standard.

2.3 WALL MOUNTED LADDER ALTERATION

A. Materials:

1. Steel: Match existing, fully welded.
2. Paint: One coat of primer and two coats of exterior latex to match existing (safety yellow).

2.4 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items required by manufacturer for a complete installation.

B. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D 1187/D 1187M.

C. Elastomeric Sealant: ASTM C 920, elastomeric silicone polymer sealant as recommended by roof accessory manufacturer for installation indicated; low modulus; of type, grade, class, and use classifications required to seal joints and remain watertight.

D. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for expansion joints with limited movement.

E. Asphalt Roofing Cement: ASTM D 4586/D 4586M, asbestos free, of consistency required for application.

2.5 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

SECTION 07 7200
ROOF ACCESSORIES

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions, and other conditions affecting performance of the Work.

B. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.

C. Verify dimensions of roof openings for roof accessories.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install roof accessories according to manufacturer's written instructions.

1. Install roof accessories level; plumb; true to line and elevation; and without warping, jogs in alignment, buckling, or tool marks.
2. Anchor roof accessories securely in place so they are capable of resisting indicated loads.
3. Use fasteners, separators, sealants, and other miscellaneous items as required to complete installation of roof accessories and fit them to substrates.
4. Install roof accessories to resist exposure to weather without failing, rattling, leaking, or loosening of fasteners and seals.

B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.
1. Bed flanges in thick coat of asphalt roofing cement where required by manufacturers of roof accessories for waterproof performance.

C. Pitch Pan Installation:

1. Clean and prime existing pipe(s) or wire(s) as required by roofing manufacturer.
2. Prime bottom and top of pitch pan flanges and set flange in approved roofing cement.
3. Strip in flange in accordance with manufacturer’s requirements and apply approved sealant.

D. Wall Mounted Ladder Alteration

1. Remove bracket (cut) attaching ladder to top of parapet.
2. Fabricate new bracket to match existing and to accommodate new parapet height.
3. New bracket attachment to be fully welded and painted to match existing ladder.

3.3 REPAIR AND CLEANING

A. Clean exposed surfaces according to manufacturer's written instructions.

B. Clean off excess sealants.

C. Replace roof accessories that have been damaged or that cannot be successfully repaired by finish touchup or similar minor repair procedures.

END OF SECTION 07 7200

SECTION 07 9200
JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Sheet metal flashing sealants
2. Metal to masonry sealants

B. Related Sections:

1. Section 07 5216 – SBS Modified Bituminous Membrane Roofing
2. Section 07 6200 – Sheet Metal Flashing and Trim

1.3 SUBMITTALS

A. Product Data: For each joint-sealant product indicated.

B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

C. Sealant, Waterproofing, and Restoration Institute (SWRI) Validation Certificate: For each sealant specified to be validated by SWRI's Sealant Validation Program.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.

B. Source Limitations: Obtain each kind of joint sealant from single source from single manufacturer.

C. Owner shall require improper work to be removed and replace at no additional cost.

1.5 PROJECT CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

SECTION 07 9200
JOINT SEALANTS

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

2.2 SILICONE JOINT SEALANTS

A. Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 50, for Use NT.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Silicone

1) Dow Corning Corporation; 795
2) Sika Corporation, Construction Products Division; SikaSil-C995
3) Consultant Approved Equal

b. High Temperature Sealant;

1) TremPro 644 HT by Tremco, Inc.
2) Dow Corning® 736 Heat Resistant Sealant
3) Consultant Approved Equal

2.3 JOINT SEALANT BACKING

A. General: Provide sealant backings of material that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Cylindrical Sealant Backings: ASTM C 1330, Type B (bicellular material with a surface skin), as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.4 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances

capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

D. Butyl sealant tape as approved by manufacturer.

E. Cloth: 100 percent cotton (lint free)

F. Brush: Natural fiber bristles

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.

2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:

a. Concrete
b. Masonry

3. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:

a. Metal

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior

experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. For Roof Drain Joints: Refer to Specification Section 22 14 23 “Storm Drainage Pipe Specialties.”

D. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

E. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

F. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

G. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint profile per Figure 8A in ASTM C 1193, unless otherwise indicated.
4. Provide flush joint profile where indicated per Figure 8B in ASTM C 1193.

5. Provide recessed joint configuration of recess depth and at locations indicated per Figure 8C in ASTM C 1193.

    a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

3.4 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

END OF SECTION 07 9200

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SECTION 22 1423
STORM DRAIN PIPING SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1. Division 01 - General Requirement Sections.
2. Section 03 4100 – Structural Concrete Deck
3. Section O5 3100 – Steel Decking
4. Section 07 5216 – Modified Bituminous Roofing
5. Section 07 6200 – Sheet Metal Flashing and Trim

B. The Subcontractors shall refer to the General Requirements of the Specifications, General Conditions, Special Conditions and Temporary Services that also pertain to work in this Section.

C. All local, cities, state or other codes required for work in this Section shall apply.

1.2 SUMMARY

A. Section Includes:

1. Replace the existing drain bowl and related hardware at the Oil Storage Building (canopy roof) and the Post Aeration Facility (drain in steel roof deck area). Contractor shall remove and replace the existing drain assembly, the vertical pipe below the roof deck, and elbows and tie directly into the horizontal leaders. Test the drains for flow prior to and following the new roof installation.
2. At all other drain locations, install aluminum retrofit drain inserts.
3. Miscellaneous storm drainage piping specialties
4. Flashing materials

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

1.4 QUALITY ASSURANCE

A. Drainage piping specialties shall bear label, stamp, or other markings of specified testing agency.

B. Products used in this work shall be produced by manufacturers regularly engaged in the manufacture of similar items and with a history of successful production acceptable to the consultant.

C. Qualifications of Installers: For repair of roof drain bowl to drain pipe plumbing seal a plumbing contractor shall be licensed by the State of Ohio. A plumbing contractor is not required to clean and reset existing clamping rings and strainers.

D. In acceptance or rejection of the work of this section, the consultant will make no allowance for lack of skill on the part of the workmen.

1.5 PRODUCT HANDLING

A. Use all means to protect the materials of this section before, during, and after installation, and to protect the work and materials of other trades.

B. Deliver only new materials to the job site in original, unopened containers. Materials to be stored in such a manner as to be protected from rain, snow, or inclement weather. When storing materials on the roof, do not over stress the deck.

C. In the event of damage, immediately make all repairs and replacements to the approval of the consultant and at no additional cost to the owner.

1.6 CLEANING OF DRAINS

A. Contractor shall ensure all existing roof drain lines are tested to ensure they are clear, working, and flowing properly prior to removal of the existing roof systems.

B. If roof drains are clogged, contractor shall notify Owner and Consultant.

1. Clogged roof drain lines shall be cleaned to the point of the nearest clean-out.

2. Provide adequate equipment and experienced manpower to mechanically clean all roof drains.

3. Each existing drain is to be checked and verified to be free, clear and draining properly. Work is limited to the drains within all areas in the field of new roofing.

4. Contractor to survey all roof drains prior to roofing construction and provide a report to the Owner of all roof drains that are plugged or draining inefficiently.

C. The Contractor shall bring any drain with an un-clearable blockage to the Owner and Consultant's attention.

D. Prior to the start of work, the Contractor shall submit a plan for accomplishing the work.

E. The method to be used for approval by the Owner and Consultant. The Owner shall not be held responsible for any delay to the roofing contractor as a result of additional plumbing work that may be required.

1.7 STANDARDS

A. All plumbing work shall be installed in strict accordance with all applicable State and local codes and regulations.

PART 2 - PRODUCTS

2.1 New Cast Iron Drain Assembly (Oil Storage Building canopy roof and the Post Aeration Facility drain in steel deck area)

A. Drain connections as required and as necessary to comply with applicable State and local codes and regulations.

B. Manufacturers: Subject to compliance with requirements, provide manufacturer's name; product name or designation or comparable product by one of the following:

1. Josam Company
2. Marathon Roofing Products
3. Smith, Jay R. Mfg. Co.
4. Wade
5. Zurn Plumbing Products Group; Specification Drainage Operation

a. Regardless of manufacturer, include clamping collar, low-silhouette cast iron dome strainer, and associated hardware.

C. Aluminum, Retrofit, Roof Drains:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Hercules RetroDrain by OMG Roofing Products

b. Consultant Approved equal

c. Body Material: Aluminum

d. Dimension of Body: Match existing interior vertical drain leader diameter

e. Dome Material: Aluminum ***vandal resistant***

2.2 MISCELLANEOUS PRODUCTS

A. Refer to 07 62 00 “Sheet Metal Flashing and Trim” for lead flashing at drains.

B. Refer to 07 92 00 “Joint Sealants” for roof drain joint sealant.

C. Plastic rings and strainer domes shall not be approved.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install roof drain parts per the manufacturer’s instructions.

C. Contractor shall familiarize themselves with the work required and notify owner of any major disruptions or issues that may be encountered.

1. All drains shall be flashed per the roofing material manufacturer's written installation instructions. Roofing materials are specified in Division 07 Sections.

3.2 FLASHING INSTALLATION

A. Secure flashing into sleeve and specialty clamping ring or device.

B. Clamping rings shall be installed on a daily basis.

1. Install one full tube of water cut-off sealant at each drain bowl/clamping ring installation.

C. Fabricate and install flashing and pans, sumps, and other drainage shapes.

3.3 FLASHING INSTALLATION (FOR RETROFIT DRAIN)

A. Prime flange with asphalt primer on top and bottom.

B. Set flange on roof in solid coating of bituminous cement.

C. Secure flashing into sleeve and specialty clamping ring or device.

D. Provide membrane flashings as noted on Drawings, or as recommended by the membrane system manufacturer for the installed Retrofit Drain.

3.4 PROTECTION

A. Protect drains during remainder of construction period to avoid clogging with dirt or debris and to prevent damage from traffic or construction work.

B. Place plugs in ends of uncompleted piping at end of each day or when work stops.

C. Perform a water test of the drains prior to reroofing to verify that the lines are not blocked. If any blockage is found, report to Owner. Perform a second water test following the completion of the reroofing to verify that the drains are free flowing without any blockage caused by or during construction.

3.5 INTENT OF SPECIFICATIONS

A. It is the intent of these specifications to call out the performance criteria desired for the roof storm drainage system on this project.

1. It is the intent of these Specifications that all drains be assured to be free and in operation prior to and immediately after the installation of new roofing.

B. It is the Contractor's responsibility to make all measurements and supply materials for all areas on the project as specified, including all changes made in writing prior to the bid.

C. The Contractor shall also be responsible for providing approved drawings and details meeting the manufacturer's requirements so that a warranty will be issued upon completion.

D. This specification shall cover all roof areas and related items necessary to complete the roofing project and must accommodate any current detail changes or deviations by the manufacturer necessary to ensure that the Warranty will be issued as specified upon completion.

E. Contractors shall employ all reasonable methods to clean the drains and remove any blockage short of any dismantling of interior plumbing. Any drain that cannot be unplugged by the contractor shall be charted on the shop drawings and noted by the Consultant.

END OF SECTION 22 1423

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2019 CANTON WATER RECLAMATION FACILITY ROOF REPLACEMENTS
PROPOSAL PAGE

We (I), hereby propose to furnish the following article(s) and/or service(s) at the price(s) and terms stated subject to all instructions, conditions, specifications, and all attachments hereto. We (I) have read all attachments including the specifications and fully understand what is required.

BID ITEM	SPEC ITEM	DESCRIPTION	QTY	UNIT	UNIT PRICE LABOR	UNIT PRICE MATERIAL	TOTAL UNIT PRICE	ITEM TOTAL
ROOFING								
1	ALL	Perform roof replacement and miscellaneous work as outlined in specification manual and as shown on drawings.	1	Lump Sum				
2	01 2100	Unforeseen conditions, include $15,000 in base bid.	1	Lump Sum	n/a	n/a	$15,000.00	$15,000.00
3	01 2200	Concrete deck repair.	200	S.F.				
4	01 2200	Rusted steel deck preparation and painting.	200	S.F.				
5	01 2200	Slightly compromised steel deck overlay.	50	S.F.				
6	01 2200	Deteriorated steel deck replacement. Will be deducted from contract total if Alternate 1 is used.	200	S.F.				
7	01 2200	Wood blocking replacement.	200	B.F.				
8	01 2300	100% steel roof deck replacement (Post Aeration Facility Alternate)	1	Lump Sum				
		PROJECT TOTAL						

S.F. - Square Foot L.F. - Linear Foot B.F. - Board Foot

Bid Price in Figures _____ **FROM:** _____

_____

Bid Price in Words _____ _____

For informational purposes only. Total unit costs will govern.

2019 CANTON WATER RECLAMATION FACILITY ROOF REPLACEMENTS
PROPOSAL PAGE

Report of

Roofing Material Asbestos Survey for

Canton Water Reclamation Facility
3530 Center Avenue Southeast
Canton, Ohio 44707

Prepared for

City of Canton
Water Reclamation Facility
3530 Central Avenue Southeast
Canton, Ohio 44707
(330) 438-4805

Prepared by

Professional Service Industries, Inc.
5555 Canal Road
Cleveland, Ohio 44125
216-447-1335

April 8, 2019

PSI Project Number 0232742

April 8, 2017

City of Canton
Canton Water Reclamation Facility
3530 Center Avenue Southeast
Canton, Ohio 44707

Attention: Mr. Doug Dickerhoff
Maintenance Chief

Subject: Roofing Material Asbestos Survey Report
Emergency Sludge Holding, Oil Storage Building, Post Aeration Facilities, Pre-Aeration Building, and RAS Building
3530 Center Avenue Southeast
Canton, Ohio 44707
PSI Project Number 0232742

Dear Mr. Dickerhoff,

Professional Service Industries, Inc. (PSI) performed the Roofing Material Asbestos Survey of the above-referenced property that you requested. PSI provided its services in general accordance with our agreement.

PSI thanks you for choosing us as your consultant for this project. Please contact us at 216-447-1335 if you have any questions or we may be of further service.

Respectfully Submitted,

PROFESSIONAL SERVICE INDUSTRIES, INC.

Martin Kurkul
Asbestos Hazard Evaluation Specialist

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TABLE 1 – SUSPECT ACM

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APPENDIX B – SAMPLE LOCATION PLAN
APPENDIX C – INSPECTOR & LABORATORY CERTIFICATIONS

1 EXECUTIVE SUMMARY

Professional Service Industries, Inc. (PSI) was retained by the City of Canton to conduct a survey for asbestos-containing materials (ACM) of roofing systems at the Emergency Sludge Holding, Oil Storage Building, Post Aeration Facilities, Pre-Aeration Building, and RAS Building located at the Canton Water Reclamation Facility at 3530 Center Avenue Southeast in Canton, Ohio.

The purpose of the investigation and sampling was to provide general information regarding the presence, condition, and estimated quantity of accessible asbestos containing roofing materials located at the subject facilities prior to planned roof replacement.

The asbestos inspection and sampling was conducted on March 13, 2019. A total of 22 samples were collected from 5 homogenous areas (HA) of suspect roofing materials. The samples were analyzed by polarized light microscopy (PLM).

The following ACM (>1% asbestos) were identified during this investigation:

Building	**Material Description**
Emergency Sludge Holding	Roof Materials
Emergency Sludge Holding	Flashing Materials
Pre-Aeration Building	Roof Materials
Pre-Aeration Building	Flashing Materials

This summary does not contain all the information presented in the full report. The report should be read in its entirety to obtain a more complete understanding of the information provided and to aid in any decisions made or actions taken based on this information.

2 INTRODUCTION

2.1 SCOPE OF SERVICES

Professional Service Industries, Inc. (PSI) was retained by the City of Canton to conduct a survey for asbestos-containing materials (ACM) of roofing systems at five buildings located within the Canton Water Reclamation Facility at 3530 Center Avenue Southeast in Canton, Ohio.

The scope of services for this project consisted of conducting a roofing material asbestos survey; including inspection, sampling and analysis of accessible and exposed roofing materials scheduled for replacement. The buildings included:

- Emergency Sludge Holding
- Oil Storage Building
- Post Aeration Facilities
- Pre-Aeration Building
- RAS Building

The investigation included a visual inspection of the subject areas, sample collection, PLM sample analysis, quantification of ACM, report preparation and report review.

2.2 PURPOSE

The purpose of this survey was to provide general information for the subject properties regarding the presence, condition, and quantity of accessible and exposed roofing and roof mounted equipment materials that may contain asbestos.

2.3 AUTHORIZATION

Authorization to perform this evaluation and analysis was in the form of Purchase Order No. 2019-0001886, dated February 7, 2019, from the City of Canton, Ohio to Professional Service Industries Inc., based on PSI Proposal No. 0232-260089.

2.4 LIMITATIONS

This asbestos survey was intended to meet the requirements of the National Emission Standards for Hazardous Air Pollutants (NESHAP) for demolition or renovation. The survey included a thorough inspection of all roofing materials. Although PSI made an attempt to identify all areas of suspect roofing materials, there may exist conditions which were unable to be identified within the scope of this survey.

2.5 WARRANTY

The field and laboratory results reported herein are considered sufficient in detail and scope to determine the presence of accessible and exposed suspect roofing ACM for the building structures. PSI warrants that the findings contained herein have been prepared in general accordance with accepted professional practices at the time of its preparation as applied by professionals in the community. Changes in the state of the art or in applicable regulations cannot be anticipated and have not been addressed in this report.

The survey and analytical methods have been used to provide the client with information regarding the presence of accessible and/or exposed suspect ACM existing at the time of the inspection. Test results are valid only for the materials tested. There is a distinct possibility that conditions may exist which could not be identified within the scope of the study or which were not apparent during the site visit. This inspection covered only those areas that were exposed and/or physically accessible to the Inspector. The study is also limited to the information available from the client at the time it was conducted.

As directed by the client, PSI did not provide any service to investigate or detect the presence of moisture, mold or other biological contaminants in or around any structure, or any service that was designed or intended to prevent or lower the risk of the occurrence of the amplification of the same. Client acknowledges that mold is ubiquitous to the environment with mold amplification occurring when building materials are impacted by moisture. Client further acknowledges that site conditions are outside of PSI's control, and that mold amplification will likely occur, or continue to occur, in the presence of moisture. As such, PSI cannot and shall not be held responsible for the occurrence or recurrence of mold amplification.

No other warrantees are implied or expressed.

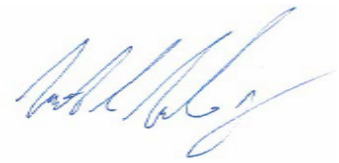
3 GENERAL BUILDING AND SURVEY INFORMATION

3.1 BUILDING INFORMATION

Subject Property:	Canton Water Reclamation Facility 3530 Center Avenue Southeast Canton, Ohio.
Emergency Sludge Storage	
Roof Construction:	Gravel Surface Coal Tar Built-Up
Estimated Survey Area:	430 square feet
Oil Storage Building	
Roof Construction:	Modified Bitumen
Estimated Survey Area:	1,050 square feet
Post Aeration Facility	
Roof Construction:	Gravel Surfaced Modified Asphalt Built-Up
Estimated Survey Area:	4,060 square feet
Pre-Aeration Building	
Roof Construction:	Gravel Surface Coal Tar Built-Up
Estimated Survey Area:	430 square feet
RAS Building	
Roof Construction:	Modified Bitumen
Estimated Survey Area:	3,040 square feet

3.2 INSPECTION INFORMATION

Name of PSI Inspector:



Martin Kurkul
State License # ES36332

Date of Inspection: March 13, 2019

4 METHODOLOGY

Inspection and sampling procedures were performed in general accordance with the guidelines published by the United States Environmental Protection Agency (US-EPA). The inspection and survey described below was performed by a US-EPA accredited and State of Ohio licensed inspector.

4.1 VISUAL INSPECTION PROCEDURES

An initial walkthrough of the roofs was conducted to determine the presence of suspect roofing materials and suspect materials associated with the roof mounted equipment that were accessible and exposed. Although PSI made an attempt to identify all areas of ACM, there may exist conditions which were unable to be identified within the scope of this survey.

Materials which were similar in color, texture, general appearance and which appear to have been installed at the same time were grouped in homogeneous sampling areas. Such materials are termed "homogeneous materials" by the US-EPA. During this walkthrough, the approximate locations of these homogeneous materials were noted.

The inspector evaluated each suspect ACM to determine whether the material was friable or non-friable by touching the material, where practical. A friable material is defined as any material able to be crushed, crumbled, pulverized or reduced to a powder by hand pressure when dry.

Each material was further assessed for overall condition. Conditions were rated as good, damaged or significantly damaged. PSI's inspector also identified the US-EPA NESHAP classification of the material: Regulated asbestos containing material (RACM), Category I non-friable ACM, or Category II non-friable ACM based on the materials current condition.

PSI's inspector shall provide estimated quantities of the materials positively identified as ACM based on materials that were accessible and exposed.

4.2 ASBESTOS SAMPLING PROCEDURES

Following the walkthrough, the inspector collected samples of suspect materials. US-EPA guidelines were used to determine the sampling protocol. Sample locations were chosen to be representative of the homogeneous sampling area. While an effort was made to collect samples randomly, samples were taken preferentially from areas which were the least visible to minimize disturbance of the material.

Each sample location was sprayed with amended water and was kept wet during the entire sampling process. Samples were collected by coring through the material from the surface down to the base substrate. All layers of the material were extracted and placed into a sample container for transport to the laboratory. Sample containers were sealed and labeled with a unique sample identification number.

In accordance with the agreement between PSI and the client, roofing materials were sampled by coring through the roof system to the base deck material. PSI applied a temporary patch to the roof core location following sample extraction. Due to the destructive nature of roof sampling however, PSI does not warrant a water tight condition following sample extraction, nor can PSI guarantee the continuance of any roof system warrantees by other entities.

4.3 ASBESTOS ANALYSIS PROCEDURES

All samples were analyzed by PSI located at 850 Poplar Street in Pittsburgh, Pennsylvania. The PSI Pittsburgh Asbestos Laboratory is a National Voluntary Laboratory Accreditation Program (NVLAP) Accredited (#101350-0) and an American Industrial Hygiene Association (AIHA) Accredited (#8222) Laboratory. A copy of the Laboratory's Accreditation Certificate is included in the Appendix.

The samples were analyzed for asbestos on a "positive-stop" basis by PLM in accordance with the "EPA Method for the Determination of Asbestos in Bulk Building Materials" (EPA/600/R-93/116 July 1993). Analysis was performed by using bulk samples for visual observation and slide preparation(s) for microscopic examination and identification. The samples were mounted on slides and then analyzed for asbestos (chrysotile, amosite, crocidolite, anthophyllite, actinolite/tremolite), and fibrous non-asbestos constituents (mineral wool, fiberglass, cellulose, etc.). Asbestos was identified by refractive indices, morphology, color, pleochroism, birefringence, extinction characteristics, and signs of elongation. The same characteristics were used to identify the non-asbestos constituents.

The microscopist visually estimated relative amounts of each constituent by determining the volume of each constituent in proportion to the total volume of the sample, using a stereoscope.

The US-EPA method allows samples which are visually determined to have 10% or less asbestos to be quantified using a Point Count procedure. An ocular reticule (cross hair or point array) is used to visually superimpose a point or points on the microscope field of view. A total of 400 points superimposed on either asbestos fibers or non-asbestos matrix material must be counted over at least eight different preparations of representative subsamples. If an asbestos fiber and matrix particle overlap so that a point is superimposed on their visual intersection, a point is scored for both categories. Point counting provides a quantification of the area percent asbestos. Point counted results supersede the results of the visual estimation.

It should be noted that some ACM might not be accurately identified or quantified by PLM. As an example, the original fabrication of vinyl floor tiles routinely involved milling of asbestos fibers to extremely small sizes. As a result, these fibers may go undetected under the standard PLM method. Transmission Electron Microscopy (TEM) is recommended for a more definitive analysis of these materials.

4.4.1 Laboratory Quality Control Program

The PSI Laboratory in Pittsburgh, Pennsylvania, maintains an in-house quality control program. This program involves blind reanalysis of ten percent of all samples, precision and accuracy controls, and use of standard bulk reference materials. In addition, the PSI Laboratory is accredited by NVLAP, which also has quality control procedures inherent in its program.

5 FINDINGS

5.1 ASBESTOS RESULTS

A total of 22 samples were collected from 5 homogenous areas (HA) of suspect roofing materials during the survey. The following ACM (>1% asbestos) were identified during this investigation:

Building	Material Description	Asbestos Content
Emergency Sludge Storage	Roof Materials	5% Chrysotile
Emergency Sludge Storage	Flashing Materials	5% Chrysotile
Pre-Aeration Building	Roof Materials	5% Chrysotile
Pre-Aeration Building	Flashing Materials	3% Chrysotile

The Report of Bulk Sample Analysis for Asbestos with chain of custody, sample location drawing and certifications are included in the Appendices.

The attached table provides the suspect ACM observed. The table lists the material sample ID#, material description, general location and laboratory results. For each confirmed ACM material; the condition, friability, NESHAP category, and estimated quantity are provided.

5.1.1 NON-SUSPECT MATERIALS

The following materials were observed but are considered ‘non-suspect’ ACM due to their composition and were not sampled.

- Stone and masonry building components

5.1.2 QUANTIFICATION

Quantification of suspect ACM was conducted using visual estimation by a licensed asbestos inspector. This visual estimation was performed in accordance with generally accepted practices in the asbestos industry based on materials that were accessible and exposed. These values are sufficiently accurate for the purpose of documenting the presence of asbestos within its space for the purpose of identifying abatement control conditions or for general policy considerations. Actual quantities may differ between visually estimated values and physical measurements. If a licensed asbestos abatement contractor is engaged to remove asbestos containing materials, the abatement contractor is responsible for verifying reported quantities of ACM.

5.2 REGULATORY GUIDELINES:

5.2.1 ACM DEFINITION

The US-EPA and OSHA consider a material to be asbestos-containing if at least one sample from the homogeneous area shows asbestos in an amount greater than 1%.

5.2.2 FRIABLE ACM DEFINITION

The US-EPA defines friable ACM as any ACM that, when dry, can be crumbled, pulverized or reduced to powder by hand pressure.

5.2.3 POINT COUNT QUANTIFICATION

If a material is found to contain 10% or less asbestos via visual estimation, it can be treated as non-asbestos-containing per US-EPA Regulations only if verified to contain 1% or less asbestos by the Point Count Quantification Procedure. If not point counted, a sample in which asbestos was visually detected and estimated (including trace to ≤1%) must be assumed to be greater than 1% and treated as ACM. Please refer to the laboratory analyses for a more detailed description of the microscopic analysis of individual samples.

5.2.4 US-EPA NESHAP CATEGORIES –

US-EPA classifies ACM into three categories:

Category I Nonfriable (Cat I NF) includes asbestos-containing packings, gaskets, resilient floor covering and asphalt roofing products.

Category II Nonfriable (Cat II NF) includes any ACM, excluding Category I NF, which cannot be crumbled, pulverized or reduced to powder by hand pressure when dry.

Regulated ACM (RACM) – means any friable ACM, including:

- Cat I NF ACM that has become friable
- Cat I NF ACM that will be or has been subjected to sanding, grinding, cutting or abrading
- Cat II NF ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation activities.

5.2.5 OSHA

OSHA requires all suspect materials to be analyzed by layer, even materials such as drywall/joint compound, which may sometimes be composited per the US-EPA. If any layer contains asbestos in a concentration >1%, the material is considered an ACM.

OSHA has a classification system (I thru IV) for ACM depending on the type of material and the disturbance. Briefly, *'Class I'* work is defined as activities involving the removal of ACM or presumed ACM (PACM) that is thermal system insulation (TSI) and surfacing materials. *'Class II'* activities involve removal of ACM/PACM other than TSI or surfacing material. *'Class III'* work includes repair and maintenance operations which are likely to disturb ACM/PACM, and *'Class IV'* work includes maintenance and custodial activities during which employees contact but do not disturb ACM/PACM.

Materials where asbestos is detected, but where point counting is conducted and determined that the concentration is ≤1% asbestos, are not considered to be ACM by OSHA. However, these materials are considered unclassified asbestos work per OSHA. Some OSHA work control practices and prohibitions will still apply, with the extent depending on whether the worker's exposure to airborne asbestos exceeds the OSHA PEL.

Additional details of the OSHA asbestos regulations related to the construction industry can be found in 29 CFR part 1926.1101.

5.2.6 OHIO EPA (OEPA)

The OEPA regulations are consistent with the US-EPA's NESHAP standards with the exception of the following rule changes:

- Friable ACM: Any Cat I or Cat II ACM that becomes damaged from either deterioration or attempts at removal or abatement resulting in small fragments the size of four square inches or less shall be considered friable or RACM.
- Disposal: OEPA requires that all Cat II materials to be disposed of at a regulated asbestos landfill.

5.2.7 OHIO DEPARTMENT OF HEALTH (ODH)

ODH governs asbestos certification and licensure in Ohio under Chapter 3710 of the Ohio Revised Code and Chapter 3701-34 of the Ohio Administrative Code.

An Asbestos Hazard Abatement Activity is defined by ODH as any activity involving the removal, renovation, enclosure, repair or encapsulation of reasonably related friable ACM in an amount greater than fifty linear feet or fifty square feet. Asbestos Hazard Abatement Activities require:

- Abatement activities be conducted by a licensed Asbestos Hazard Abatement Contractor using licensed Asbestos Hazard Abatement Workers
- A written Asbestos Hazard Abatement Project Agreement

- A written Prior Notification of Asbestos Hazard Abatement form be submitted to ODH 10 business days prior to the start of any asbestos hazard abatement project

6 CONCLUSIONS & RECOMMENDATIONS

6.1 CONCLUSIONS

Confirmed Asbestos Containing Category I materials were found at the subject site.

The identified ACM was observed to be in fair condition at the time of the survey.

6.2 RECOMMENDATIONS

The Ohio EPA regulations allows Category I non-friable and Category II non-friable ACM to remain in place during demolition, unless that material becomes damaged from either deterioration or attempts at removal or abatement resulting in small fragments the size of four square inches or less. If the material becomes deteriorated, the material must be treated as RACM.

If Cat I non-friable ACM is not removed prior to demolition, the generated debris may be disposed of as construction and demolition waste but cannot be recycled or used as clean-fill.

The contractor must also comply with 40 Code of Federal Regulations (C.F.R.) Part. 61, Subpart M, App. A., which states that asbestos-containing roofing materials are not to be sanded, ground, cut or abraded. The contractor must follow all of Appendix A, 40 C.F.R. Part 61, Subpart M (C), focusing on cutting versus slicing roofing material. The contractor must utilize manual methods (using equipment such as axes, hatchets, or knives, spud bars, pry bars, and shovels, but not saws). This is because these methods do not destroy the structural matrix or integrity of the material such that the material is crumbled, pulverized or reduced to powder. As a result, it is EPA's interpretation that when such methods are used, assuming the roof material is not friable; the removal operation is not subject to the regulation; however, some OSHA regulations will still apply based on the employee's airborne exposure

Any suspect materials not identified in this survey report that area discovered during construction activities should be treated as an assumed ACM unless the material is identified as non-ACM by an accredited Asbestos Inspector.

TABLES

TABLE 1 – SUSPECT ACM

ID#	General Location	Material Description	F / NF [1]	Cond.[2]	Asbestos Content[3]	EPA NESHAP Cat [4]	Estimated Quantity
C-1	Post Aeration Facilities	Bitumen Built-Up	-	-	NAD	-	-
		Asphalt, Black	-	-	NAD	-	-
		No Vapor Barrier	-	-	NAD	-	-
C-2	Post Aeration Facilities	Bitumen Built-Up	-	-	NAD	-	-
		Asphalt, Black	-	-	NAD	-	-
		No Vapor Barrier	-	-	NAD	-	-
C-3	Post Aeration Facilities	Bitumen Built-Up	-	-	NAD	-	-
		Asphalt, Black	-	-	NAD	-	-
		No Vapor Barrier	-	-	NAD	-	-
C-4	Pre-Aeration Building	Coal Tar Built-Up	F	Fair	5% CH	CAT I	430 sf
		Coal Tar, Black	-	-	NAD		
		No Vapor Barrier			NAD		
C-5	Pre-Aeration Building	Coal Tar Built-Up	F	Fair	5% CH	CAT I	430 sf
		Coal Tar, Black	-	-	NAD		
		No Vapor Barrier	-	-	NAD		
C-6	Emergency Sludge Storage	Coal Tar Built-Up	F	Fair	5% CH	CAT I	430 sf
		Coal Tar, Black	-	-	NAD		
		No Vapor Barrier	-	-	NAD		
C-7	Emergency Sludge Storage	Coal Tar Built-Up	-	-	NAD	CAT I*	430 sf
		Coal Tar, Black	-	-	NAD		
		No Vapor Barrier	-	-	NAD		
C-8	Oil Storage Building	Granulated Modified Bitumen	-	-	NAD	-	-
		Asphalt, Black	-	-	NAD		
		No Vapor Barrier	-	-	NAD		
C-9	Oil Storage Building	Granulated Modified Bitumen	-	-	NAD	-	-
		Asphalt, Black	-	-	NAD	-	-
		No Vapor Barrier	-	-	NAD	-	-
C-10	Oil Storage Building	Granulated Modified Bitumen	-	-	NAD	-	-
		Asphalt, Black	-	-	NAD	-	-
		No Vapor Barrier	-	-	NAD	-	-

C-11	RAS Building	Granulated Modified Bitumen	-	-	NAD	-	-
		Asphalt, Black	-	-	NAD	-	-
		No Vapor Barrier	-	-	NAD	-	-
C-12	RAS Building	Granulated Modified Bitumen	-	-	NAD	-	-
		Asphalt, Black	-	-	NAD	-	-
		No Vapor Barrier	-	-	NAD	-	-
F-1	Post Aeration Facilities	Granulated Modified Bitumen	-	-	NAD	-	-
		Asphalt, Black	-	-	NAD	-	-
F-2	Post Aeration Facilities	Granulated Modified Bitumen	-	-	NAD	-	-
		Asphalt, Black	-	-	NAD	-	-
F-3	Pre-Aeration Building	Roll Flashing	F	Fair	3% CH	CAT I	80 sf
		Asphalt, Black	-	-	NAD		
F-4	Pre-Aeration Building	Roll Flashing	F	Fair	3% CH	CAT I	80 sf
		Asphalt, Black	-	-	NAD		
F-5	Emergency Sludge Storage	Roll Flashing	F	Fair	3% CH	CAT I	60 sf
		Asphalt, Black	-	-	NAD		
F-6	Oil Storage Building	Granulated Modified Bitumen	-	-	NAD	-	-
		Asphalt, Black	-	-	NAD	-	-
F-7	Oil Storage Building	Granulated Modified Bitumen	-	-	NAD	-	-
		Asphalt, Black	-	-	NAD	-	-
F-8	Oil Storage Building	Granulated Modified Bitumen	-	-	NAD	-	-
		Asphalt, Black	-	-	NAD	-	-
F-9	RAS Building	Granulated Modified Bitumen	-	-	NAD	-	-
		Asphalt, Black	-	-	NAD	-	-
F-10	RAS Building	Granulated Modified Bitumen	-	-	NAD	-	-
		Asphalt, Black	-	-	NAD	-	-

*Homogenous Area (HA) same as corresponding sample with 5% asbestos content

1 F = Friable
NF = Non-friable
2 Cond. = Condition of Materials
3 NAD = No Asbestos Detected
4 NESHAP Category
RACM = Regulated ACM
Cat I = Category I Non-Friable ACM
Cat II = Category II Non-Friable ACM

APPENDIX A – REPORT OF BULK SAMPLE ANALYSIS FOR ASBESTOS

psi Information To Build On
Engineering • Consulting • Testing

REPORT OF BULK SAMPLE ANALYSIS FOR ASBESTOS

TESTED FOR: PSI, Inc
5555 Canal Road
Cleveland, OH 44125
Attn: Martin Kurkul

Project ID: 0232742
Canton Water
Reclamation Facility
Canton, OH

Date Received: 3/18/2019 **Date Completed:** 3/21/2019 **Date Reported:** 3/25/2019

Analyst: Lori Huss **Work Order:** 1903413 **Page:** 1 of 3

Client ID	Lab ID (Layer)	Sample Description (Color, Texture, Etc.) *Analyst's Comment*	Asbestos Content (Percent and Type)	Non-asbestos Fibers (Percent and Type)
C-1	001A	(1) Black, Roof Core, Homogeneous	**NO ASBESTOS DETECTED**	10% Cellulose Fiber
C-2	002A	(1) Black, Roof Core, Homogeneous	**NO ASBESTOS DETECTED**	10% Cellulose Fiber
C-3	003A	(1) Black, Roof Core, Homogeneous	**NO ASBESTOS DETECTED**	10% Cellulose Fiber
C-4	004A	(1) Black, Roof Core, Homogeneous	**5% Chrysotile**	10% Cellulose Fiber
C-5	005A	(1) Black, Roof Core, Homogeneous	**5% Chrysotile**	10% Cellulose Fiber
C-6	006A	(1) Black, Roof Core, Homogeneous	**5% Chrysotile**	10% Cellulose Fiber
C-7	007A	(1) Black, Roof Core, Homogeneous	**NO ASBESTOS DETECTED**	7% Fibrous Glass 10% Cellulose Fiber
C-8	008A	(1) Black, Roof Core, Homogeneous	**NO ASBESTOS DETECTED**	7% Fibrous Glass 10% Cellulose Fiber
C-9	009A	(1) Black, Roof Core, Homogeneous	**NO ASBESTOS DETECTED**	2% Cellulose Fiber 7% Fibrous Glass

Quantitation is based on a visual estimation of the relative area of bulk sample components, unless otherwise noted in the "Comments" section of this report. The results are valid only for the item tested. This report may not be used to claim product endorsement by NVLAP or any agency of the U.S. Government. Method used: E.P.A. Interim Method for the Determination of Asbestos in Bulk Insulation Samples (EPA 600/M4-82-020). Polarized Light Microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Quantitative Transmission Electron Microscopy is currently the only method that can be used to determine if the material can be considered or treated as non-asbestos containing. Samples will be disposed of within 30 days unless notified in writing by the client. No part of this report may reproduced, except in full, without written permission of the laboratory. The reporting limit is 1% by weight. NVLAP Lab Code 101350-0.

Respectfully submitted,
PSI, Inc.

George Skarupa

Approved Signatory
George Skarupa

Analyst: Lori Huss **Work Order:** 1903413

Client ID	Lab ID (Layer)	Sample Description (Color, Texture, Etc.) *Analyst's Comment*	Asbestos Content (Percent and Type)	Non-asbestos Fibers (Percent and Type)
C-10	010A	(1) Black, Roof Core, Homogeneous	**NO ASBESTOS DETECTED**	7% Fibrous Glass 10% Cellulose Fiber
C-11	011A	(1) Black, Roof Core, Homogeneous	**NO ASBESTOS DETECTED**	7% Fibrous Glass 10% Cellulose Fiber
		(2) Silver, Paint, Homogeneous	**NO ASBESTOS DETECTED**	None Reported
C-12	012A	(1) Black, Roof Core, Homogeneous	**NO ASBESTOS DETECTED**	5% Cellulose Fiber 7% Fibrous Glass
		(2) Silver, Paint, Homogeneous	**NO ASBESTOS DETECTED**	None Reported
F-1	013A	(1) Black, Flashing, Homogeneous	**NO ASBESTOS DETECTED**	2% Cellulose Fiber 3% Fibrous Glass
		(2) Silver, Paint, Homogeneous	**NO ASBESTOS DETECTED**	2% Talc
F-2	014A	(1) Black, Flashing, Homogeneous	**NO ASBESTOS DETECTED**	2% Cellulose Fiber 3% Fibrous Glass
		(2) Silver, Paint, Homogeneous	**NO ASBESTOS DETECTED**	2% Talc
F-3	015A	(1) Black, Flashing, Homogeneous	**3% Chrysotile**	3% Cellulose Fiber
		(2) Silver, Paint, Homogeneous	**NO ASBESTOS DETECTED**	None Reported
F-4	016A	(1) Black, Flashing, Homogeneous	**3% Chrysotile**	3% Cellulose Fiber
		(2) Silver, Paint, Homogeneous	**NO ASBESTOS DETECTED**	None Reported
F-5	017A	(1) Black, Flashing, Homogeneous	**5% Chrysotile**	10% Cellulose Fiber
F-6	018A	(1) Black, Flashing, Homogeneous	**NO ASBESTOS DETECTED**	10% Cellulose Fiber
F-7	019A	(1) Black, Flashing, Homogeneous	**NO ASBESTOS DETECTED**	10% Fibrous Glass
F-8	020A	(1) Black, Flashing, Homogeneous	**NO ASBESTOS DETECTED**	10% Fibrous Glass

Quantitation is based on a visual estimation of the relative area of bulk sample components, unless otherwise noted in the "Comments" section of this report. The results are valid only for the item tested. This report may not be used to claim product endorsement by NVLAP or any agency of the U.S. Government. Method used: E.P.A. Interim Method for the Determination of Asbestos in Bulk Insulation Samples (EPA 600/M4-82-020). Polarized Light Microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Quantitative Transmission Electron Microscopy is currently the only method that can be used to determine if the material can be considered or treated as non-asbestos containing. Samples will be disposed of within 30 days unless notified in writing by the client. No part of this report may reproduced, except in full, without written permission of the laboratory. The reporting limit is 1% by weight. NVLAP Lab Code 101350-0.

Respectfully submitted,
PSI, Inc.

George Skarupa

Approved Signatory
George Skarupa

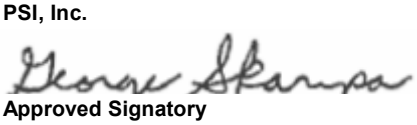
Analyst: Lori Huss **Work Order:** 1903413 **Page: 3 of 3**

Client ID	Lab ID (Layer)	Sample Description (Color, Texture, Etc.) *Analyst's Comment*	Asbestos Content (Percent and Type)	Non-asbestos Fibers (Percent and Type)
F-9	021A	(1) Black, Flashing, Homogeneous	**NO ASBESTOS DETECTED**	10% Fibrous Glass
		(2) Silver, Paint, Homogeneous	**NO ASBESTOS DETECTED**	None Reported
F-10	022A	(1) Black, Flashing, Homogeneous	**NO ASBESTOS DETECTED**	10% Fibrous Glass
		(2) Silver, Paint, Homogeneous	**NO ASBESTOS DETECTED**	None Reported

Report Notes: **(PT) Point Count Results**

Quantitation is based on a visual estimation of the relative area of bulk sample components, unless otherwise noted in the "Comments" section of this report. The results are valid only for the item tested. This report may not be used to claim product endorsement by NVLAP or any agency of the U.S. Government. Method used: E.P.A. Interim Method for the Determination of Asbestos in Bulk Insulation Samples (EPA 600/M4-82-020). Polarized Light Microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Quantitative Transmission Electron Microscopy is currently the only method that can be used to determine if the material can be considered or treated as non-asbestos containing. Samples will be disposed of within 30 days unless notified in writing by the client. No part of this report may reproduced, except in full, without written permission of the laboratory. The reporting limit is 1% by weight. NVLAP Lab Code 101350-0.

Respectfully submitted,
PSI, Inc.



Approved Signatory
George Skarupa

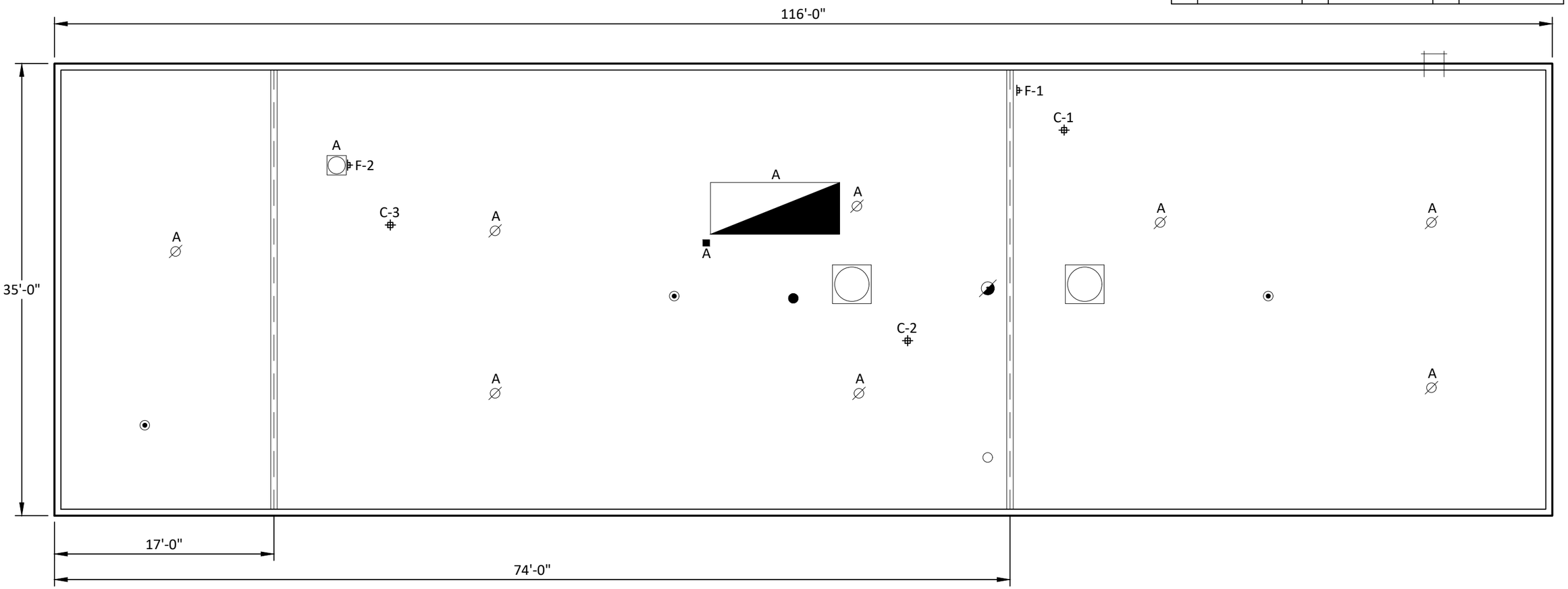
APPENDIX B – SAMPLE LOCATION PLAN

Appendix C

N
W E
S

SYMBOL LEGEND

⌀	HOODED VENT	◪	AIR CONDITIONER	▢	EXHAUST FAN
⌀	HOODED VENT (HOT)	○	PLUMBING VENT (SOIL STACK)	═	PARAPET
■ ●	PITCH PANS	⊙	ROOF DRAIN	⊐	LADDER
═	EXPANSION/ CONTROL JOINT	C-1 ⌖	CORE SAMPLE	F-1 ⊢	FLASHING SAMPLE
A	ABANDONED AND REMOVE				



0 5' 10' 20'

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

ROOF AREAS	
	SQ. FT.
TOTAL	4,060

CAD FILE: 0232-742-SP-1

No.:	DATE:	REVISIONS:

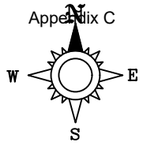
intertek psi Building Science Solutions
Building and Construction
5555 Canal Road · Cleveland · Ohio · 44125 · Tel 216.447.1335

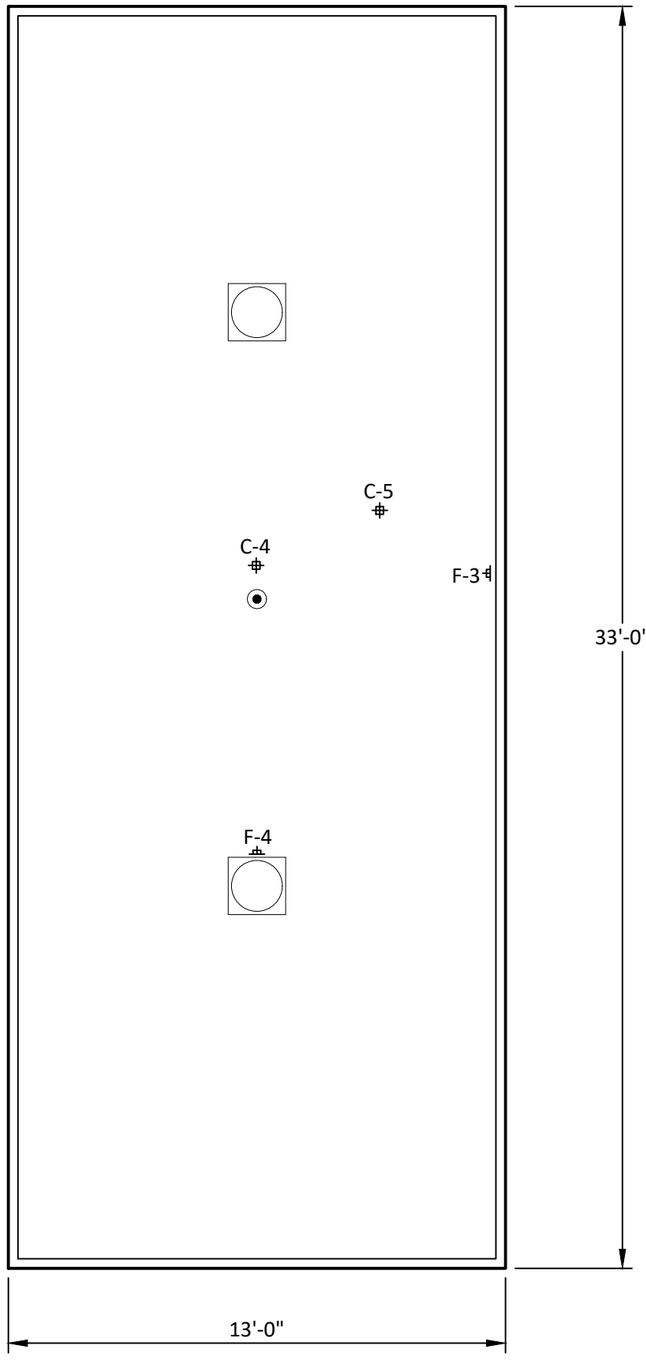
FACILITY NAME: CITY OF CANTON, OH
WATER RECLAMATION FACILITY
3530 CENTRAL AVE. SOUTHEAST - CANTON, OH 44707

TITLE: POST AERATION FACILITY - DEMO PLAN WITH CORE LOCATIONS

DRAWN BY:	DATE:	DRAWING NO.:
MER	3/14/2019	DP-3
PROJECT MGR.:	PROJECT NO:	
D. ROTH	0232742	

Appendix C





SYMBOL LEGEND

	ROOF DRAIN
	PARAPET
	EXHAUST FAN
C-1	CORE SAMPLE
F-1	FLASHING SAMPLE

0 5' 10' 20'

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

ROOF AREAS	
	SQ. FT.
TOTAL	429

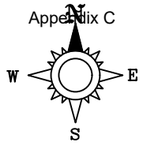
CAD FILE: 0232-742-SP-1

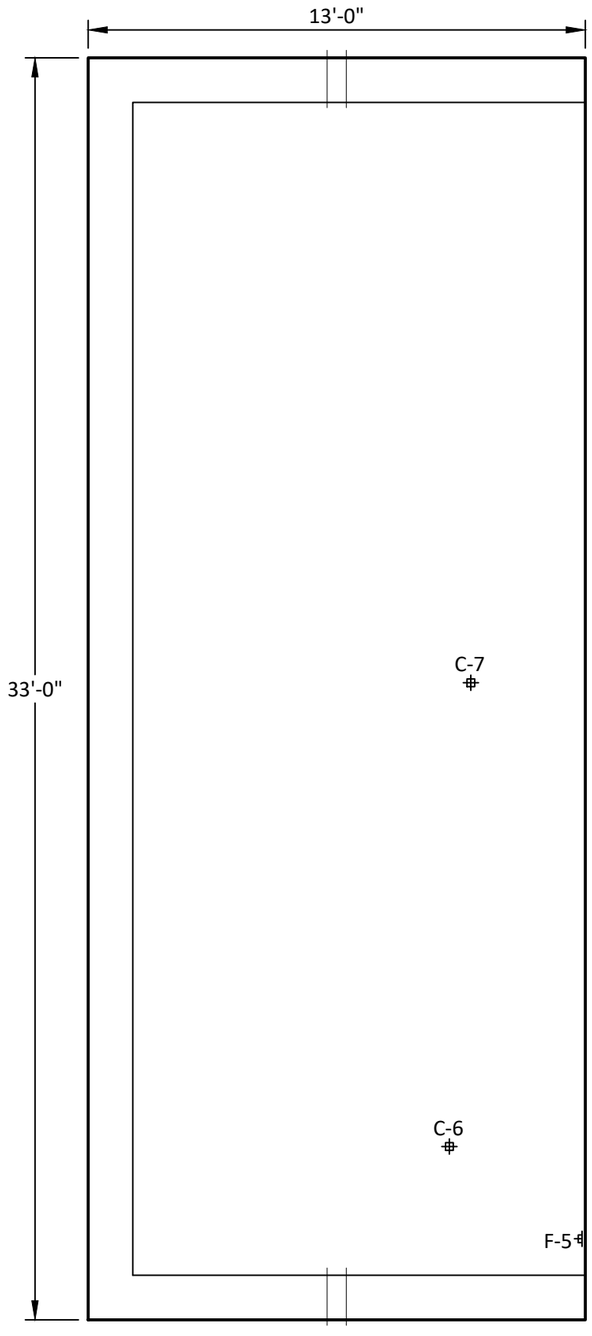
No.:	DATE:	REVISIONS:

intertek psi Building Science Solutions
Building and Construction
5555 Canal Road · Cleveland · Ohio · 44125 · Tel 216.447.1335

FACILITY NAME: CITY OF CANTON, OH WATER RECLAMATION FACILITY 3530 CENTRAL AVE. SOUTHEAST - CANTON, OH 44707	DRAWN BY: MER	DATE: 3/14/2019	DRAWING NO.: DP-4
TITLE: PRE-AERATION BLDG. - DEMO PLAN WITH CORE LOCATIONS	PROJECT MGR.: D. ROTH	PROJECT NO: 0232742	

Appendix C





SYMBOL LEGEND

	PARAPET
	SCUPPER
C-1	CORE SAMPLE
F-1	FLASHING SAMPLE

0 5' 10' 20'

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

ROOF AREAS	
	SQ. FT.
TOTAL	429

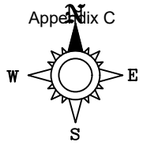
CAD FILE: 0232-742-SP-1

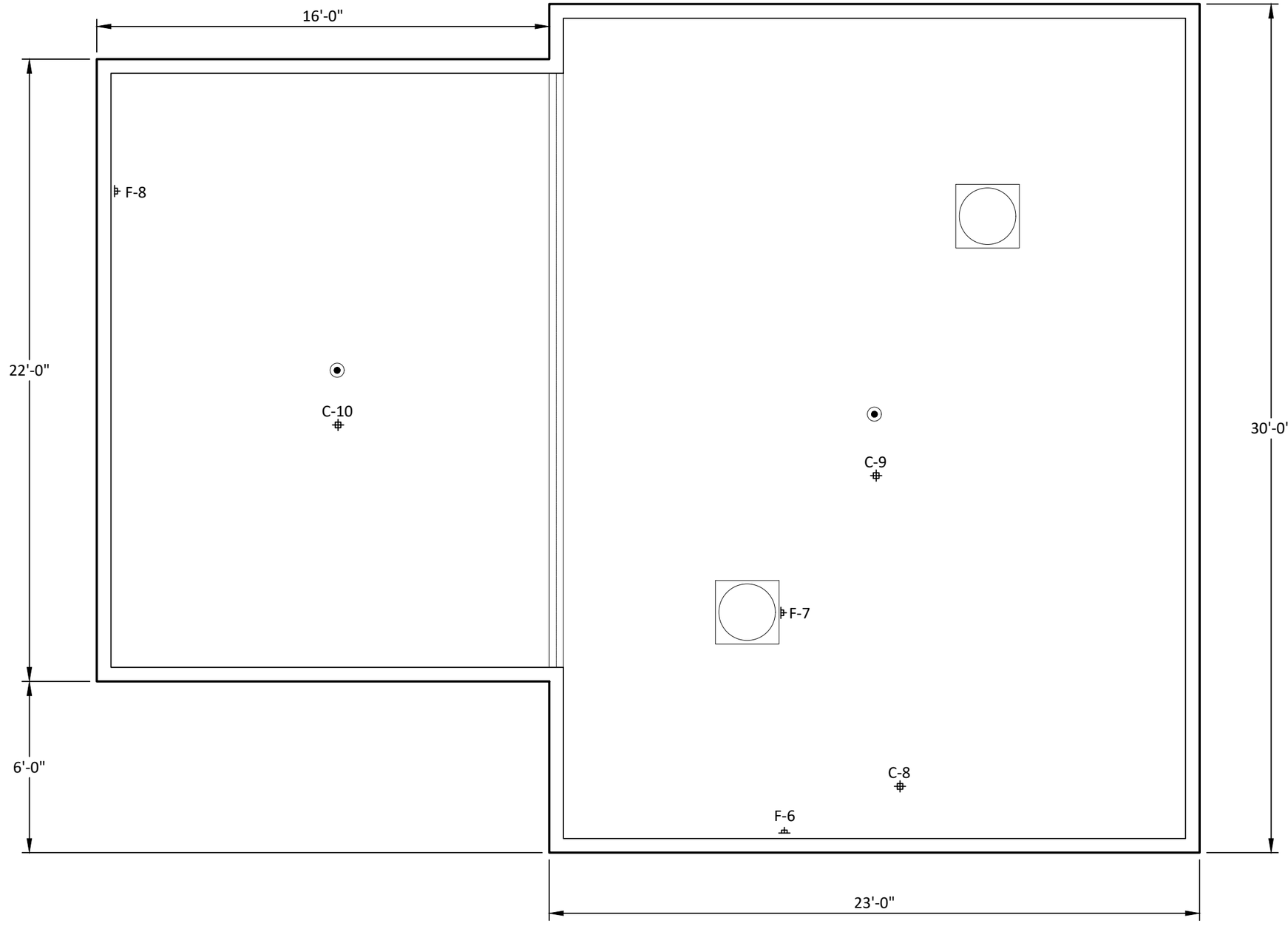
No.:	DATE:	REVISIONS:

intertek psi Building Science Solutions
Building and Construction
5555 Canal Road · Cleveland · Ohio · 44125 · Tel 216.447.1335

FACILITY NAME: CITY OF CANTON, OH WATER RECLAMATION FACILITY 3530 CENTRAL AVE. SOUTHEAST - CANTON, OH 44707	DRAWN BY: MER	DATE: 3/14/2019	DRAWING NO.: DP-1
TITLE: EMERGENCY SLUDGE STORAGE - DEMO PLAN WITH CORE LOCATIONS	PROJECT MGR.: D. ROTH	PROJECT NO: 0232742	

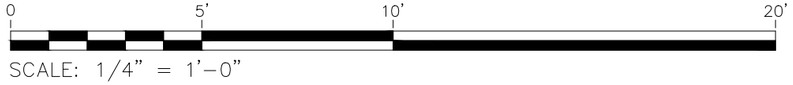
Appendix C





SYMBOL LEGEND

	EXHAUST FAN
	PARAPET
	ROOF DRAIN
	EXPANSION/ CONTROL JOINT
C-1	CORE SAMPLE
F-1	FLASHING SAMPLE



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

ROOF AREAS	
	SQ. FT.
TOTAL	1,042

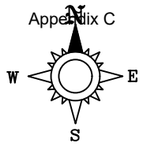
CAD FILE: 0232-742-SP-1

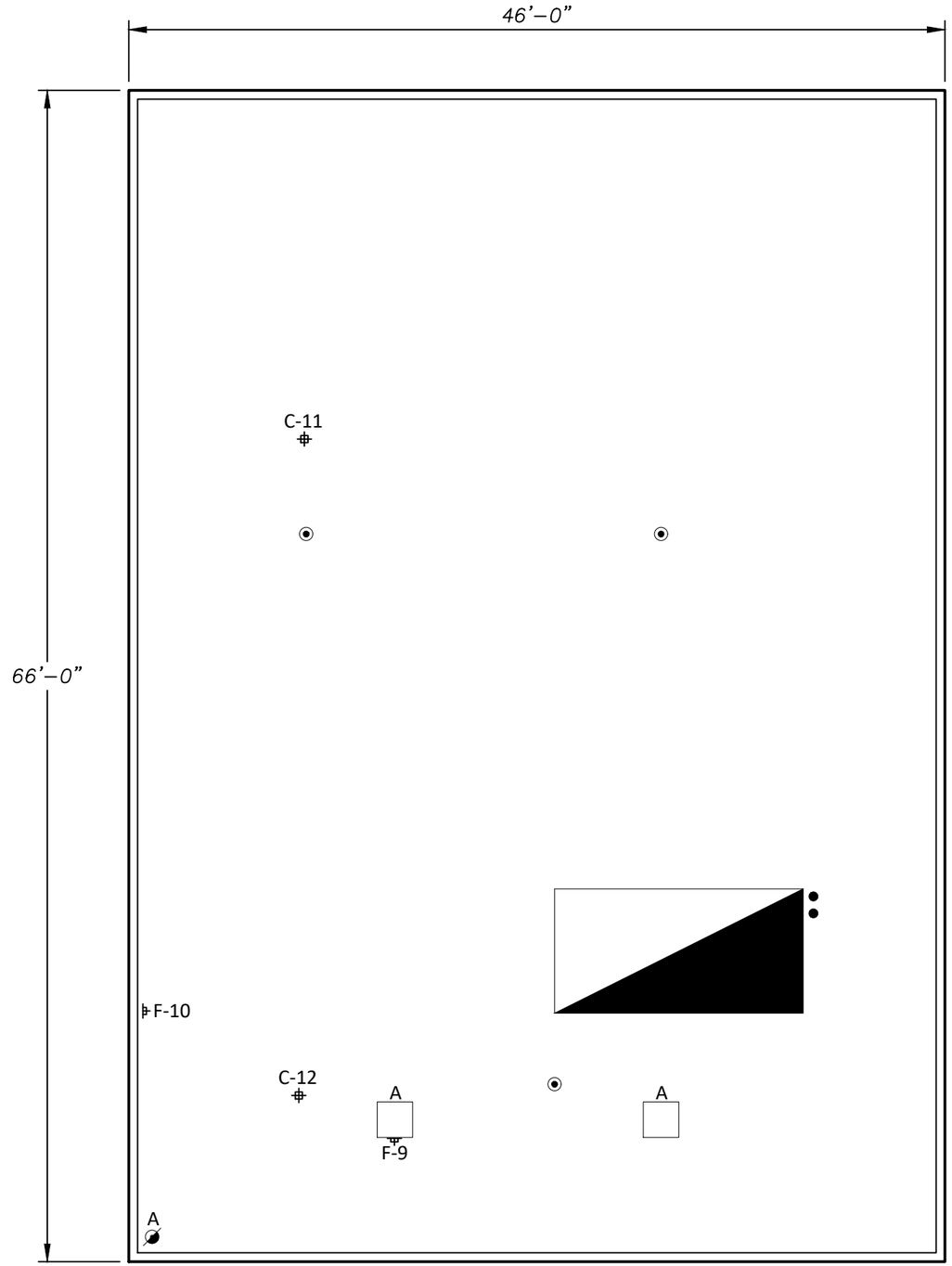
No.:	DATE:	REVISIONS:

intertek psi Building Science Solutions
Building and Construction
5555 Canal Road · Cleveland · Ohio · 44125 · Tel 216.447.1335

FACILITY NAME: CITY OF CANTON, OH WATER RECLAMATION FACILITY 3530 CENTRAL AVE. SOUTHEAST - CANTON, OH 44707	DRAWN BY: MER	DATE: 3/14/2019	DRAWING NO.: DP-2
TITLE: OIL STORAGE BUILDING - DEMO PLAN WITH CORE LOCATIONS	PROJECT MGR.: D. ROTH	PROJECT NO: 0232742	

Appendix C





SYMBOL LEGEND

⊙	ROOF DRAIN
═══	PARAPET
	HOODED VENT (HOT)
◪	AIR CONDITIONER
■ ●	PITCH PANS
□	CURB
C-1 ⌗	CORE SAMPLE
F-1	FLASHING SAMPLE
A	ABANDONED AND REMOVE

0 5' 10' 20'

SCALE: 1/8" = 1'–0"

ROOF AREAS	
	SQ. FT.
TOTAL	3,036

CAD FILE: 0232–742–SP–1

No.:	DATE:	REVISIONS:

intertek psi Building Science Solutions
Building and Construction
5555 Canal Road · Cleveland · Ohio · 44125 · Tel 216.447.1335

FACILITY NAME: CITY OF CANTON, OH
WATER RECLAMATION FACILITY
3530 CENTRAL AVE. SOUTHEAST - CANTON, OH 44707

TITLE: RAS BLDG. - DEMO PLAN WITH CORE LOCATIONS

DRAWN BY:	DATE:	DRAWING NO.:
MER	3/14/2019	DP-5
PROJECT MGR.:	PROJECT NO:	
D. ROTH	0232742	

APPENDIX C – INSPECTOR & LABORATORY CERTIFICATIONS

Appendix C

Ohio Environmental Protection Agency

John R. Kasich, Governor
Mary Taylor, Lt. Governor
Craig W. Butler, Director

July 26, 2018

Martin F Kurkul Jr
PSI Cleveland
5555 Canal Rd
Cleveland OH 44125

RE: Asbestos Hazard Evaluation Specialist
Certification Number: ES36332
Expiration Date: 07/26/2019

Dear Martin F Kurkul Jr:

This letter and enclosed certification card approves your request to be certified as an Asbestos Hazard Evaluation Specialist. You must present your card upon request at any project site while performing duties. Copies of cards are not acceptable as proof of certification.

This certification may be revoked by the Director of the Environmental Protection Agency for violation of any of the requirements of 3745-22 or 3745-20 of the Ohio Administrative Code.

If you have any questions, please call 614-644-0226.

Sincerely,

Mark JS Needham

Mark Needham
Manager, Asbestos Program
Division of Air Pollution Control

50 West Town Street • Suite 700 • F
epa.ohio.gov • (614) 64

Appendix C

TSI TRAINING SERVICES INTERNATIONAL

Asbestos Building Inspector Initial

Certificate

This is to certify

Martin F. Kurkul Jr.

XXX-XX-9700

has attended and successfully completed the Asbestos Hazard Emergency Response Act mandatory course for the Asbestos Building Inspector Initial and has passed an examination in that course with a minimum score of 70% or better. Training was in accordance with 40 CFR Part 763 (AHERA). The above student received the requisite training for asbestos accreditation under Title II of the Toxic Substances Control Act and State of Indiana requirements under 326 IAC 18-2 and Chapter 3745-22 Ohio Administrative Code.

Robert H Wetter	6/6/19	6/4/18 - 6/6/18	6/6/18	Cleveland, OH
Training Manager	Expiration Date	Date(s) of Course	Examination Date	Course Location

33150 Lakeland Blvd.
Cleveland, OH 44095
www.TSItraining.com

Course Certificate No. 18 TSI 72987 ii

Appendix C

TSI TRAINING SERVICES INTERNATIONAL

Asbestos Management Planner Initial

Certificate

This is to certify

Martin F. Kurkul Jr.

XXX-XX-9700

has attended and successfully completed the Asbestos Hazard Emergency Response Act mandatory course for the Asbestos Management Planner Initial and has passed an examination in that course with a minimum score of 70% or better. Training was in accordance with 40 CFR Part 763 (AHERA). The above student received the requisite training for asbestos accreditation under Title II of the Toxic Substances Control Act and State of Indiana requirements under 326 IAC 18-2 and Chapter 3745-22 Administrative Code.

Robert Hutter	6/8/19	6/7/18 - 6/8/18	6/8/18	Cleveland, OH
Training Manager	Expiration Date	Date(s) of Course	Examination Date	Course Location

33150 Lakeland Blvd.
Cleveland, OH 44095
www.TSItraining.com

Course Certificate No. **18 TSI 73000 mpi**

2019 CANTON WATER RECLAMATION FACILITY ROOF REPLACEMENT PROJECT

SITE LOCATION
THE CITY OF CANTON, OHIO
WATER RECLAMATION FACILITY
3530 CENTRAL AVENUE SOUTHEAST
CANTON, OHIO 44707

OFFICES:
THE CITY OF CANTON, OHIO
218 CLEVELAND AVENUE SW
CANTON, OHIO 44702

GENERAL NOTES

1. THE WRF IS INSURED BY FM GLOBAL. ALL WORK SHALL CONFORM WITH THE MOST CURRENT FM CODES, STANDARDS AND LOSS PREVENTION DATA SHEETS.
2. ALL CODES HAVING JURISDICTION SHALL BE STRICTLY OBSERVED IN THE CONSTRUCTION OF THE PROJECT, INCLUDING ALL APPLICABLE FEDERAL, STATE, CITY AND COUNTY BUILDING, ZONING, ELECTRICAL, MECHANICAL, PLUMBING, AND FIRE CODES. THE CONTRACTOR SHALL VERIFY ALL CODE REQUIREMENTS AS THEY RELATE TO THIS PROJECT BEFORE COMMENCEMENT OF CONSTRUCTION AND BRING ANY DISCREPANCIES BETWEEN CODE REQUIREMENTS AND THE CONSTRUCTION DOCUMENTS TO THE ATTENTION OF THE CONSULTANT IN WRITING, FOR RESOLUTION.
3. LOCATIONS, SIZES, AND DIMENSIONS OF ROOF FEATURES AND PENETRATIONS SHOWN ARE APPROXIMATE, AND BIDDERS SHALL REVIEW AND VERIFY ALL PROJECT CONDITIONS AS PART OF THEIR BID.
4. CONTRACTOR STORAGE AND PARKING SHALL BE LOCATED AT APPROVED LOCATIONS. CONTRACTOR SHALL NOT BLOCK THE ACCESS PATH TO DUMPSTERS AND BUILDING EGRESS AREAS.
5. THE BASE BID WORK INCLUDING ELECTRICAL, PLUMBING, NATURAL GAS, AND HVAC WORK SHALL BE PERFORMED BY A STATE LICENSED CONTRACTOR.
6. UTILITY LINES, CONDUIT, JUNCTION BOXES AND MISCELLANEOUS EQUIPMENT BELOW THE STRUCTURAL ROOF DECK REQUIRE ENGINEERING CONTROLS TO AVOID CONTACT WITH, AND DAMAGE TO UNDERDECK COMPONENTS.
7. NO UNSCHEDULED INTERRUPTION OF ELECTRICAL SERVICE WILL BE ALLOWED DURING THE WORK.
8. REPAIR EXISTING ROOF DECK WHERE DETERIORATED OR DAMAGED. REFER TO SPECIFICATIONS FOR AMOUNT TO BE INCLUDED IN THE BASE BID. MUST BE VERIFIED BY OWNER'S REPRESENTATIVE.
9. BASE BID WORK INCLUDES RAISING THE EXISTING ROOF TOP EQUIPMENT CURBS TO PROVIDE FOR THE SPECIFIED 8" (MINIMUM) FLASHING HEIGHTS.
10. THE BASE BID WORK INCLUDES CONTRACTOR VERIFICATION OF THE ATTACHMENT OF EXISTING WOOD BLOCKING AND FOR THE RESETTING AND RE-ATTACHMENT OF THE EXISTING WOOD BLOCKING.
11. RAISE THE HEIGHT OF THE EXISTING SOIL PIPES, AS NEEDED, TO PROVIDE FOR MINIMUM 8" FLASHING HEIGHT ABOVE THE FINISHED ROOF SURFACE.
12. MAINTAIN THE ROOF IN A WATERTIGHT CONDITION DURING THE PROJECT. NO MORE ROOFING SHALL BE REMOVED IN A DAY THAN CAN BE REINSTALLED. INSTALL AN APPROPRIATE NIGHT SEAL EACH DAY.
13. COMPONENTS NOT INDICATED AS EXISTING ON ALL PROJECT DRAWINGS SHALL BE CONSIDERED NEW COMPONENTS TO BE PROVIDED AND INSTALLED BY THE CONTRACTOR.
14. THE OWNER AND CONSULTANT SHALL NOT BE RESPONSIBLE FOR THE SAFETY AND CONSTRUCTION PROCEDURES, TECHNIQUES, OR THE FAILURE OF THE CONTRACTOR TO CARRY OUT THE WORK IN ACCORDANCE WITH THE DRAWINGS, SPECIFICATIONS, OR THE REQUIRED CODES.
15. DETAILS AND SECTIONS IN THE DRAWINGS ARE SHOWN AT SPECIFIC LOCATIONS ARE INTENDED TO SHOW GENERAL REQUIREMENTS THROUGHOUT. DETAILS NOTED ARE TYPICAL AND IMPLY ALL SIMILAR CONDITIONS BE TREATED SIMILARLY. MODIFICATIONS TO BE MADE BY THE CONTRACTOR TO ACCOMMODATE MINOR VARIATIONS, AT NO ADDITIONAL COST TO THE OWNER.
16. CONTRACTOR SHALL BRING ERRORS AND OMISSIONS WHICH MAY OCCUR IN THE CONTRACT DOCUMENTS TO THE ATTENTION OF THE CONSULTANT IN WRITING. WRITTEN INSTRUCTIONS SHALL BE OBTAINED BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR THE RESULTS OF ANY ERROR, DISCREPANCIES, OR OMISSIONS, IN THE CONTRACT DOCUMENTS, OF WHICH THE CONTRACTOR FAILED TO NOTIFY THE CONSULTANT BEFORE CONSTRUCTION, MODIFICATION, AND/OR FABRICATION OF THE WORK.

PROJECT NOTES

1. INDICATED SLOPES REPRESENT THE SLOPE OF THE FINISHED ROOF SYSTEM. AFTER THE EXISTING ROOF SYSTEM IS REMOVED, THE CONTRACTOR IS TO CAREFULLY INSPECT THE ROOF DECK FOR BUILT-IN SLOPE, TO THE GREATEST EXTEND POSSIBLE. THE CONTRACTOR IS TO VERIFY THE EXISTING SLOPE CONDITIONS IN THE ROOF DECK AND CONFIRM THE ROOF DRAINAGE PLAN INDICATED IN THE CONSTRUCTION DOCUMENTS WILL NOT POND WATER IN EXCESS OF WHAT WILL BE COVERED IN THE SPECIFIED ROOFING MANUFACTURER'S SYSTEM WARRANTY. THE CONTRACTOR SHALL NOTIFY THE OWNER IN WRITING IF EXISTING CONDITIONS VARY FROM THOSE INDICATED IN THE CONSTRUCTION DOCUMENTS.
2. ALL EXISTING ROOF SYSTEM COMPONENTS AND EQUIPMENT IDENTIFIED IN THE CONSTRUCTION DOCUMENTS OR DURING CONSTRUCTION AS ABANDONED OR OBSOLETE SHALL BE REMOVED DOWN TO THE STRUCTURAL ROOF DECK UNLESS OTHERWISE NOTED. LICENSED ELECTRICAL AND MECHANICAL CONTRACTORS ARE TO CAP OFF AND TERMINATE ALL ASSOCIATED SERVICE LINES BELOW THE STRUCTURAL ROOF DECK AS REQUIRED BY THE MOST RECENTLY ADOPTED VERSION OF THE BUILDING CODES. REPAIR OR REPLACE ALL INTERIOR SURFACES AFFECT BY DEMOLITION AS REQUIRED TO MATCH SURROUNDING FINISHES. MAINTAIN INTERIOR FIRE AND SMOKE RATINGS IN ALL SEPARATION WALLS.
3. REMOVE DEBRIS FROM SITE ON A DAILY BASIS.

STATE OF OHIO
MARK S. EVANS
57055
REGISTERED
PROFESSIONAL ENGINEER

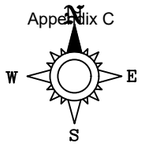
CAD FILE: 0232-742-SP-1

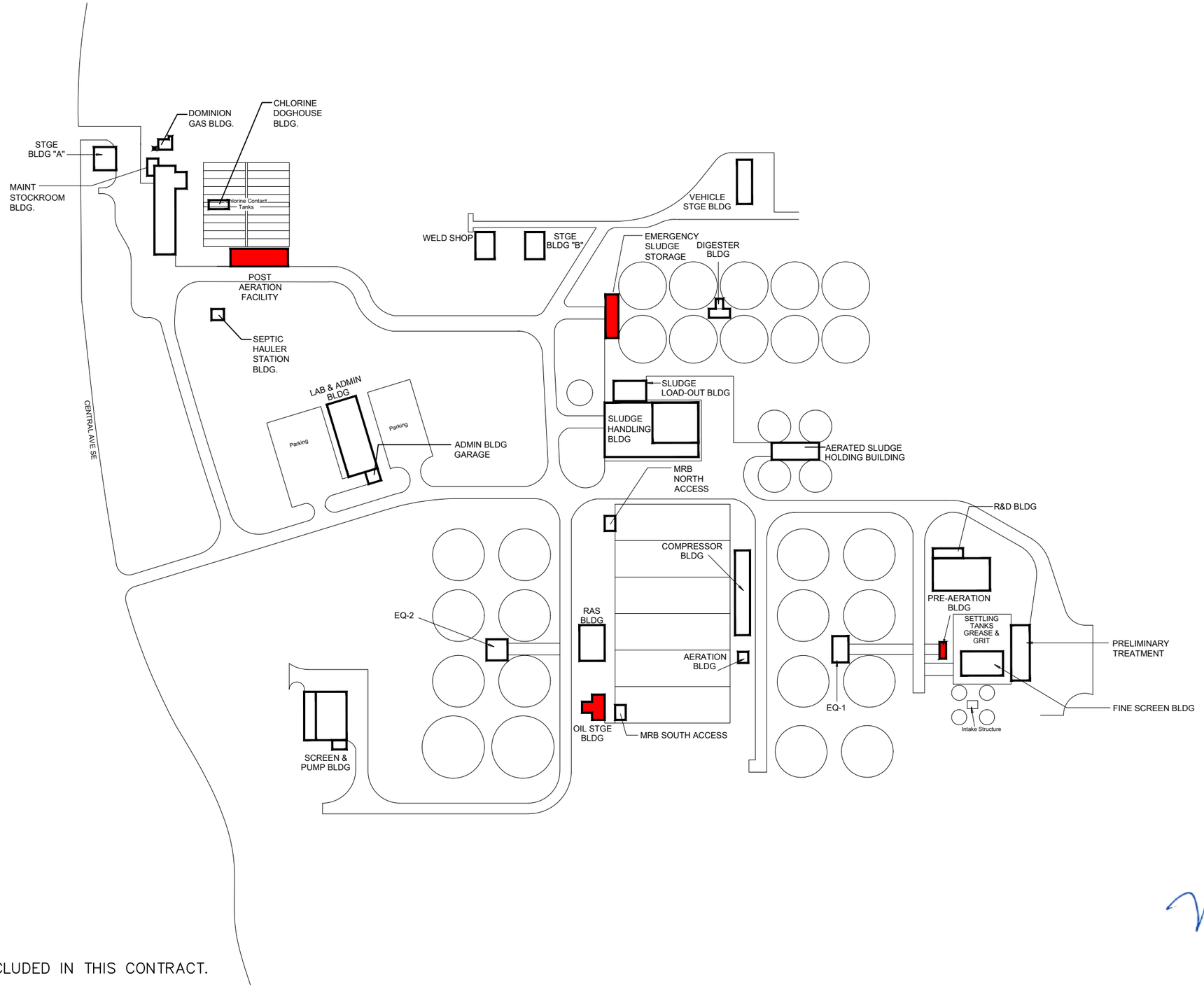
No.:	DATE:	REVISIONS:

intertek psi
Building Science Solutions
Building and Construction
5555 Canal Road · Cleveland · Ohio · 44125 · Tel 216.447.1335

FACILITY NAME: CANTON WATER RECLAMATION FACILITY 2019 ROOF REPLACEMENTS	DRAWN BY: MER	DATE: 6/14/2019	DRAWING NO.: SP-1
TITLE: SITE PLAN	PROJECT MGR.: D. ROTH	PROJECT NO: 0232742	

Appendix C





■ – DENOTES BUILDINGS INCLUDED IN THIS CONTRACT.

STATE OF OHIO
MARK S. EVANS
E-57055
REGISTERED
PROFESSIONAL ENGINEER

CAD FILE: 0232–742–SP–1

No.:	DATE:	REVISIONS:

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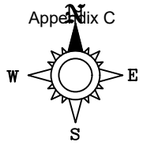
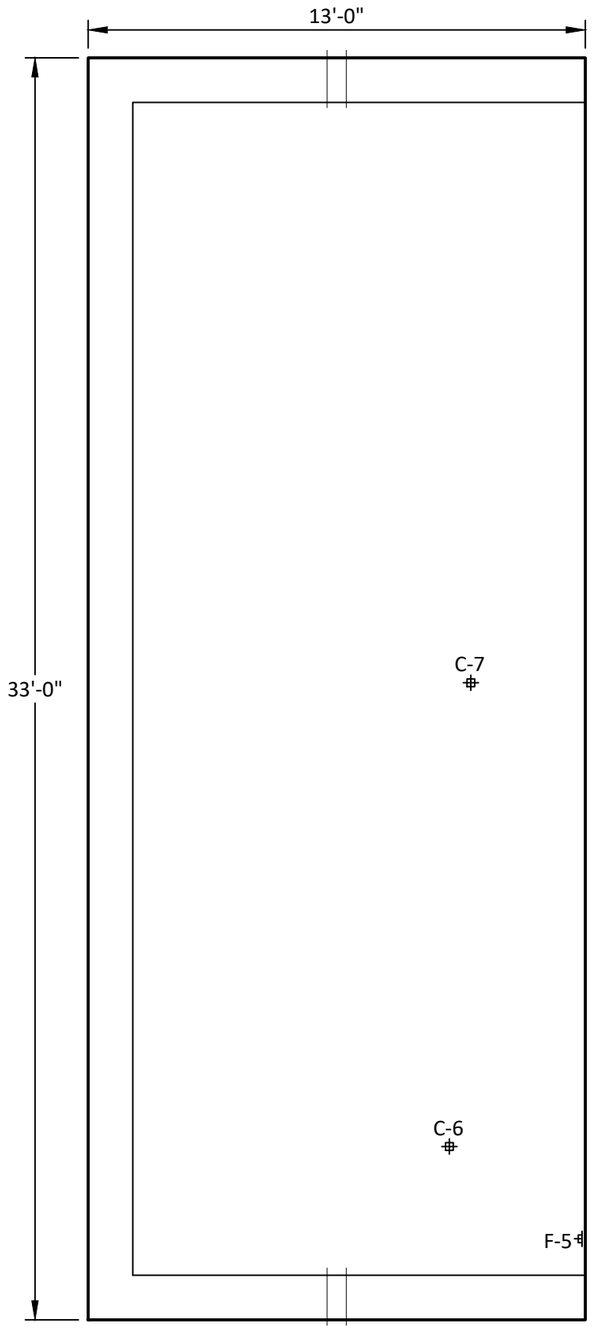
FACILITY NAME: CITY OF CANTON, OH WATER RECLAMATION FACILITY 3530 CENTRAL AVE. SOUTHEAST - CANTON, OH 44707	DRAWN BY: MER	DATE: 6/14/2019	DRAWING NO.: SP-1
TITLE: SITE PLAN	PROJECT MGR.: D. ROTH	PROJECT NO: 0232742	

Appendix C





SYMBOL LEGEND

	PARAPET
	SCUPPER
C-1	CORE SAMPLE
F-1	FLASHING SAMPLE

0 5' 10' 20'

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

STATE OF OHIO
MARK S. EVANS
E-57455
REGISTERED
PROFESSIONAL ENGINEER

ROOF AREAS

	SQ. FT.
TOTAL	429

CAD FILE: 0232-742-SP-1

No.:	DATE:	REVISIONS:

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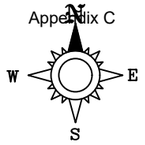
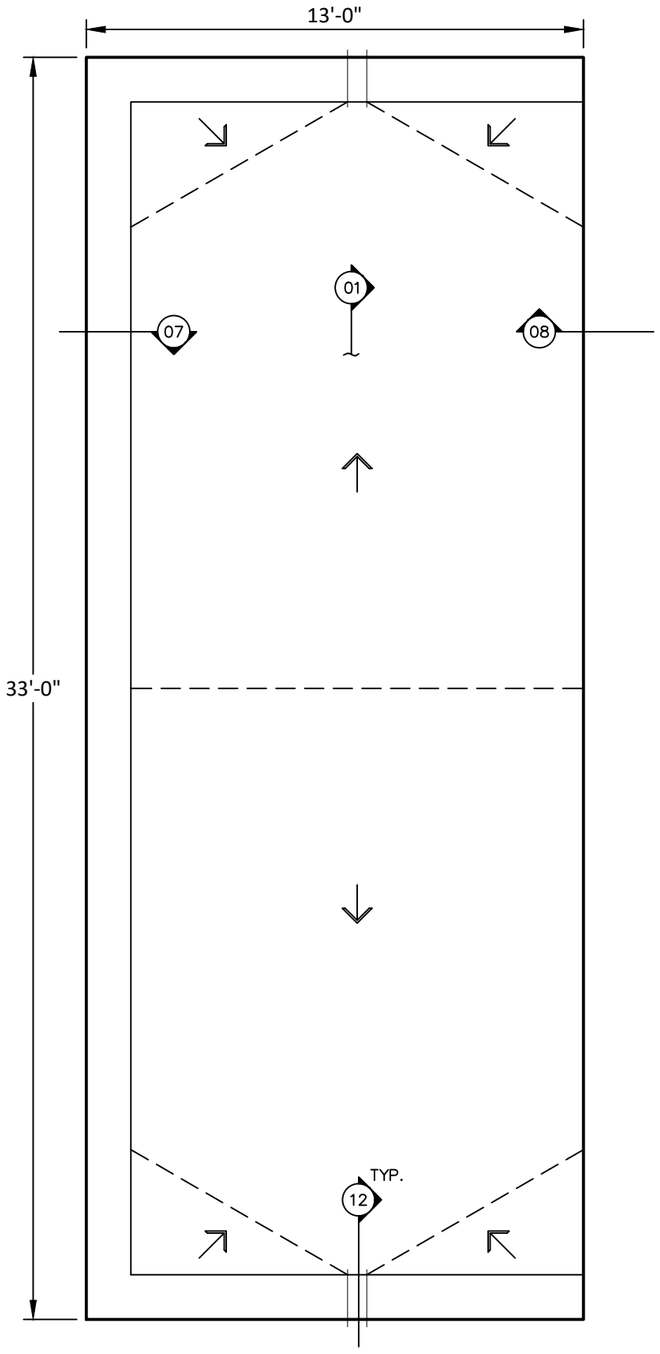
Building Science Solutions
Building and Construction
5555 Canal Road · Cleveland · Ohio · 44125 · Tel 216.447.1335

FACILITY NAME: CITY OF CANTON, OH WATER RECLAMATION FACILITY 3530 CENTRAL AVE. SOUTHEAST - CANTON, OH 44707	DRAWN BY: MER	DATE: 6/14/2019	DRAWING NO.: DP-1
TITLE: EMERGENCY SLUDGE STORAGE - DEMO PLAN WITH CORE LOCATIONS	PROJECT MGR.: D. ROTH	PROJECT NO: 0232742	

Appendix C





SYMBOL LEGEND

	PARAPET
	SCUPPER
1	DETAIL No.

GENERAL NOTES

1. DRAINAGE CRICKETS SHALL SLOPE 1/4" PER FOOT.
2. REMOVE OBSOLETE EQUIPMENT FROM THE EAST ADJOINING WALL AND PATCH VOIDS WITH COMPATIBLE MATERIAL.
3. FABRICATE AND INSTALL SCUPPERS BASED ON FINISHED ROOF HEIGHT. ADD WOOD BLOCKING IN SCUPPER OPENINGS AS NEEDED.

0 5' 10' 20'

SCALE: 1/4" = 1'–0"

STATE OF OHIO
MARK S. EVANS
E-57455
REGISTERED
PROFESSIONAL ENGINEER

ROOF AREAS	
	SQ. FT.
TOTAL	429

CAD FILE: 0232–742–SP–1

No.:	DATE:	REVISIONS:

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Building and Construction
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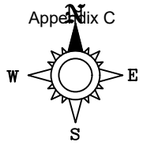
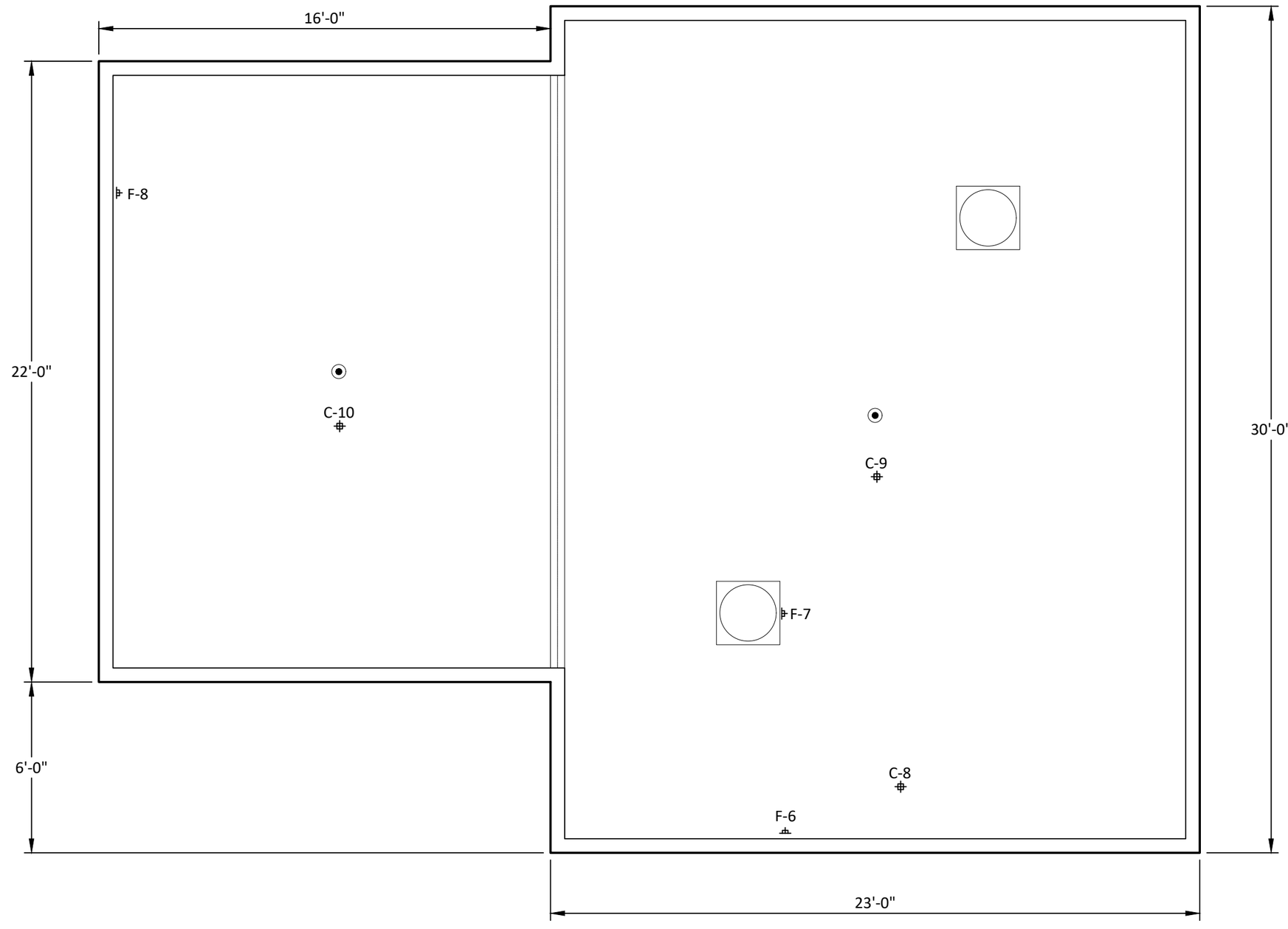
FACILITY NAME: CITY OF CANTON, OH WATER RECLAMATION FACILITY 3530 CENTRAL AVE. SOUTHEAST - CANTON, OH 44707	DRAWN BY: MER	DATE: 6/14/2019	DRAWING NO.: RP-1
TITLE: EMERGENCY SLUDGE STORAGE - SLOPE PLAN WITH DETAIL CALLOUTS	PROJECT MGR.: D. ROTH	PROJECT NO: 0232742	

Appendix C





SYMBOL LEGEND

	EXHAUST FAN
	PARAPET
	ROOF DRAIN
	EXPANSION/ CONTROL JOINT
C-1	CORE SAMPLE
F-1	FLASHING SAMPLE

0 5' 10' 20'

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

ROOF AREAS	
	SQ. FT.
TOTAL	1,042

CAD FILE: 0232-742-SP-1

No.:	DATE:	REVISIONS:

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Building and Construction
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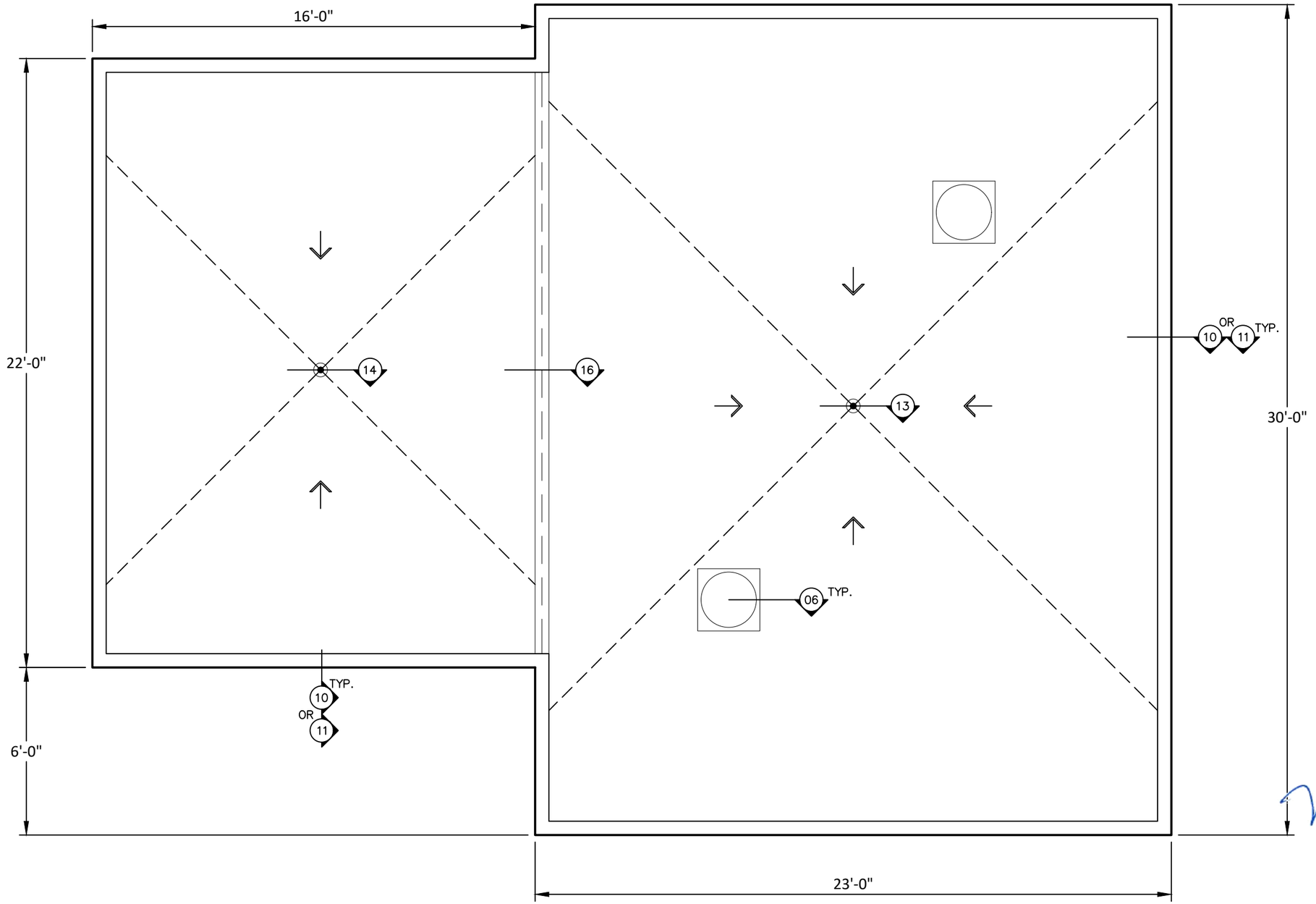
FACILITY NAME:	DRAWN BY:	DATE:	DRAWING NO.:
CITY OF CANTON, OH WATER RECLAMATION FACILITY 3530 CENTRAL AVE. SOUTHEAST - CANTON, OH 44707	MER	6/14/2019	DP-2
TITLE: OIL STORAGE BUILDING - DEMO PLAN WITH CORE LOCATIONS	PROJECT MGR.: D. ROTH	PROJECT NO: 0232742	

Appendix C

N W E S

SYMBOL LEGEND

	EXHAUST FAN
	PARAPET
	ROOF DRAIN
	EXPANSION/ CONTROL JOINT
1	DETAIL No.



0 5' 10' 20'

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

ROOF AREAS	
	SQ. FT.
TOTAL	1,042

STATE OF OHIO
MARK S. EVANS
E-57455
REGISTERED
PROFESSIONAL ENGINEER

CAD FILE: 0232-742-SP-1

No.:	DATE:	REVISIONS:

intertek psi Building Science Solutions
Building and Construction
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FACILITY NAME: CITY OF CANTON, OH WATER RECLAMATION FACILITY 3530 CENTRAL AVE. SOUTHEAST - CANTON, OH 44707	DRAWN BY: MER	DATE: 6/14/2019	DRAWING NO.: RP-2
TITLE: OIL STORAGE BUILDING - SLOPE PLAN WITH DETAIL CALLOUTS	PROJECT MGR.: D. ROTH	PROJECT NO: 0232742	

Appendix C

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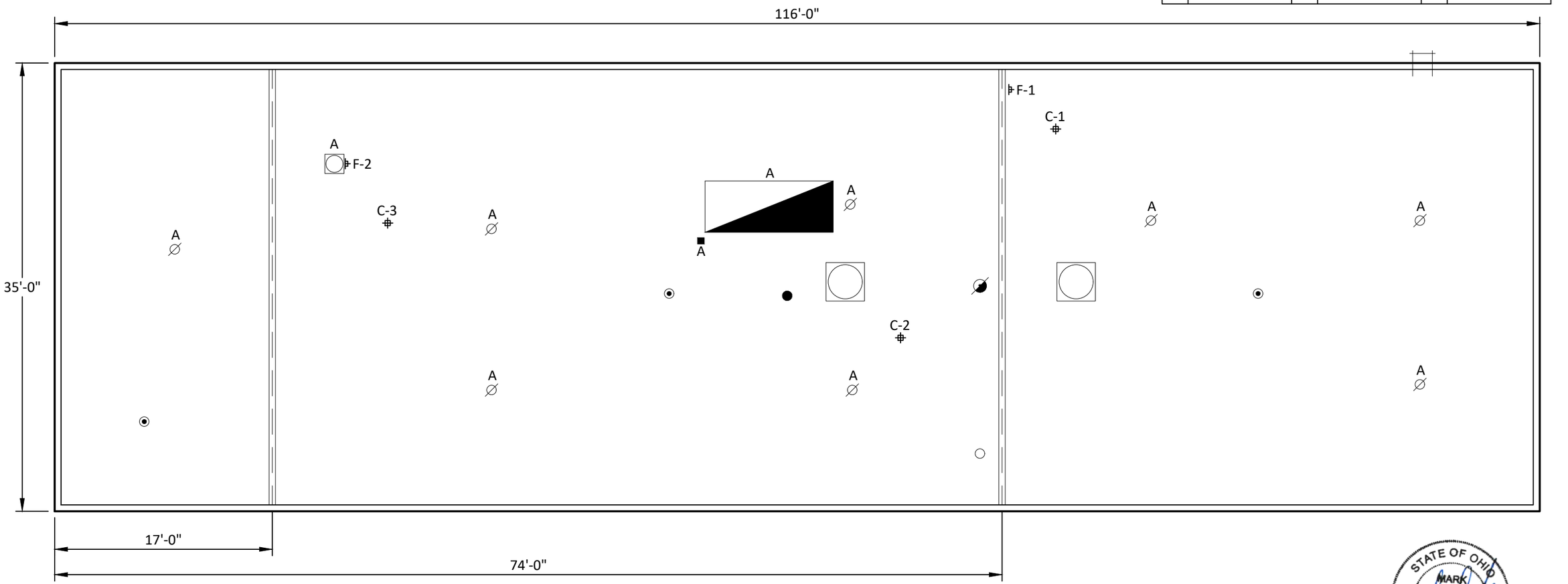
SYMBOL LEGEND

⌀	HOODED VENT	◪	AIR CONDITIONER	◯	EXHAUST FAN
⌀	HOODED VENT (HOT)	○	PLUMBING VENT (SOIL STACK)	═	PARAPET
■ ●	PITCH PANS	⊙	ROOF DRAIN	⊐	LADDER
═	EXPANSION/ CONTROL JOINT	C-1 ⌖	CORE SAMPLE	F-1 ⊢	FLASHING SAMPLE
A	ABANDONED AND REMOVE				



0 5' 10' 20'

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

ROOF AREAS	
	SQ. FT.
TOTAL	4,060

STATE OF OHIO MARK S. EVANS E-57456 REGISTERED PROFESSIONAL ENGINEER

CAD FILE: 0232-742-SP-1

No.:	DATE:	REVISIONS:

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Building and Construction
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FACILITY NAME:	DRAWN BY:	DATE:	DRAWING NO.:
CITY OF CANTON, OH WATER RECLAMATION FACILITY 3530 CENTRAL AVE. SOUTHEAST - CANTON, OH 44707	MER	6/14/2019	DP-3
TITLE: POST AERATION FACILITY - DEMO PLAN WITH CORE LOCATIONS	PROJECT MGR.: D. ROTH	PROJECT NO: 0232742	

Appendix C

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W E
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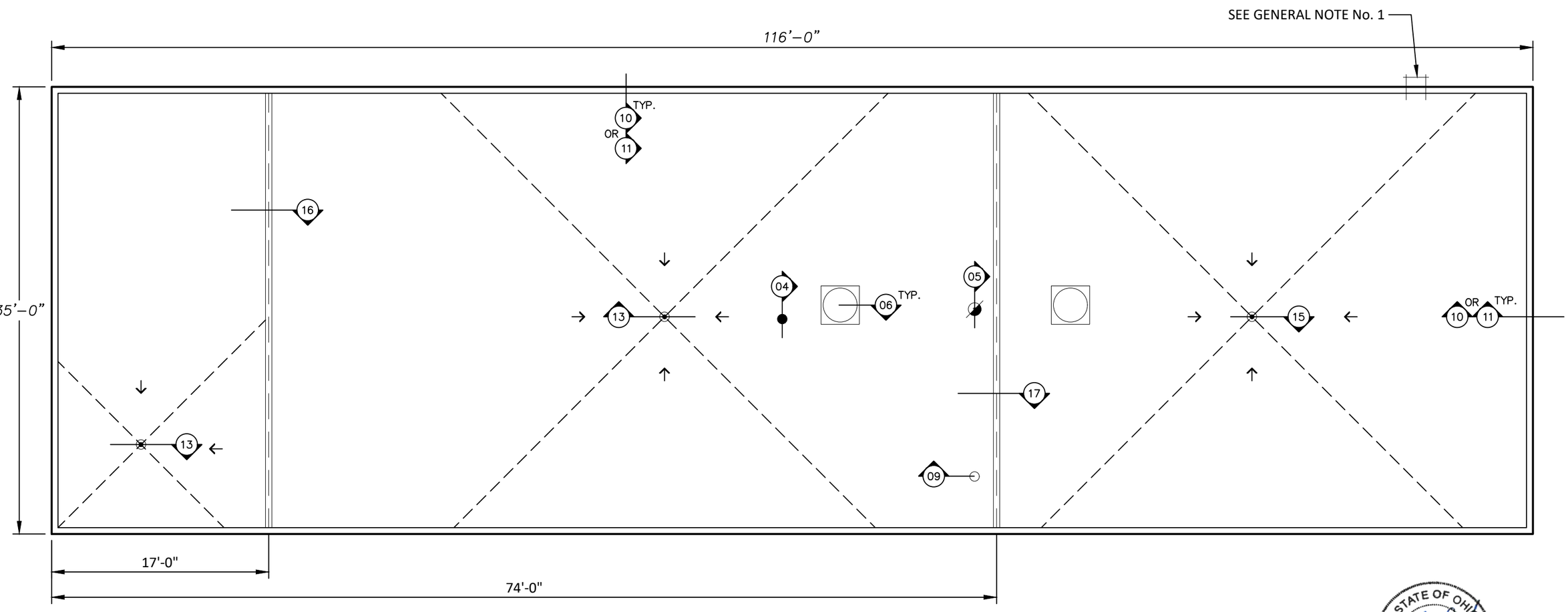
SYMBOL LEGEND

	EXPANSION/ CONTROL JOINT		LADDER		EXHAUST FAN
	HOODED VENT (HOT)		PLUMBING VENT (SOIL STACK)		PARAPET
	PITCH PANS		ROOF DRAIN	1	DETAIL No.



GENERAL NOTES

1. LADDER TO BE MODIFIED TO ATTACH TO NEW PARAPET HEIGHT. SEE SPECIFICATION SECTION 077200 ROOF ACCESSORIES.

0 5' 10' 20'

SCALE: 1/8" = 1'–0"

STATE OF OHIO
MARK S. EVANS
E-57455
REGISTERED
PROFESSIONAL ENGINEER

ROOF AREAS

	SQ. FT.
TOTAL	4,060

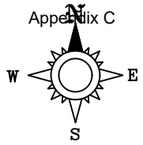
CAD FILE: 0232–742–SP–1

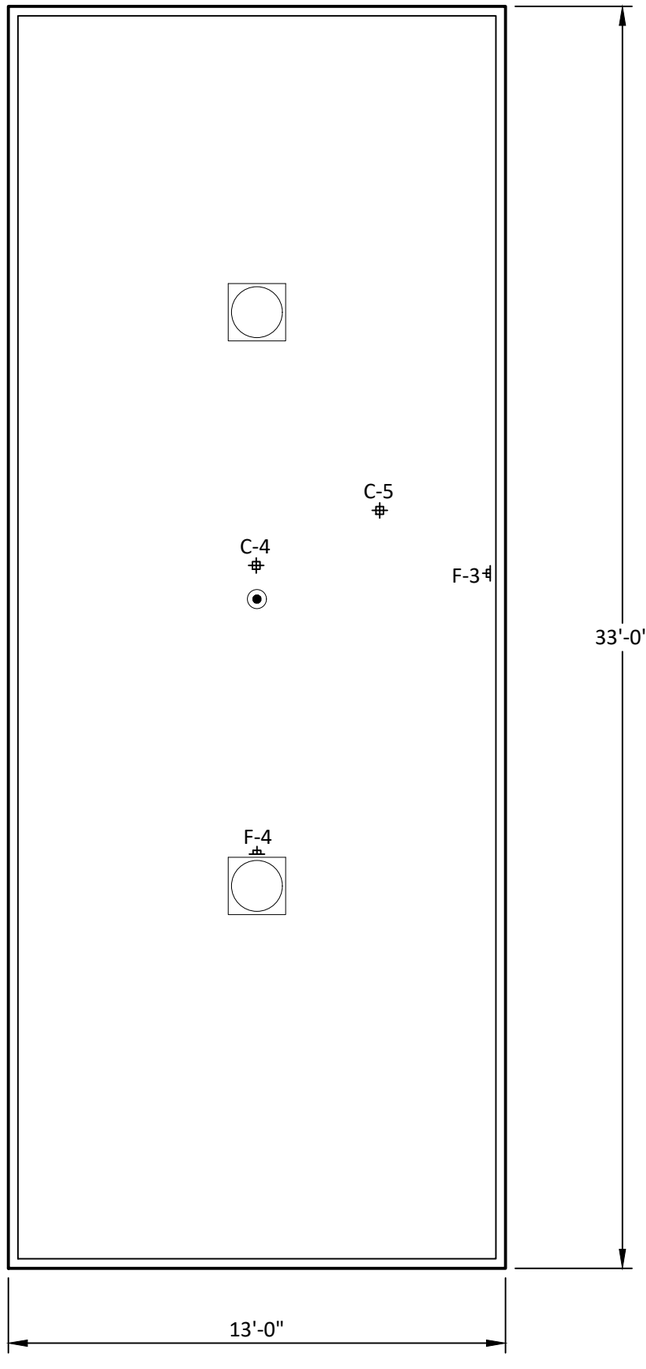
No.:	DATE:	REVISIONS:

intertek psi
Building Science Solutions
Building and Construction
5555 Canal Road · Cleveland · Ohio · 44125 · Tel 216.447.1335

FACILITY NAME: CITY OF CANTON, OH WATER RECLAMATION FACILITY 3530 CENTRAL AVE. SOUTHEAST - CANTON, OH 44707	DRAWN BY: MER	DATE: 6/14/2019	DRAWING NO.: RP-3
TITLE: POST AERATION FACILITY - SLOPE PLAN WITH DETAIL CALLOUTS	PROJECT MGR.: D. ROTH	PROJECT NO: 0232742	

Appendix C





SYMBOL LEGEND

⊙	ROOF DRAIN
═══	PARAPET
⊡	EXHAUST FAN
C-1 ⌗	CORE SAMPLE
F-1 ⊥	FLASHING SAMPLE

ROOF AREAS	
	SQ. FT.
TOTAL	429

0 5' 10' 20'

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

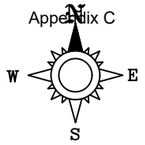
CAD FILE: 0232-742-SP-1

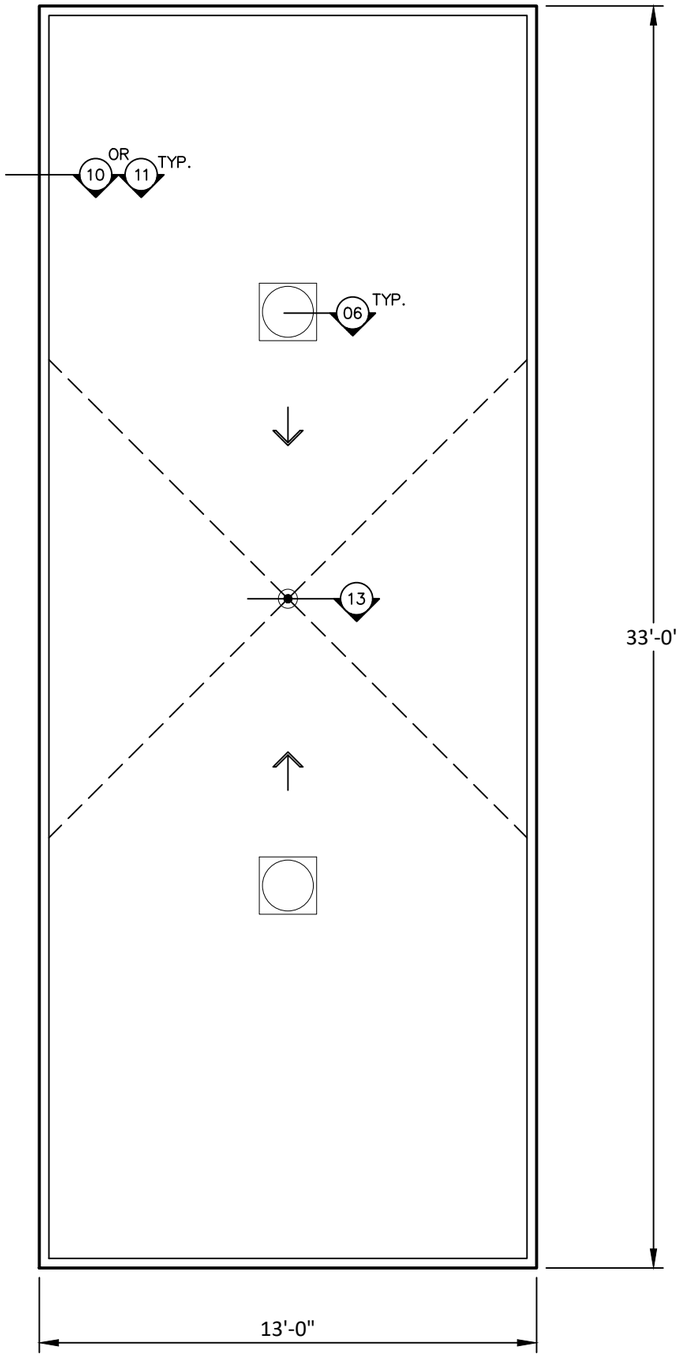
No.:	DATE:	REVISIONS:

intertek psi Building Science Solutions
Building and Construction
5555 Canal Road · Cleveland · Ohio · 44125 · Tel 216.447.1335

FACILITY NAME:	DRAWN BY:	DATE:	DRAWING NO.:
CITY OF CANTON, OH WATER RECLAMATION FACILITY 3530 CENTRAL AVE. SOUTHEAST - CANTON, OH 44707	MER	6/14/2019	DP-4
TITLE: PRE-AERATION BLDG. - DEMO PLAN WITH CORE LOCATIONS	PROJECT MGR.: D. ROTH	PROJECT NO: 0232742	

Appendix C





SYMBOL LEGEND

⊙	ROOF DRAIN
═	PARAPET
⊡	EXHAUST FAN
1	DETAIL No.

0 5' 10' 20'

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

ROOF AREAS	
	SQ. FT.
TOTAL	429

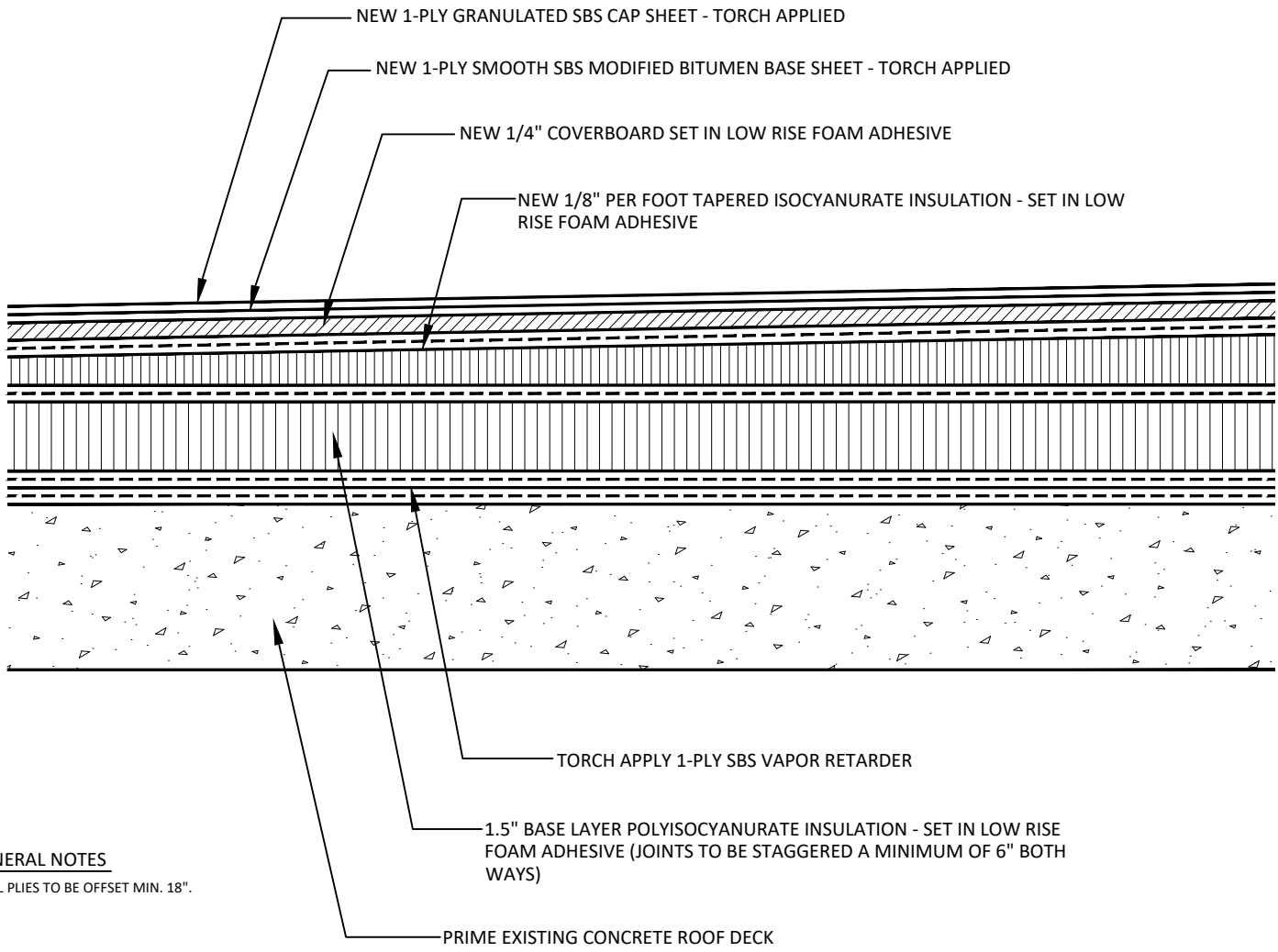
CAD FILE: 0232-742-SP-1

No.:	DATE:	REVISIONS:

intertek psi Building Science Solutions
Building and Construction
5555 Canal Road · Cleveland · Ohio · 44125 · Tel 216.447.1335

FACILITY NAME: CITY OF CANTON, OH WATER RECLAMATION FACILITY 3530 CENTRAL AVE. SOUTHEAST - CANTON, OH 44707		DRAWN BY: MER	DATE: 6/14/2019	DRAWING NO.: RP-4
TITLE: PRE-AERATION BLDG. - SLOPE PLAN WITH DETAIL CALLOUTS		PROJECT MGR.: D. ROTH	PROJECT NO: 0232742	

Appendix C



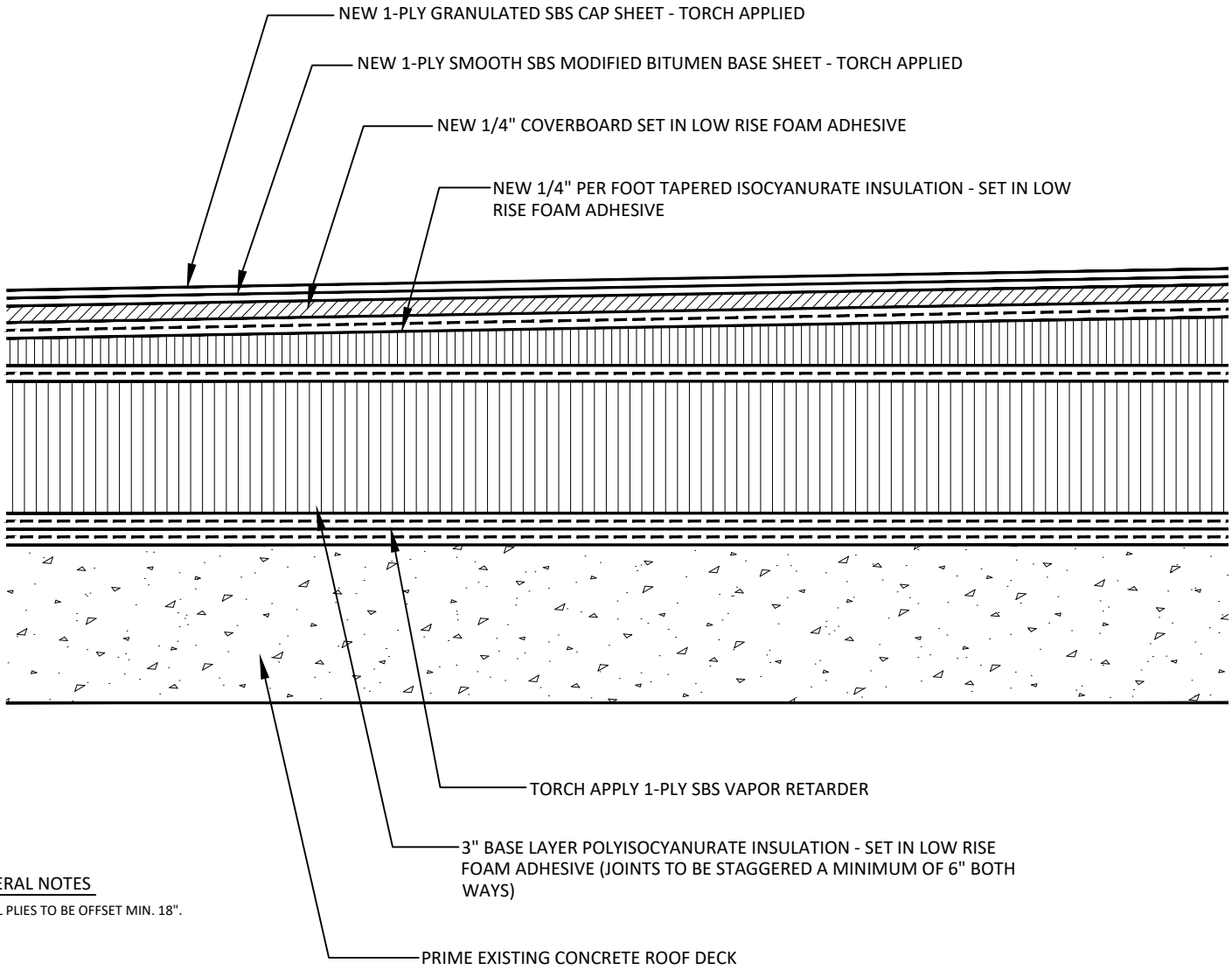
GENERAL NOTES

1. ALL PLIES TO BE OFFSET MIN. 18".

CAD FILE No.: 0232742-DETAILS

PROJECT NO: 0232-742	PROJECT NAME: CANTON WATER RECLAMATION FACILITY 2019 ROOF REPLACEMENTS	TITLE: EMERGENCY SLUDGE STORAGE ROOF CONSTRUCTION PROFILE	DRAWING NO.: 01
DRAWN BY: MER			
PROJECT MGR.: D. ROTH			
SCALE N.T.S.			
DATE: 6/14/2019			

intertek psi Building Science Solutions
Building and Construction
5555 Canal Road · Cleveland · Ohio · 44125 · Tel 216.447.1335



GENERAL NOTES

1. ALL PLIES TO BE OFFSET MIN. 18".

CAD FILE No.: 0232742-DETAILS

PROJECT NO: 0232-742	PROJECT NAME: CANTON WATER RECLAMATION FACILITY 2019 ROOF REPLACEMENTS	TITLE: OIL STORAGE BUILDING AND PRE-AERATION BUILDING ROOF CONSTRUCTION PROFILE	DRAWING NO.: 02
DRAWN BY: MER			
PROJECT MGR.: D. ROTH			
SCALE N.T.S.			
DATE: 6/14/2019			

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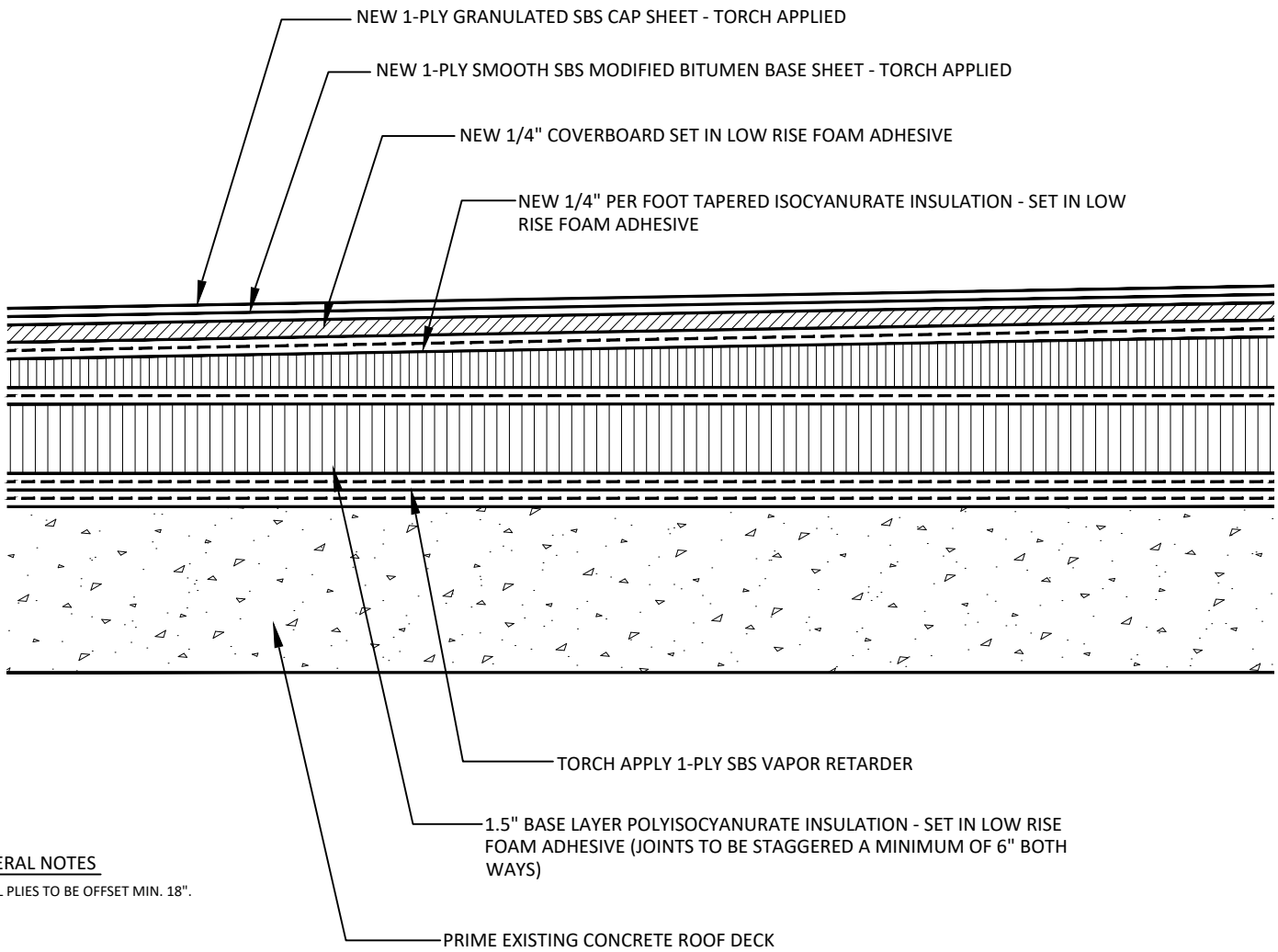

GENERAL NOTES

1. ALL PLIES TO BE OFFSET MIN. 18".

CAD FILE No.: 0232742-DETAILS

PROJECT NO: 0232-742	PROJECT NAME: CANTON WATER RECLAMATION FACILITY 2019 ROOF REPLACEMENTS	TITLE: POST AERATION FACILITIES ROOF CONSTRUCTION PROFILE	DRAWING NO.: 03A
DRAWN BY: MER			
PROJECT MGR.: D. ROTH			
SCALE: N.T.S.			
DATE: 6/14/2019			

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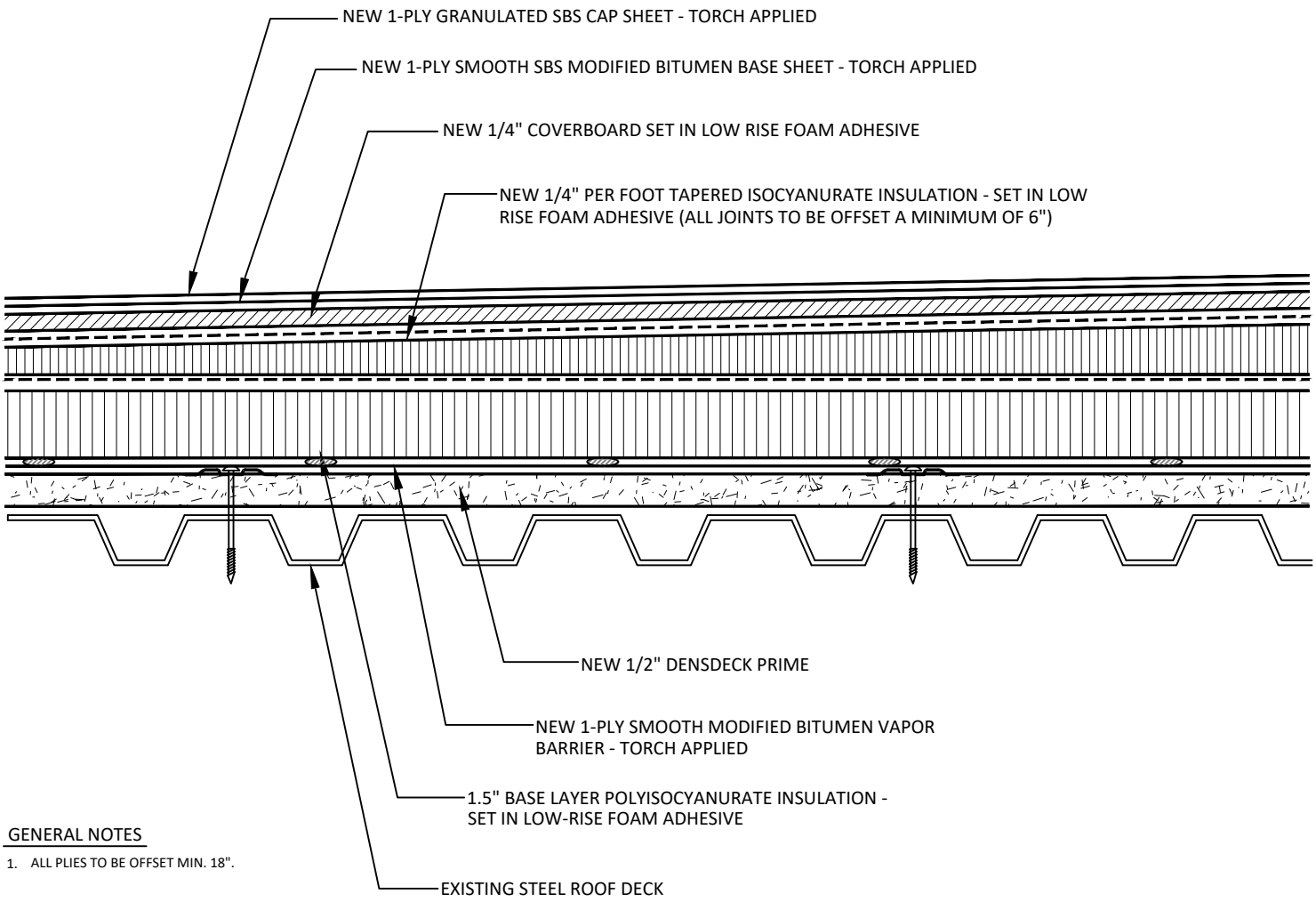

GENERAL NOTES

1. ALL PLIES TO BE OFFSET MIN. 18".

CAD FILE No.: 0232742-DETAILS

PROJECT NO: 0232-742	PROJECT NAME: CANTON WATER RECLAMATION FACILITY 2019 ROOF REPLACEMENTS	TITLE: POST AERATION FACILITIES STEEL DECK ROOF CONSTRUCTION PROFILE	DRAWING NO.: 03B
DRAWN BY: MER			
PROJECT MGR.: D. ROTH			
SCALE N.T.S.			
DATE: 6/14/2019			

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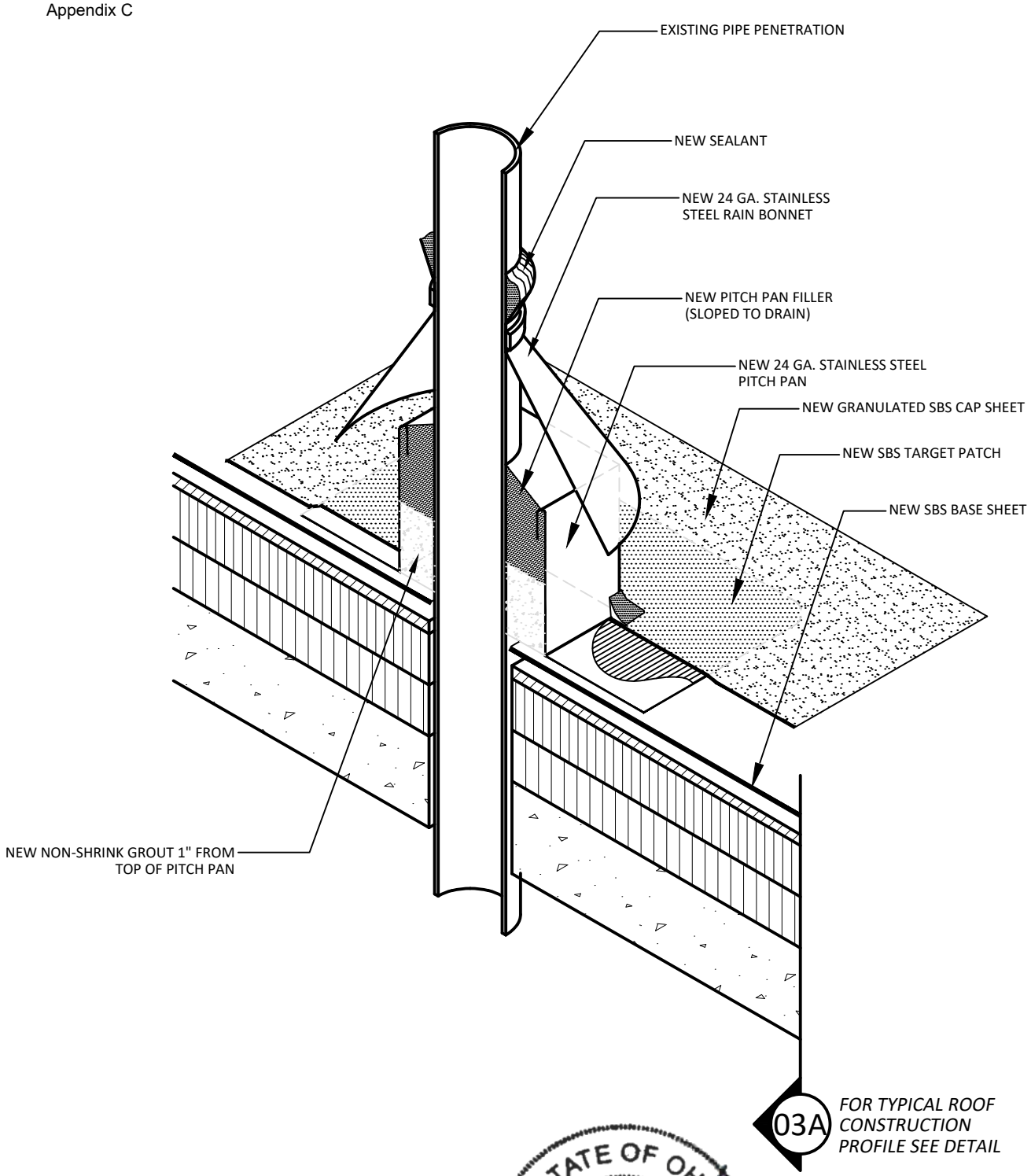

CAD FILE No.: 0232742-DETAILS

PROJECT NO: 0232-742	PROJECT NAME: CANTON WATER RECLAMATION FACILITY 2019 ROOF REPLACEMENTS	TITLE: PITCH PAN	DRAWING NO.: 04
DRAWN BY: MER			
PROJECT MGR.: D. ROTH			
SCALE: N.T.S.			
DATE: 6/14/2019			

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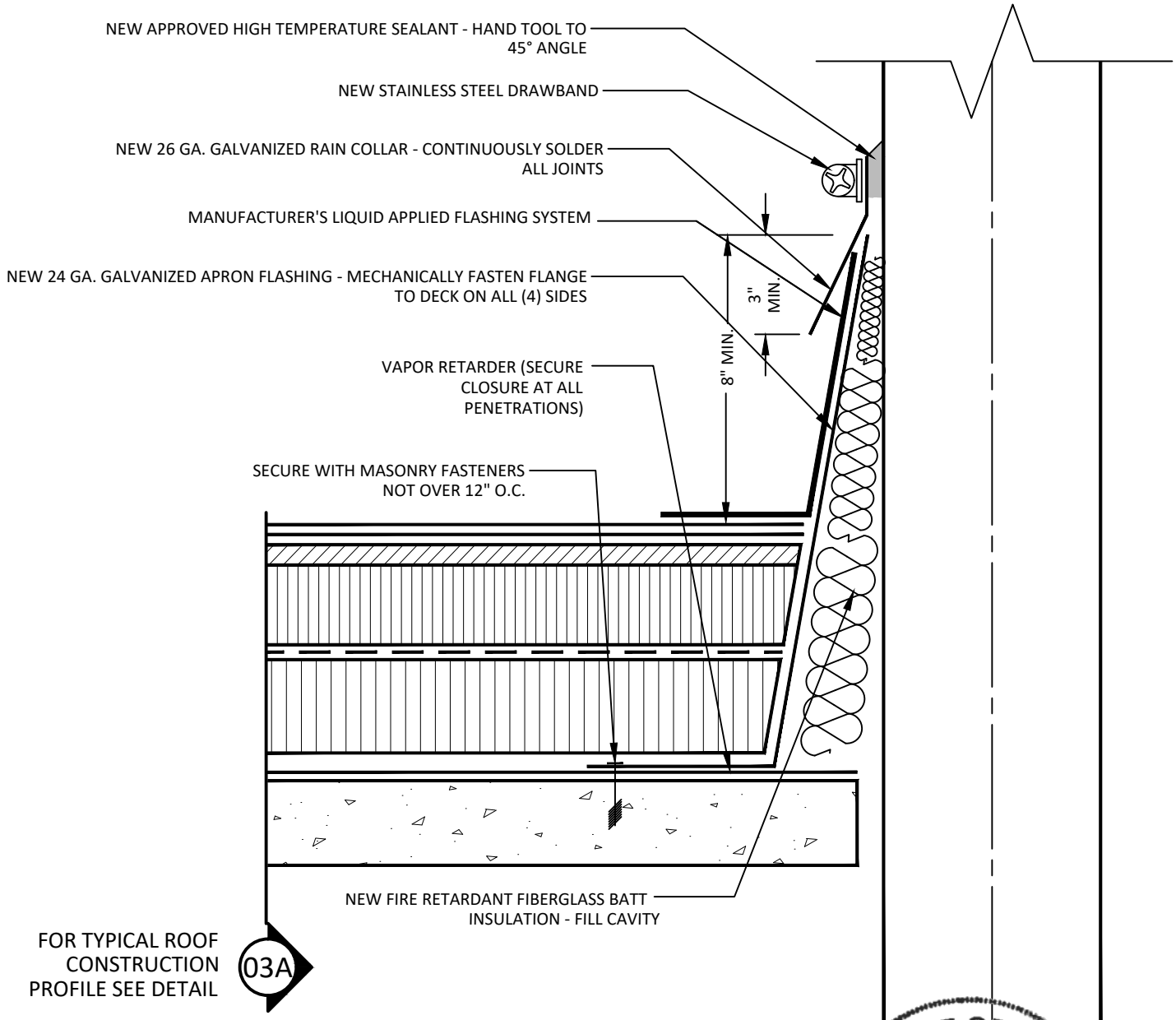

GENERAL NOTES

1.) PROVIDE AND INSTALL NEW HOT STACKS AND ALL ASSOCIATED HARDWARE COMPLETELY TO UNIT. INCLUDE NEW TYPE B VENT CAP.
2.) COMPLY WITH ALL MANUFACTURER'S WARRANTABLE DETAILS.

CAD FILE No.: 0232742-DETAILS

PROJECT NO: 0232-742	PROJECT NAME: CANTON WATER RECLAMATION FACILITY 2019 ROOF REPLACEMENTS	TITLE: HOT STACK	DRAWING NO.: 05
DRAWN BY: MER			
PROJECT MGR.: D. ROTH			
SCALE: N.T.S.			
DATE: 6/14/2019			

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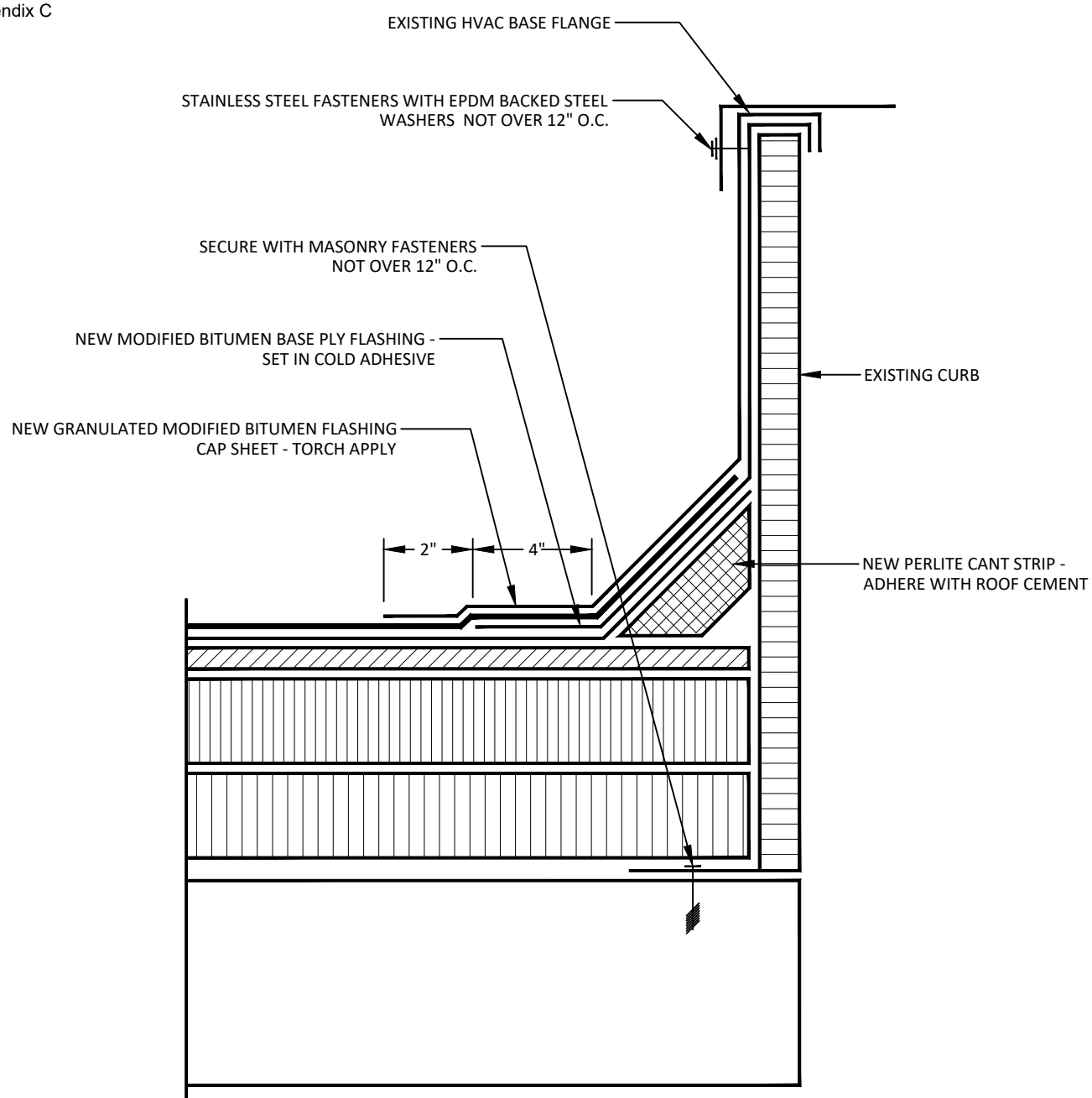

FOR TYPICAL ROOF CONSTRUCTION PROFILE SEE DETAILS 01 02 03A 03B

STATE OF OHIO MARK S. EVANS E-57055 REGISTERED PROFESSIONAL ENGINEER

GENERAL NOTES

1.) PROVIDE MINIMUM 8" FLASHING HEIGHT.

CAD FILE No.: 0232742-DETAILS

PROJECT NO: 0232-742	PROJECT NAME: CANTON WATER RECLAMATION FACILITY 2019 ROOF REPLACEMENTS	TITLE: CURB FLASHING - ALL CONSTRUCTION PROFILES	DRAWING NO.: 06
DRAWN BY: MER			
PROJECT MGR.: D. ROTH			
SCALE: N.T.S.			
DATE: 6/14/2019			

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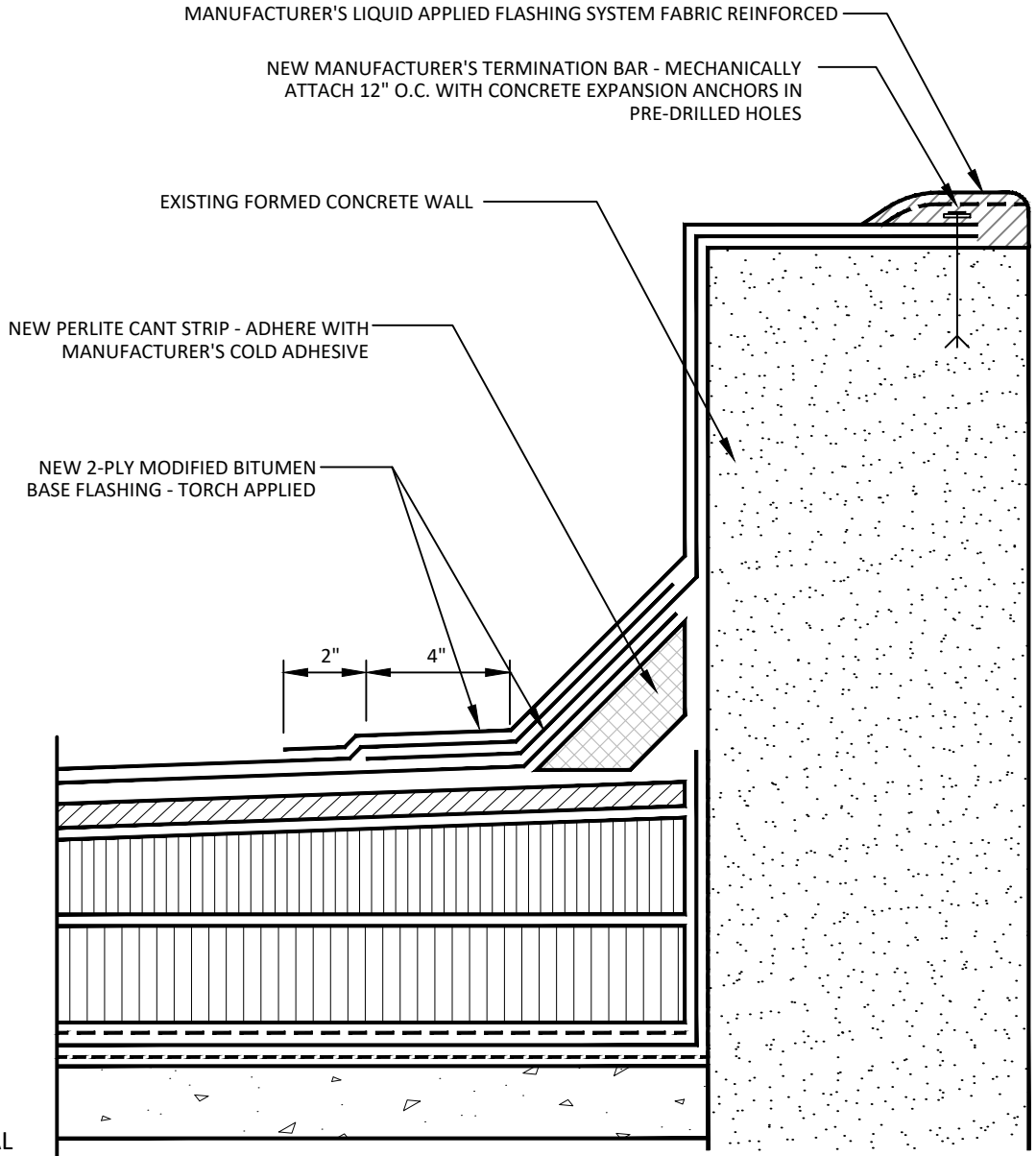

FOR TYPICAL ROOF CONSTRUCTION PROFILE SEE DETAIL 01

STATE OF OHIO
MARK S. EVANS
E-57455
REGISTERED
PROFESSIONAL ENGINEER

GENERAL NOTES

1.) CLEAN AND PRIME INTERIOR SIDE AND TOP OF WALL WITH MANUFACTURER'S APPROVED PRIMER.

CAD FILE No.: 0232742-DETAILS

PROJECT NO: 0232-742	PROJECT NAME: CANTON WATER RECLAMATION FACILITY 2019 ROOF REPLACEMENTS	TITLE: EMERGENCY SLUDGE STORAGE BUILDING PARAPET	DRAWING NO.: 07
DRAWN BY: MER			
PROJECT MGR.: D. ROTH			
SCALE: N.T.S.			
DATE: 6/14/2019			

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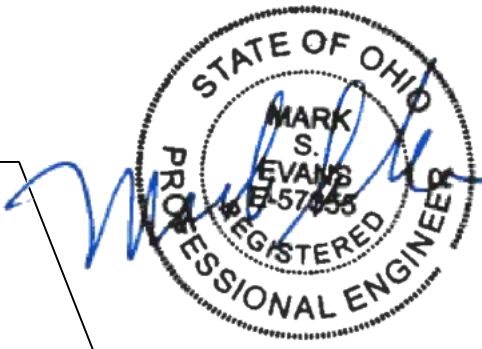

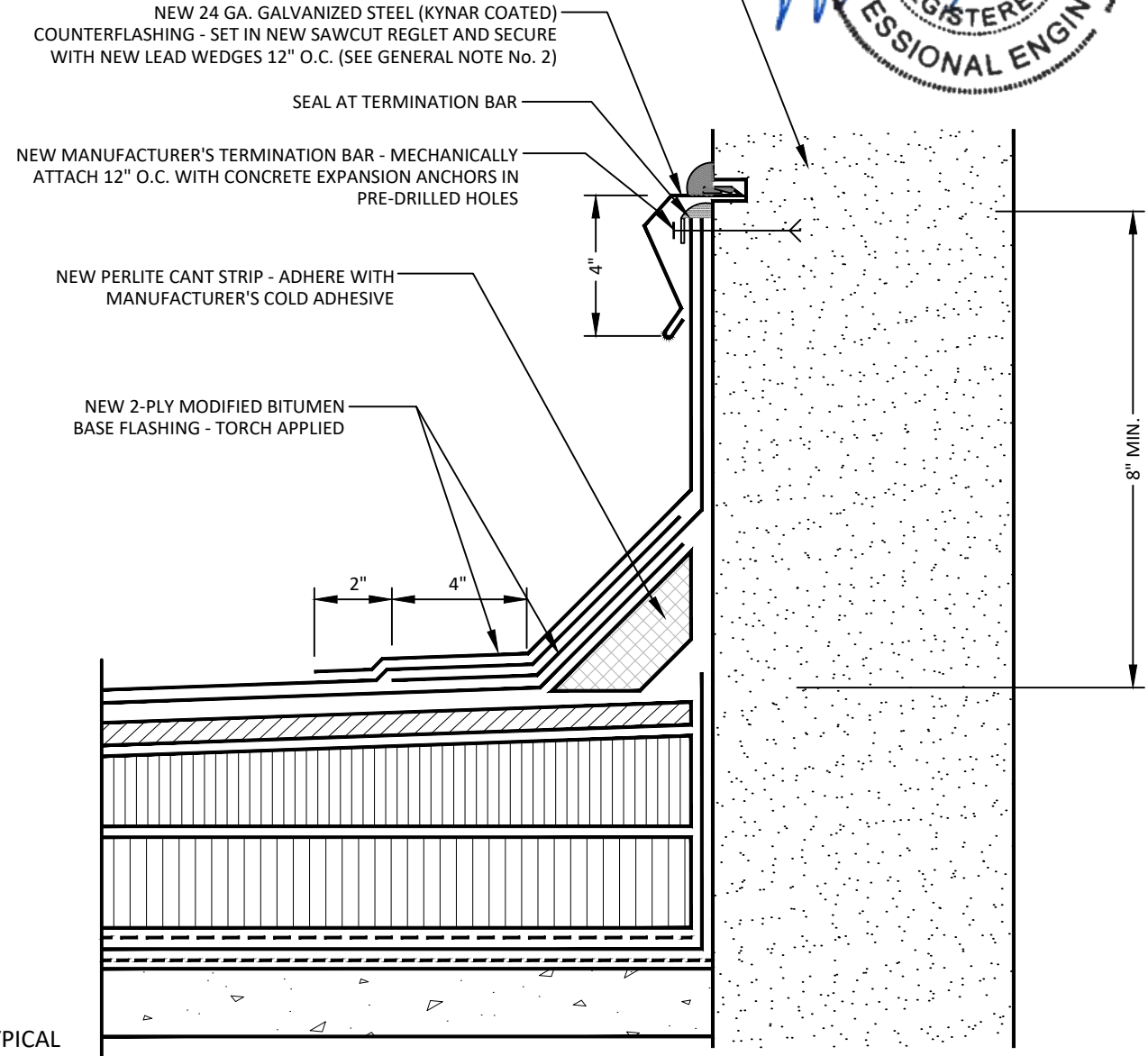

FOR TYPICAL ROOF CONSTRUCTION PROFILE SEE DETAIL 01

GENERAL NOTES

1.) FORM IN 10' LENGTHS, LAP 4", PROVIDE CONTINUOUS BEAD OF SEALANT BETWEEN ADJOIING SECTIONS.

2.) CLEAN AND PRIME INTERIOR SIDE OF WALL WITH MANUFACTURER'S APPROVED PRIMER.

CAD FILE No.: 0232742-DETAILS

PROJECT NO: 0232-742	PROJECT NAME: CANTON WATER RECLAMATION FACILITY 2019 ROOF REPLACEMENTS	TITLE: WALL FLASHING WITH REGLET MOUNTED COUNTERFLASHING	DRAWING NO.: 08
DRAWN BY: MER			
PROJECT MGR.: D. ROTH			
SCALE: N.T.S.			
DATE: 6/14/2019			

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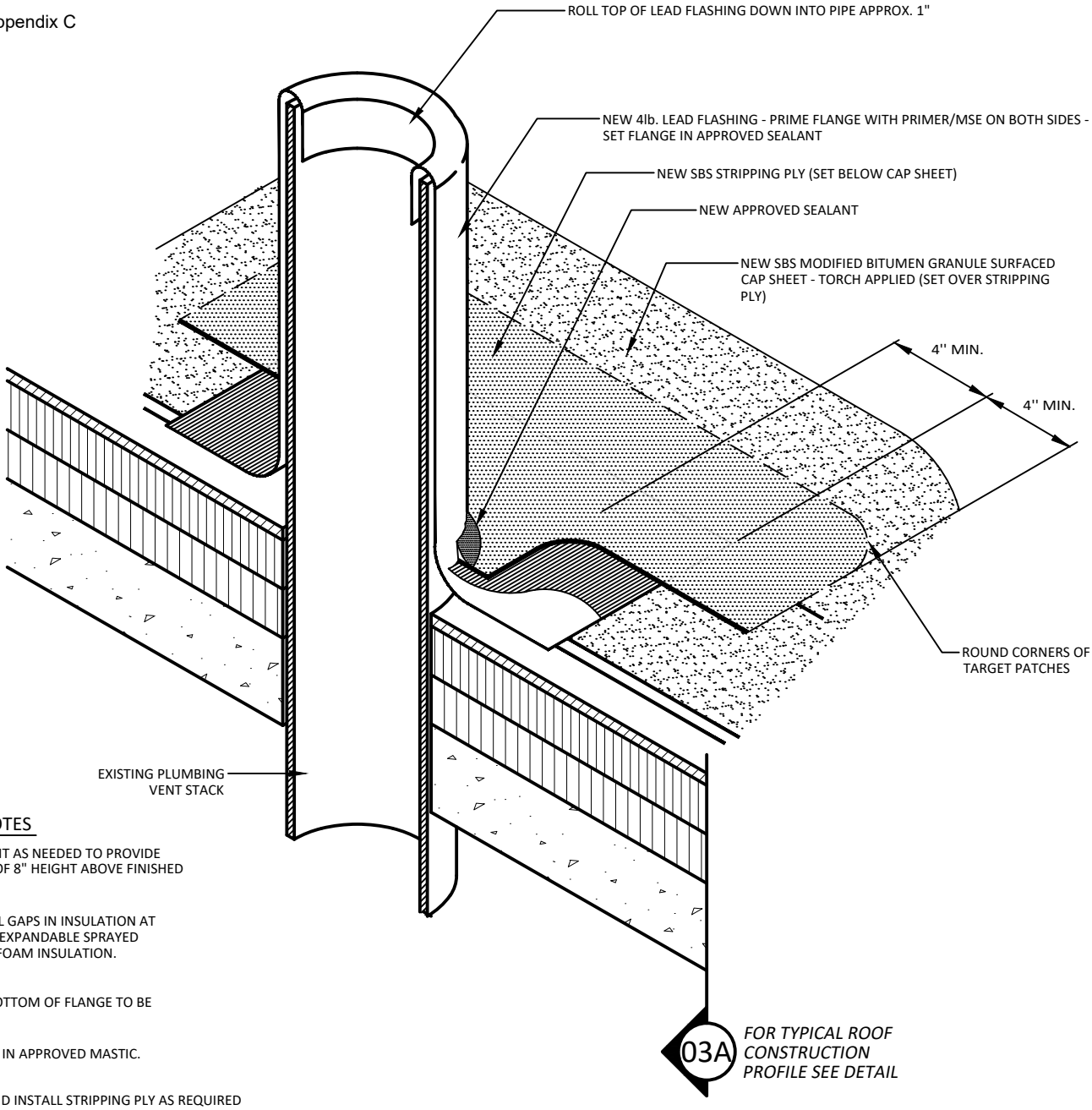

GENERAL NOTES

1.) EXTEND VENT AS NEEDED TO PROVIDE MINIMUM OF 8" HEIGHT ABOVE FINISHED ROOF.

2.) FILL ANY/ALL GAPS IN INSULATION AT VENT WITH EXPANDABLE SPRAYED URETHANE FOAM INSULATION.

3.) TOP AND BOTTOM OF FLANGE TO BE PRIMED.

4.) SET FLANGE IN APPROVED MASTIC.

5.) PROVIDE AND INSTALL STRIPPING PLY AS REQUIRED BY MANUFACTURER.

03A *FOR TYPICAL ROOF CONSTRUCTION PROFILE SEE DETAIL*

CAD FILE No.: 0232742-DETAILS

PROJECT NO: 0232-742	PROJECT NAME: CANTON WATER RECLAMATION FACILITY 2019 ROOF REPLACEMENTS	TITLE: PLUMBING VENT	DRAWING NO.: 09
DRAWN BY: MER			
PROJECT MGR.: D. ROTH			
SCALE: N.T.S.			
DATE: 6/14/2019			

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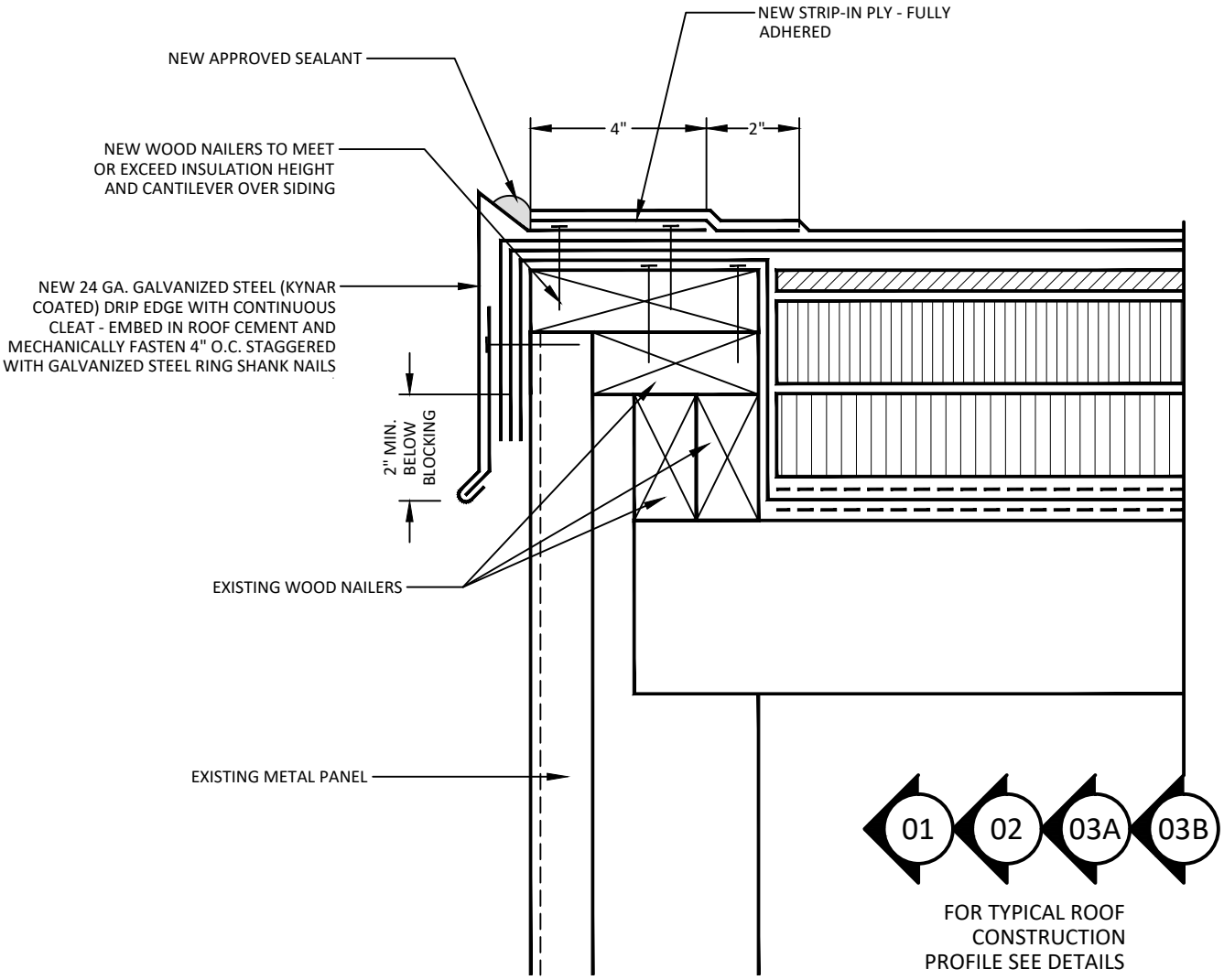

GENERAL NOTES

1.) NEW ANSI/SPRI ES-1 PERIMETER METAL AS SPECIFIED.

2.) FASTEN PER MANUFACTURER'S PUBLISHED LITERATURE.

3.) CONTRACTOR TO VERIFY FACE DIMENSION.

CAD FILE No.: 0232742-DETAILS

PROJECT NO: 0232-742	PROJECT NAME: CANTON WATER RECLAMATION FACILITY 2019 ROOF REPLACEMENTS	TITLE: PERIMETER EDGE GRAVEL STOP/FASCIA	DRAWING NO.: 10
DRAWN BY: MER			
PROJECT MGR.: D. ROTH			
SCALE N.T.S.			
DATE: 6/14/2019			

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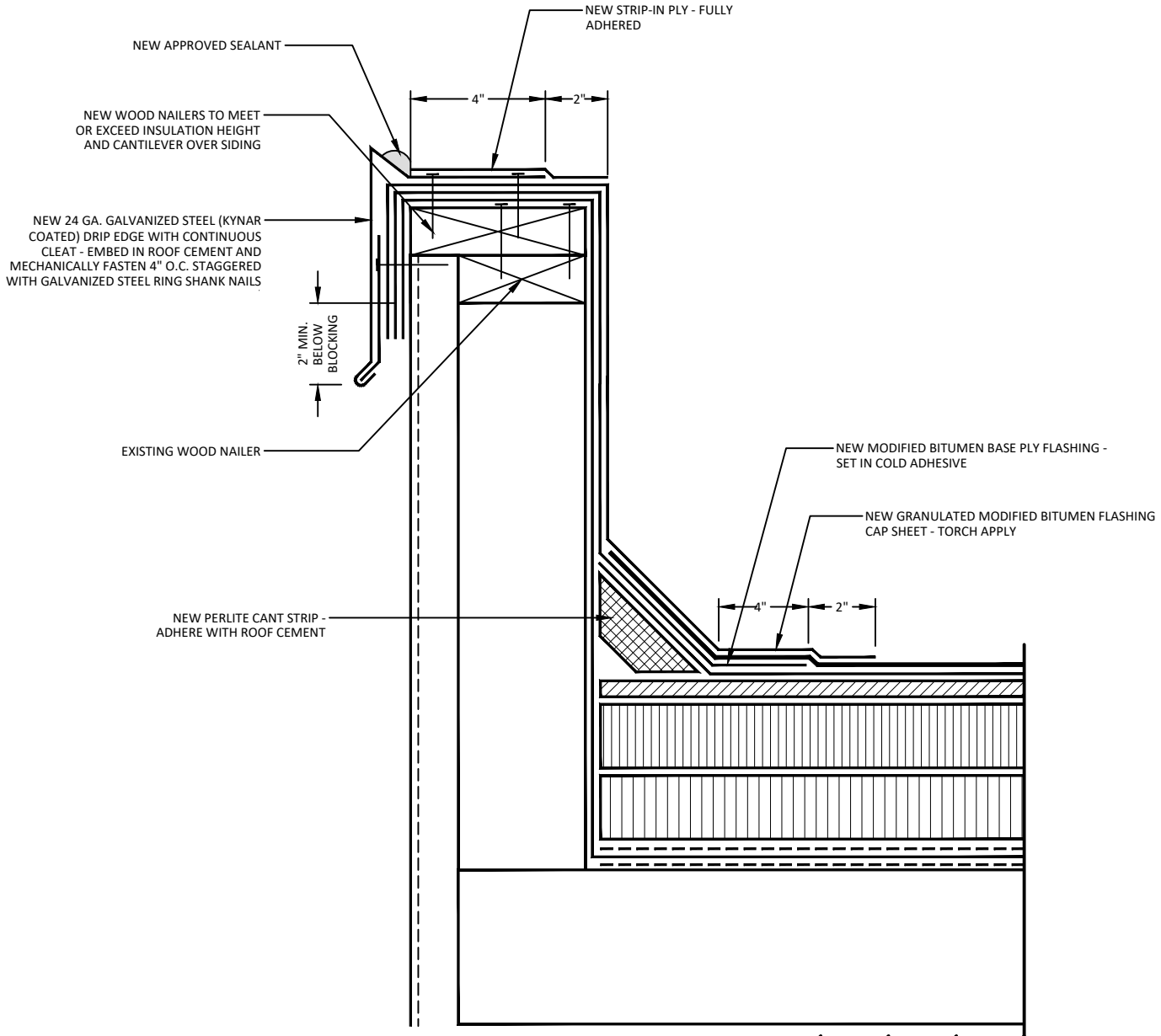

01 02 03A 03B FOR TYPICAL ROOF CONSTRUCTION PROFILE SEE DETAILS

GENERAL NOTES

1.) NEW ANSI/SPRI ES-1 PERIMETER METAL AS SPECIFIED.

2.) FASTEN PER MANUFACTURER'S PUBLISHED LITERATURE.

3.) CONTRACTOR TO VERIFY FACE DIMENSION.

STATE OF OHIO MARK S. EVANS E-57055 REGISTERED PROFESSIONAL ENGINEER

CAD FILE No.: 0232742-DETAILS

PROJECT NO: 0232-742	PROJECT NAME: CANTON WATER RECLAMATION FACILITY 2019 ROOF REPLACEMENTS	TITLE: PARAPET FLASHING	DRAWING NO.: 11
DRAWN BY: MER			
PROJECT MGR.: D. ROTH			
SCALE N.T.S.			
DATE: 6/14/2019			

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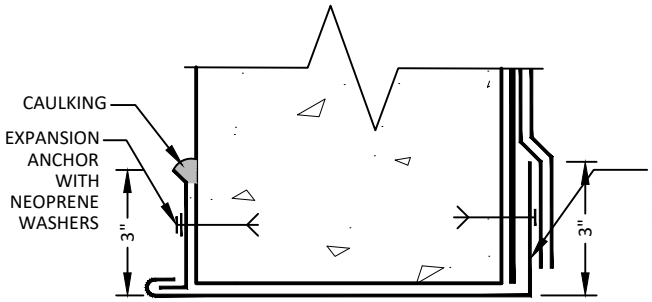

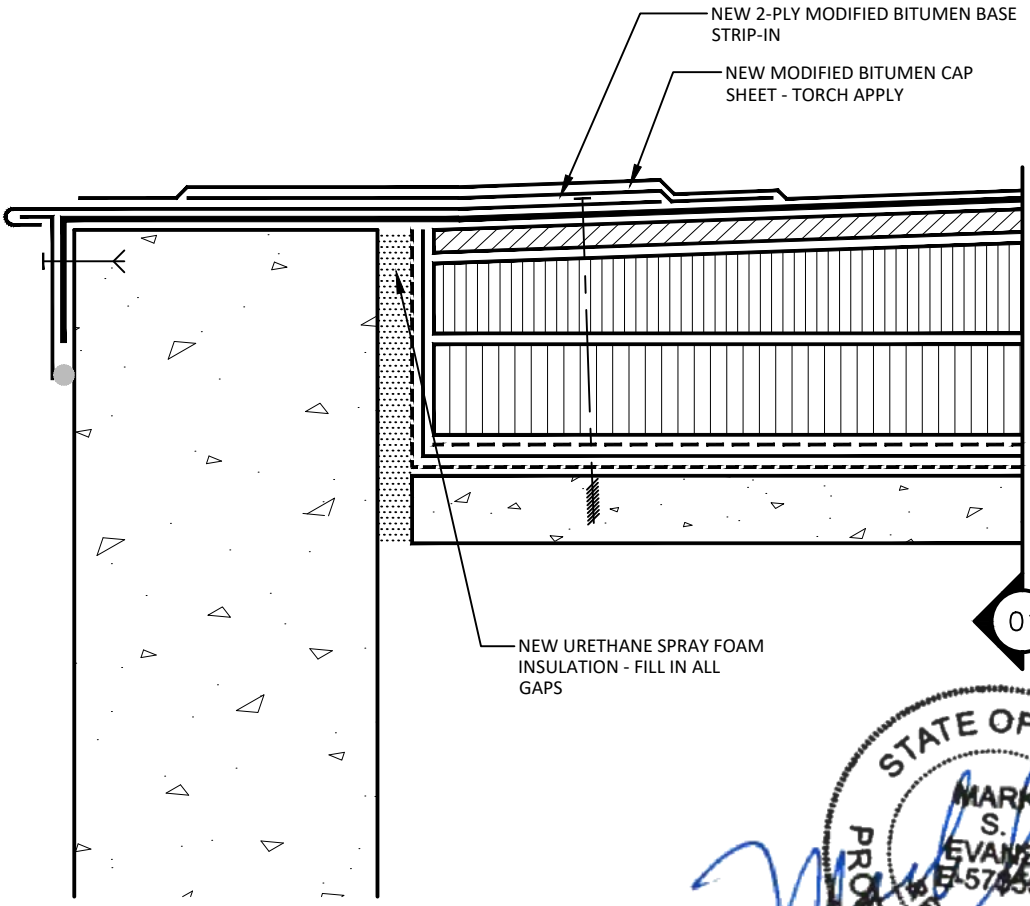

GENERAL NOTES

1.) NEW SCUPPER BOX AND DOWNSPOUT SHALL BE SIMILAR IN DESIGN TO THE EXISTING.

CAD FILE No.: 0232742-DETAILS

PROJECT NO: 0232-742	PROJECT NAME: CANTON WATER RECLAMATION FACILITY 2019 ROOF REPLACEMENTS	TITLE: SCUPPER	DRAWING NO.: 12
DRAWN BY: MER			
PROJECT MGR.: D. ROTH			
SCALE: N.T.S.			
DATE: 6/14/2019			

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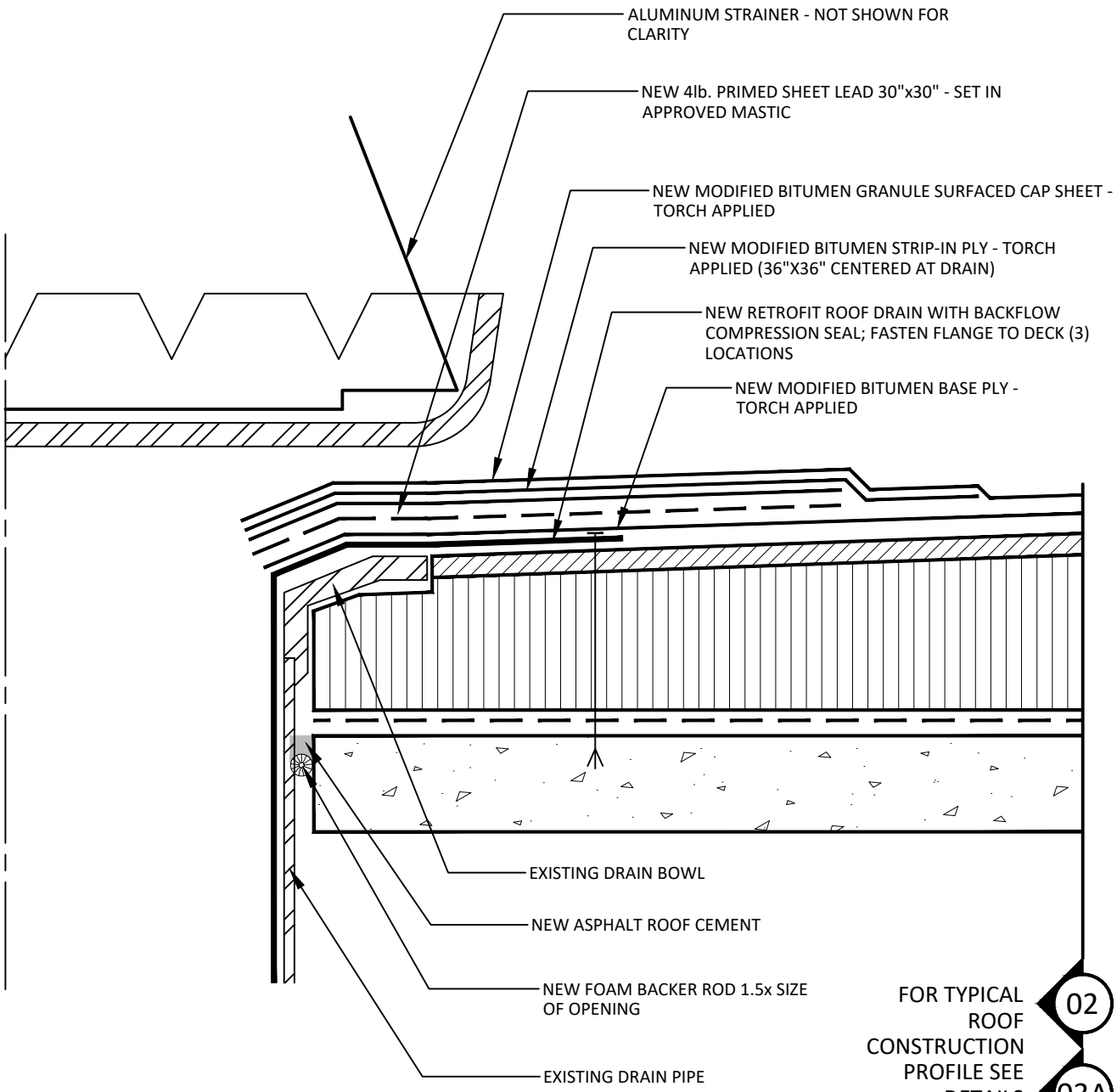

FOR TYPICAL ROOF CONSTRUCTION PROFILE SEE DETAILS 02 03A

GENERAL NOTES

1. TAPER NEW TAPERED INSULATION DRAIN SUMP 1/2" PER FOOT AND PROVIDE MINIMUM 4'x4' DRAIN SUMPS.
2. PRIME NEW DRAIN FLANGE TO RECEIVE FLASHING PLIES.
3. MECHANICALLY ATTACH NEW DRAIN FLANGE TO ROOF DECK IN (3) PLACES MINIMUM.
4. NEW TARGET AND DRAIN STRIPPING SHALL BE PER MANUFACTURER'S REQUIRED DETAILS FOR WARRANTY, AND MAY ALTER SLIGHTLY FROM ILLUSTRATION.

CAD FILE No.: 0232742-DETAILS

PROJECT NO: 0232-742	PROJECT NAME: CANTON WATER RECLAMATION FACILITY 2019 ROOF REPLACEMENTS	TITLE: RETROFIT ROOF DRAIN	DRAWING NO.: 13
DRAWN BY: MER			
PROJECT MGR.: D. ROTH			
SCALE N.T.S.			
DATE: 6/14/2019			

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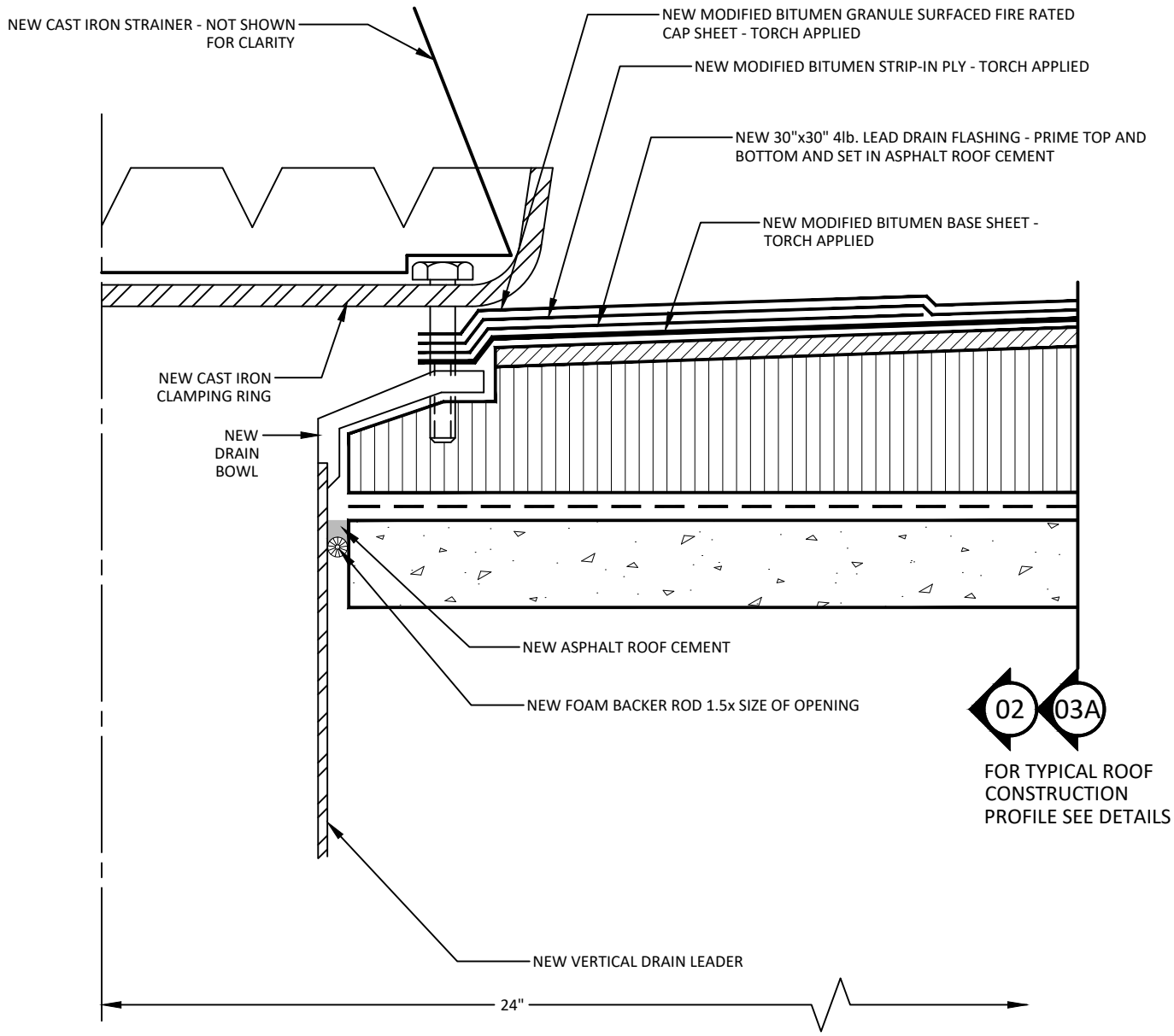

GENERAL NOTES

1.) TAPER NEW LIGHTWEIGHT INSULATING FILL 1/4" PER FOOT 24" FROM CENTER OF DRAIN.

2.) REPLACE DRAIN ASSEMBLY, VERTICAL LEADER AND ELBOWS TO HORIZONTAL PIPING.

CAD FILE No.: 0232742-DETAILS

PROJECT NO: 0232-742	PROJECT NAME: CANTON WATER RECLAMATION FACILITY 2019 ROOF REPLACEMENTS	TITLE: NEW ROOF DRAIN ASSEMBLY, CONCRETE DECK	DRAWING NO.: 14
DRAWN BY: MER			
PROJECT MGR.: D. ROTH			
SCALE: N.T.S.			
DATE: 6/14/2019			

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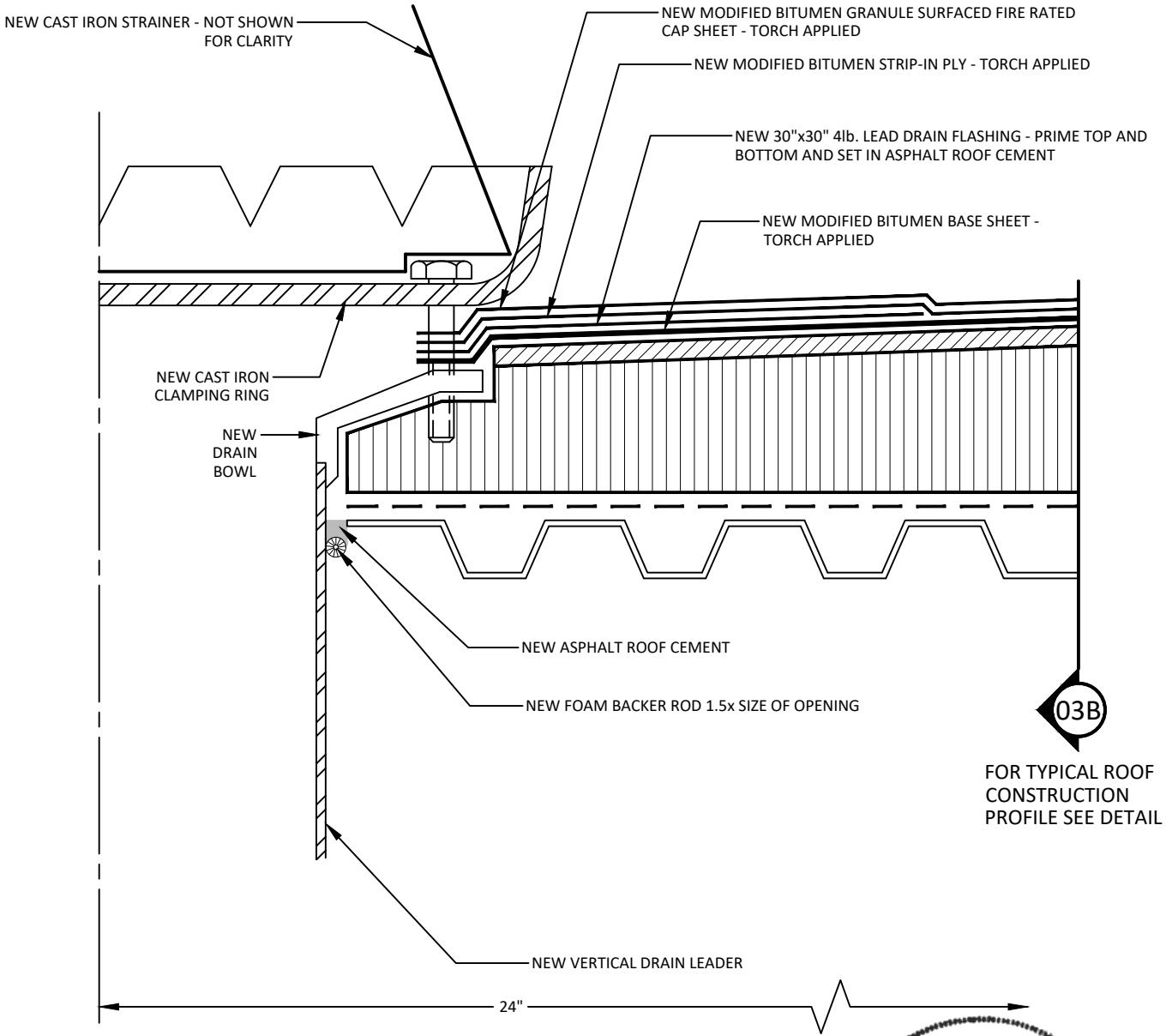

GENERAL NOTES

1.) TAPER NEW LIGHTWEIGHT INSULATING FILL 1/4" PER FOOT 24" FROM CENTER OF DRAIN.

2.) REPLACE DRAIN ASSEMBLY, VERTICAL LEADER AND ELBOWS TO HORIZONTAL PIPING.

CAD FILE No.: 0232742-DETAILS

PROJECT NO: 0232-742	PROJECT NAME: CANTON WATER RECLAMATION FACILITY 2019 ROOF REPLACEMENTS	TITLE: NEW ROOF DRAIN ASSEMBLY, METAL DECK	DRAWING NO.: 15
DRAWN BY: MER			
PROJECT MGR.: D. ROTH			
SCALE: N.T.S.			
DATE: 6/14/2019			

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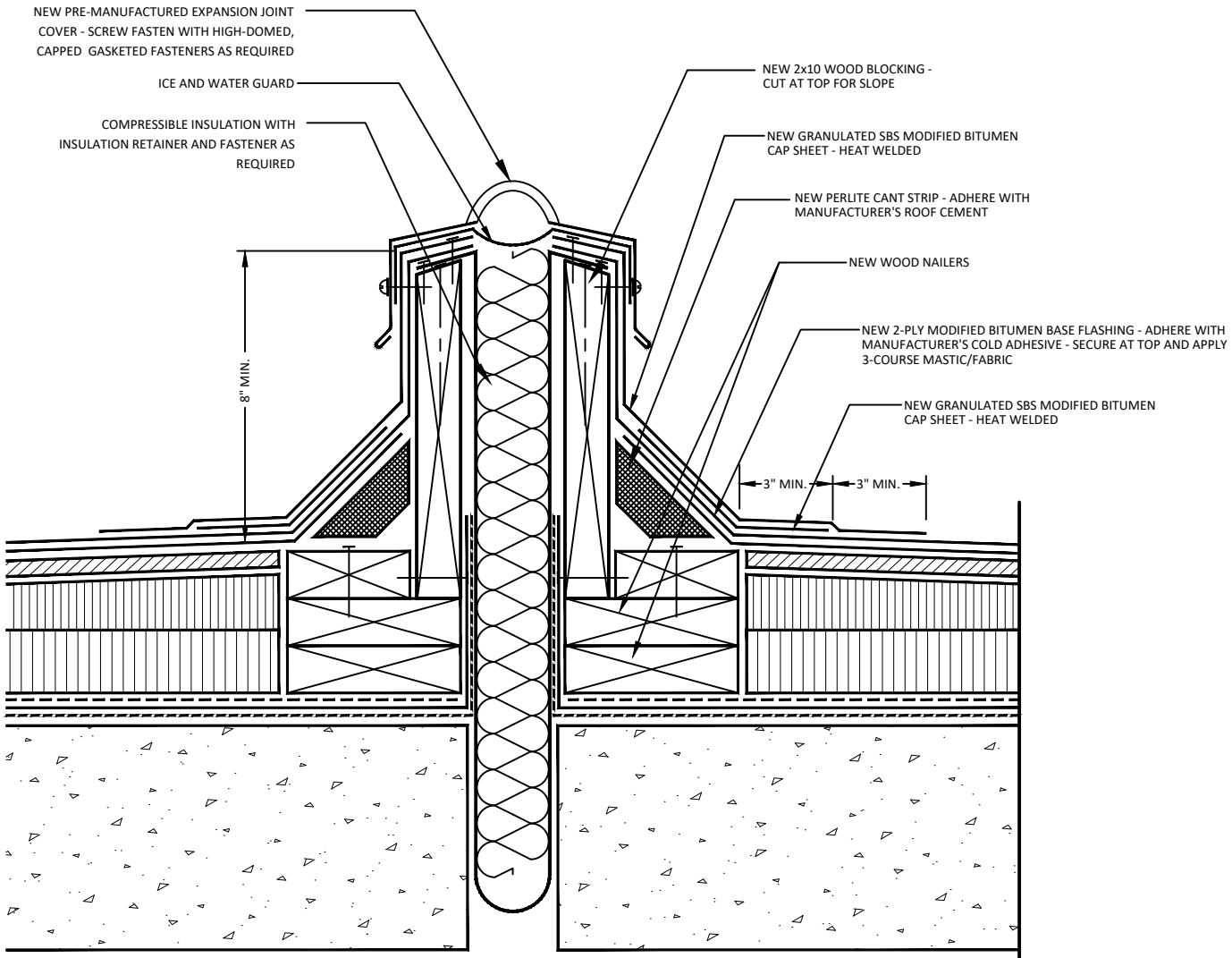

GENERAL NOTES

1.) FLASHING REQUIREMENTS TYPICAL FOR BOTH SIDES OF THE EXPANSION JOINT.

2.) WOOD NAILERS MUST BE INSTALLED WITH SUITABLE FASTENERS TO MEET APPLICABLE BUILDING CODES. (200 LBS. PER LINEAR FOOT MIN. IN ANY GIVEN DIRECTION)

3.) ALL SHEET METAL IS TO BE INSTALLED PER SMACNA GUIDELINES.

4.) FLASHING LAPS MUST BE OFFSET FROM FIELD LAPS BY A MINIMUM OF 12".

02 FOR TYPICAL ROOF CONSTRUCTION PROFILE SEE DETAIL

CAD FILE No.: 0232742-DETAILS

PROJECT NO: 0232-742	PROJECT NAME: CANTON WATER RECLAMATION FACILITY 2019 ROOF REPLACEMENTS	TITLE: EXPANSION JOINT - CONCRETE DECK - CONCRETE DECK	DRAWING NO.: 16
DRAWN BY: MER			
PROJECT MGR.: D. ROTH			
SCALE N.T.S.			
DATE: 6/14/2019			

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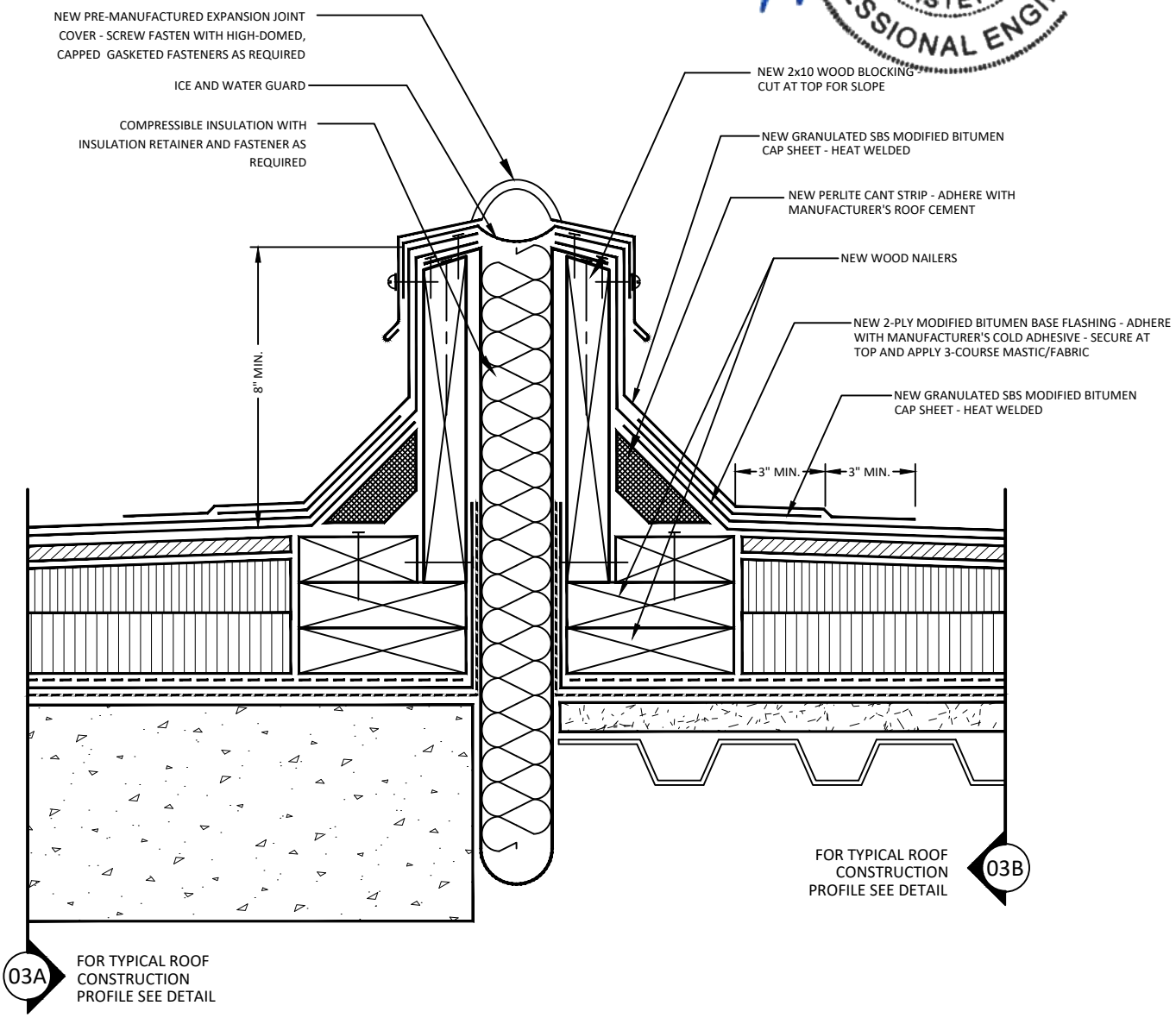

GENERAL NOTES

1.) FLASHING REQUIREMENTS TYPICAL FOR BOTH SIDES OF THE EXPANSION JOINT.

2.) WOOD NAILERS MUST BE INSTALLED WITH SUITABLE FASTENERS TO MEET APPLICABLE BUILDING CODES. (200 LBS. PER LINEAR FOOT MIN. IN ANY GIVEN DIRECTION)

3.) ALL SHEET METAL IS TO BE INSTALLED PER SMACNA GUIDELINES.

4.) FLASHING LAPS MUST BE OFFSET FROM FIELD LAPS BY A MINIMUM OF 12".

CAD FILE No.: 0232742-DETAILS

PROJECT NO: 0232-742	PROJECT NAME: CANTON WATER RECLAMATION FACILITY 2019 ROOF REPLACEMENTS	TITLE: EXPANSION JOINT - CONCRETE DECK - METAL DECK	DRAWING NO.: 17
DRAWN BY: MER			
PROJECT MGR.: D. ROTH			
SCALE N.T.S.			
DATE: 6/14/2019			

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