CITY OF BLOOMINGTON

401 N Morton St
Bloomington, IN 47404
www.bloomington.in.gov

INVITATION TO BID

For

SOLAR PANEL AND ROOF REPLACEMENT PROJECT FOR CITY BUILDINGS AND

"SOLARIZE BLOOMINGTON" INITIATIVE

ITB #2016-ESD-SOLAR

RELEASE DATE: OCTOBER 3, 2016

SUBMITTAL DATE: OCTOBER 19, 2016

Pre-Bid Proposal Meeting: October 11, 2016

Affirmative Action Plan Due: October 18, 2016

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INVITATION: The City of Bloomington is requesting qualified and experienced firms to submit bids for:

1) Roof replacements at City Hall and Police Headquarters (collectively "City Buildings"), located in the City of Bloomington, Indiana;
2) New photovoltaic (PV) systems at identified City Buildings; and
3) Residential and commercial PV installations, to be offered at a reduced price per-watt to Bloomington-area residents recruited through a "Solarize Bloomington" campaign.

GENERAL INFORMATION
PART I

1.1 **BACKGROUND:** This project helps meet the City of Bloomington's goals of reducing municipal energy use and maintaining efficient and reliable infrastructure. Specifically, the project will replace the existing roofs and install PV systems on the identified City Buildings, and offer a reduced-cost PV purchase and installation package to local residents. Responding firms are invited to submit bids individually or collaborate with another firm(s) to submit a joint bid.

The intent of this Invitation to Bidders is to select one or more firms to provide system design, procurement, and installation services for the following projects. Firms are invited to submit bids individually or collaborate with another firm(s).

The project will include the following locations:

- Bloomington City Hall, 401 N. Morton St., Bloomington, IN
- Bloomington Police Headquarters, 220 E. 3rd St., Bloomington, IN
- Residential and commercial locations throughout Bloomington. This locations will be identified through the "Solarize Bloomington" program.

By recruiting interested individuals and businesses from the private sector in conjunction with the planned larger installations on city facilities, we aim to realize economies of scale and reduce both the barriers to expanding solar in the community and the costs faced by installers in recruiting customers.

This "group buy" will be available to residents in the City of Bloomington. Installations may also take place in the surrounding area, as allowed by the selected installer(s).

1.2 **SCOPE OF WORK:** The selected firm shall:

1.2.1 Design, procure, and install PV at City Hall and at Police Headquarters **("Solar Project A")**.

a. To ensure the integrity and efficiency of the new solar installation, the project will include the installation of a light-colored, reflective roof at City Hall and Police Headquarters. The bid shall also include an alternate price for enhanced roof insulation at both locations.

1.2.2 Design, procure, and install PV at residences and commercial establishments recruited through the "Solarize Bloomington" campaign ("Solar Project B"). Participants eligible for the lower-cost installations will be recruited by the City of Bloomington and community partners.

1.2.3 **Solar Project A:** The following facilities are included in Project A. The results of a structural evaluation of both buildings is included in **Appendix A.**

1) City Hall, 401 N. Morton Street. City Hall is one of three sections of the larger Showers Building. Please see **Appendix B** for a delineation of the property lines. Roof replacement bids should be enumerated separately for Lots 1 and 3 on the included map.

2) Police Headquarters, 220 E. 3rd Street.

1.2.4 **Solar Project B: Solarize Bloomington Campaign** - The goals of the Solarize Bloomington campaign are to:

- Increase the total kilowatts of installed solar capacity in the Bloomington area,
- Create economies of scale through bulk customer acquisition, installation, and procurement of solar PV energy systems,
- Provide solar installer(s) with pre-screened residential and commercial customers, and
- Achieve a high conversion rate (from proposal to signed contract) for participants.

1.2.5 All contracts arising out of Project B will be executed between the home or business owner and the selected contractor. Installations for Project B will take place before December 31, 2017.

1.3 **SPECIFICATION AND INVENTORY INFORMATION (ROOF REPLACEMENT PROJECTS):** This information is included as general information regarding our current installations. It is intended to be used in conjunction with the information obtained during the pre-bid meeting and site visits. This information is limited and given as a general guideline. Unless otherwise specifically noted, reference to any brand, manufacturer, name, make, model or catalog number in these requirements shall be regarded as establishing a standard of quality, and shall not be construed as limiting competition and equal products may be substituted. Equivalency will be determined by the City.

1.3.1 The existing roofs consist of the following:

- Showers Building: Saw-tooth roof with clerestory windows; structurally sloped wood deck; 5/8" gypsum board; 3.5" polyisocyanurate roof insulation; ½" wood fiber insulation; fully adhered, reinforced EPDM single-ply membrane; 60,000 sf. Estimated R-value of the current materials is R-20.
- Police Headquarters: Flat roof with rooftop air handlers; wood deck, 2.5-3.5" polyisocyanurate roof insulation, EPDM; 10,000 sf. Estimated R-value of the current materials is R-20.

1.3.2 Contractor shall verify existing roof conditions at the time of the pre-bid meeting.

1.3.3 Project work for the Showers Building will consists of the following as a minimum. Please see **Appendix C** for a detailed Project Manual and specifications for the roof replacement portion of this project.

- On roof areas delineated by Lot 1 (approx. 35,000 sf) & Lot 3 (approx.. 25,000 sf) in **Appendix B**:
  - Removal and disposal of fully adhered EPDM single-ply membrane and related flashings;
  - Removal and disposal of mechanically attached ½-inch wood fiber, down to the existing polyisocyanurate roof insulation;

- Removal and replacement of any deteriorated foam insulation and/or gypsum board by Unit Pricing;
- Providing ¼-inch coverboard;
- Providing plate-bonded, 60-mil Thermoplastic Polyolefin (TPO) Membrane system or equivalent material certified by the Cool Roof Rating Council with a minimum three (3) year Solar Reflectance Index of 70 (www.coolroofs.org), with the first twelve (12) feet from each edge being black in color for the Showers Building only;
- Accommodating all structures and roof modifications necessary to affix solar panels, including flashing, boots, or other materials as acceptable to the roof manufacturer for inclusion in the system warranty.
- Firms should also provide an alternate cost option that would raise the insulation value of both roofs to R-40 from the estimated existing level of R-20, and provide a separate alternate design and bid using twenty-four (24) gauge galvanized steel (G-90), standing seam roof material with a Kynar 500 paint finish as an alternative to TPO.

1.3.4 Responding firms shall achieve a waste diversion rate of at least 65% by weight. Please include a one (1) page waste management plan with your bid proposal indicating the following:

- How all salvaged materials and waste materials will be handled, sorted, stored, and tracked during the project;
- Anticipated final disposal plan for each type of material;
- How workers will be monitored or supervised during deconstruction;
- Specify auditing procedures that will be used to track the various waste and salvaged materials for each site;
- A plan to document the process of deconstruction and the salvaged materials in writing and through photo documentation.
- An estimation of the percent diversion from final disposal that is achievable.

1.4 **LICENSES AND CERTIFICATIONS:** All relevant employees shall have all valid and up-to-date licenses required by the State of Indiana necessary for this type of project.

1.5 **QUALIFICATIONS:** Firms shall be responsive, responsible, and have the capability, experience, and personnel to render the services requested. Bid proposals must clearly demonstrate the capability, training, and certifications necessary for roofing projects and solar projects, and experience of the proposed personnel (not just of the Firm).

1.5.1 If subcontractors will be employed, similar information must be provided and the portions to be subcontracted must be identified.

1.6 **SELECTION PROCESS:** All bids deemed responsible and responsive to this request will be reviewed. Judgments of which bids meet these criteria will include price and inclusion of all items listed in the bid checklist (**Appendix D**).

1.7 **AWARD:** Bid proposals will be evaluated by the City, and taking in consideration the requirements stipulated within in this bid proposal, the award of a bid, if any award is made, will only be to a responsible and responsive bidder who submits a bid proposal which offers the best overall value to the City. The selected bid proposal shall offer the most complete and advantageous bid proposal which

meets, or exceeds the scope of work requirements prescribed within this invitation.

1.7.1 The City reserves the right to award on an all or-none basis, or award to multiple Bidders.

1.7.2 If an award is to be made, it shall be made at a subsequent Board of Public Works meeting. The City reserves the right to rescind any award if it is determined the offer is not in the best interest of the City, or if errors, omissions, inaccuracies, non-compliance, or any deficiencies are discovered after the award has been issued.

1.7.3 If the City determines that all bid proposals received should be rejected, bidders shall be notified by the Purchasing Manager accordingly. The City may or may not resubmit the Invitation to Bid request.

1.7.4 If the Board of Public Works approves the award of bid contracts, bid results will be available for review within twenty-four (24) hours after the award at: **https://bloomington.in.gov/rfp.** Results shall not be given over the telephone, or via email prior to the award of a contract.

1.7.5 Bids may be withdrawn any time *prior* to the scheduled deadline for receipt of bids. All bid proposals submitted shall remain open and valid until the bid has been rejected, or accepted, and awarded. Furthermore, the City may reject any and all bid proposals, to waive any irregularities or informalities in a bid proposal, and to issue a new or modified request, or cancel the Invitation to Bid, if it is found to be in the best interest of the City.

1.8 KEY DEADLINE DATES:

Event	Time	Day	Date
ITB Issuance Date	N/A	Monday	October 3, 2016
Pre-Bid Proposal Meeting	2:00 p.m. (EDT)	Tuesday	October 11, 2016
Final day to submit inquiries	5:00 p.m. (EDT)	Thursday	October 13, 2016
Responses to Inquiries Due	5:00 p.m. (EDT)	Friday	October 14, 2016
Affirmative Action Plan Due	5:00 p.m. (EDT)	Tuesday	October 18, 2016
Bid Submittal Deadline	4:30 p.m. (EDT)	Wednesday	October 19, 2016
Bid Opening - Board of Public Works Meeting	5:30 p.m. (EDT)	Wednesday	October 19, 2016

GENERAL CONDITIONS
PART II

2.1 SUBMISSION INSTRUCTIONS: Sealed bid proposals shall be submitted to the attention of the City of Bloomington Public Works Board. The original hard copy bid submittal packet shall be clearly marked "Solar Panel/Roof Bid 2016". Bids will be due to the address listed below on, or before **4:30 p.m. (EDT), Wednesday, October 19, 2016.** No electronic or facsimile offers will be accepted.

Sealed bid proposals will be opened and read aloud at the Board of Public Works meeting on **Wednesday, October 19, 2016 at 5:30 p.m. (EDT).** Any bid proposals received after the deadline will be returned unopened.

Submit Bids Proposals To:

City of Bloomington Board of Public Works
Attn: Kyla Cox Deckard, President
401 N Morton Dr. Suite 120
Bloomington, IN 47404

2.1.2 It is the bidder's responsibility to assure actual delivery of bid documents with the City prior to the established deadline. To confirm receipt of your submittal, please contact Christina Smith at 812.349.3589, or smithc@bloomington.in.gov.

2.2 **BID SUBMITTAL COSTS:** Those submitting bids do so entirely at their expense. There is no expressed or implied obligation by the City to reimburse any individual or firm for any costs incurred in preparing or submitting bids, or providing additional information when requested by the City.

2.3 **ACCEPTANCE:** Submission of any bid indicates acceptance of the terms and conditions, and requirements contained in the ITB, and attached Contract unless clearly and specifically noted in the bidder's submittal documents.

2.4 **PRE-BID PROPOSAL MEETING:** A mandatory pre-bid proposal meeting is scheduled for **October 11, 2016, 2:00 p.m. (EDT),** in the McCloskey Room at City Hall. All attendees must sign in at the site visit location. A tour of both City Hall and Police Headquarters will be provided with opportunities to pose questions. The City will either respond to questions, or document questions for later response. Any follow-up questions should be submitted as per instructions listed in Section 2.5.

2.5 **INQUIRIES AND ADDENDA:** It is the Bidder's responsibility to clarify any details in question, or submit any suggestions **before** a bid is submitted. All questions, or suggestions shall be emailed to the attention of Julie Martindale, Purchasing Manager at martindj@bloomington.in.gov. Email inquiries, or suggestions shall include "Solar Panel/Roof Bid 2016" in the subject line and may be submitted until **5:00 p.m. (EDT), Thursday, October 13, 2016**

2.5.1 Inquires shall reference the ITB section number relevant to the question presented for clarification.

2.5.2 Responses shall be in written form via email to the requesting Bidder within one (1) business day when possible.

2.5.3 If necessary, an addendum or addenda will be issued, and accessible on the City's RFP page which is located here: **https://bloomington.in.gov/rfp**.

2.5.4 It is the Bidder's responsibility to access the City's RFP webpage prior to submitting a bid to insure no updates, additions, omissions, or corrections have been posted.

2.5.5 Any ambiguities or inconsistencies shall be brought to the attention of the City through written communication or via **email** by **5:00 p.m. (EDT), Thursday, October 13, 2016.**

2.5.6 The City assumes no liability for assuring accurate, complete, or on time e-mail transmissions, or receipts.

Email inquiries to:
Julie Martindale, Purchasing Mgr.
martindj@bloomington.in.gov

2.6 **COMPLIANCE:** The Bidder warrants and agrees that its performance under any award or contract that may be rendered from this bid will at all times comply with all local, state and federal laws, codes, rules, ordinances and regulations.

2.7 **BID REJECTION:** The City reserves the right to reject any and all bids, in whole or in part, to waive any and all informalities, and to disregard all non-conforming, non-responsive or conditional bids.

2.8 **BID SUBMITTAL REQUIREMENTS:** In order to facilitate the bid opening, bidders are required to prepare their bid proposals in accordance with the instructions outlined in this section. Each bidder is required to submit the bid proposal in a sealed package. Bidders whose bid proposal deviates from these instructions may be considered non-responsive and may be disqualified at the discretion of the City.

Bidders interested in performing the work described in this ITB shall provide the following information in a clear, comprehensive, and concise manner illustrating the company's capabilities and expertise:

2.8.1 **Company Introductory Letter:**
Letter must state the name and title of the person(s) authorized to represent the company in any negotiations, the name(s) and titles(s) of persons authorized to sign any contract that may result from this ITB, the contact person's name, mailing address, phone and fax numbers, and email address. A legal representative of the company authorized to bind the firm in contractual matters must sign the Cover Letter and the Proposal.

2.8.2 **Firm Qualifications:**
Provide a statement that documents the company's qualifications and as it relates to experience described in the Scope of Work. The response should include the following:

1. Proposing Firm Profile
   A. Detail size and organizational structure. Include information on all partner firms if relevant.
   B. Describe experience in working on and replacing commercial roof systems.
   C. Describe experience in developing, designing, and installing residential, municipal, and/or commercial solar electric systems, and how this experience will apply to a community solar project.

i. Confirm that your suppliers will be able to supply the quantity of panels needed to complete Projects A and B. If there is a minimum or maximum number of locations and/or kilowatt capacity that your firm is willing and/or able to accommodate by the December 31, 2017 deadline as part of the Solarize Bloomington purchase, please note that.

ii. Indicate the maximum capacity of solar that your firm has installed in a single year.

2.8.3 **Project Capabilities:**

Provide a statement describing capability to complete the project per the project timeline specified above. Include a discussion of financial stability, number of employees, length of time in business, capacity, and resources. Include any website or marketing support your firm plans to provide for this project.

A. Explain how the firm can expand quickly and maintain quality to meet the large demand for solar that may occur due to this project. Present your plan to accommodate large demand within the timeline stated above. If possible, provide examples of projects completed to-date that have prepared the firm for an undertaking of this scale.

B. Provide references from five (5) most recent solar, and five (5) most recent roofing projects, including size, date of installation, and location. Include a contact name, email, and phone number for each project and reference. In addition, identify any municipal solar projects and/or community solar projects similar to the services requested in the Scope of Work.

2.8.4 **Qualifications of the Project Team:**

A. Identify key personnel for this project including roles, experience, licenses and certificates, with corresponding numbers as appropriate. Include proof of any North American Board of Certified Energy Practitioner certification information, including level and type. This certification is preferred, but not mandatory. Also note any Master Electrician or other certified staff involved in this project.

B. Identify the main point of contact at the proposing firm. Confirm this individual's ability to provide bi-weekly progress reports to the City.

C. Identify any subcontractors you plan to use, along with their role in the project, and provide background information on size, experience, management, and licensing.

2.8.5 **Business Practices:**

A. Lead management practices: Describe the process for in-office management of a large volume of solar leads, scheduling of site assessments and installations, and processing of relevant paperwork.

B. Provide a sample customer contract tailored for use with Solarize Bloomington that includes a description of your terms of payment, process, and timeline, from initial deposit to final payment. (**Note:** All contracts will be executed between the homeowner or business owner and the selected contractor. The Contract between the owner and the selected firm will state that the City of Bloomington is not a party to the Contract, and that the selected contractor will be solely liable for any claims, losses, or damages arising out of the Contract.)

C. Describe how the firm addresses change orders.

D. Address health and safety record and practices.

2.8.6 **Work Quality:**

A. Explain why the products included in your response to this proposal are appropriate for this project. Provide descriptions of warranties and support that ensure long-term durability, operation, and maintenance of PV installations. Include performance and reliability figures, in addition to where the products were manufactured.

B. Describe the installation process, including how you will minimize disruption and disturbance of City facility operations, neighbors, landscaping, structures, and clients' living or working arrangements during preparation, installation, and clean up.

C. Describe final testing and sign-off procedures, including punch lists, inspection, and other necessary requirements.

2.8.7 **Customer Service:**

A. Describe how you plan to handle incident reports (trouble, warranty, service calls, and inquiries). Discuss your typical response time on calls, hours of coverage for customer service calls, and process for providing status reports after an incident is logged.

B. List any complaints received by the Better Business Bureau over the last 3 years.

C. Describe the training you provide the homeowner, including materials or manuals, customer care books, and/or support for later questions and system performance.

2.8.8 **Timeline:**

A. Note any impacts the timeline for the various installations could have on the per-watt price, including variability if some projects are completed in 2016 and some in 2017.

2.8.9 **Pricing and Financial Schedule:**

A. For roof replacement projects: Present a cost breakdown for each facility to provide the services outlined in the Scope of Work and the Project Manual in **Appendix C**. Please submit a detailed cost per line item for the following facilities:

i. Police Headquarters, including an alternate design and quote to increase the R-value of the roof from R-20 to R-40.
ii. Lot 1 of the Showers Building (City Hall – see **Appendix B**), including an alternate design and quote to increase the R-value of the roof from R-20 to R-40, and provide a separate alternate design and bid using twenty-four (24) gauge galvanized steel (G-90), standing seam roof material with a Kynar 500 paint finish as an alternative to TPO. Include information on how this alternate will affect solar racking design.
iii. Lot 3 of the Showers Building (CFC, Inc. – see **Appendix B**), including an alternate design and quote to increase the R-value of the roof from R-20 to R-40, and provide a separate alternate design and bid using twenty-four (24) gauge galvanized steel (G-90), standing seam roof material with a Kynar 500 paint finish as an alternative to TPO.

B. For Solar Project A: Present solar pricing as a price-per-watt of installed capacity that is inclusive of materials, labor, and all other expenses involved in the installation. Prices should exclude any eligible incentives or tax credits for a grid-tied system installed on the specified buildings. Also present a total cost and expected annual production for each facility if the maximum possible system size were installed.

i. Components:
   a. Proposed panels shall have a minimum of 19% efficiency.
   b. Panels must not be installed closer than twelve (12') feet from the edge of the roof, so they are not visible from the ground.
   c. Include information on the manufacturer, model, rated power (where appropriate), country of origin and specifications of the proposed PV system (at a minimum, modules, inverters, and mounting system). Other details include:

i. Central-inverter-based designs shall be transformer-less, and include power optimizers with individual module performance monitoring via the internet.
ii. Electrical connection shall be on the load side of the meter with utility net metering.
iii. Metal conduit shall be used for all above ground wiring.
iv. Surface mounted metal conduit is acceptable, except in finished interior areas.
v. Only copper wire shall be used.
vi. A revenue grade PV performance meter shall be included.
vii. Provide online performance reporting.
viii. Include an optional cost for extending the manufactures' warranty for the inverter and optimizer components to twenty (20) years.

C. For Solar Project B: Present solar pricing as a price-per-watt of installed capacity that is inclusive of materials, labor, and all other expenses involved in the installation. Prices should exclude any eligible incentives or tax credits for a grid-tied system installed on the specified buildings. The price is to apply to all work described in the Residential Solar Scope of Work in

Appendix E. If there is a minimum or maximum system size that will be eligible for the proposed price-per-watt, please indicate that here.

i. System design and components are not binding at the proposal stage, but this information will be used to evaluate price proposals.

ii. You can provide up to three equipment pricing options, but you are not required to provide three.

a. Specify a nominal cost per watt for typical systems (4 kilowatts and 8 kilowatts).

b. At least one of the systems you provide with cost estimates for should be U.S. made modules, and one option should be for panels of a minimum 17% efficiency. System panels shall be sixty (60) cell for residential installations.

c. If you are able to offer a discount or rebate for larger individual installations, or if the capacity of panels in total for all projects installed exceeds a certain level, please note that offer in your response.

d. For all system options, include information on the manufacturer, model, rated power (where appropriate), country of origin and specifications of the proposed PV system options (at a minimum, modules, inverters, and mounting system).

1. Central inverter based designs shall be transformer-less, and include power optimizers with individual module performance monitoring via the internet.
2. Electrical connection shall be on the load side of the meter with utility net metering where available.
3. Metal conduit shall be used for all above ground wiring.
4. Surface mounted metal conduit is acceptable, except in finished interior areas.
5. Only copper wire shall be used.
6. A revenue grade PV performance meter shall be included.
7. Specify minimum inches of open space on each side and between the rain gutter and array.
8. Provide online performance reporting.

e. Note product warranties and availability and cost of extended warranties.

f. Expected System Generation: Provide expected annual system generation (in kilowatt-hours) for each kW of system capacity.

iii. Identify any factors or special conditions that would result in additional costs (such as roof materials, roof slope, improvements to existing wiring, roof access, etc.) and provide estimates of additional charges for each such factor or condition. To the extent possible, minimize the amount of special-condition-based pricing by anticipating these factors in your overall per-watt price in order to minimize the amount of uncertainty associated with any individual installation.

iv. If possible, we would like to offer lower-income households the opportunity to participate in the program. Describe any proposals you have to make the program available to low-income households.

v. **Note:** Include all your anticipated costs of customer development in your response. Customer communication, site assessments, system design and bid development should be factored into the final price. That is, there should be no charge for owners to have a site assessment and bid from the selected contractor – it is all in the final bid price. Calculate any costs associated with system design and a site visit into your price-per-watt proposal.

2.8.10 **Design Solar Project A:**
Include preliminary drawings for the proposed PV system that include (at a minimum):
Maximum possible system size (in kW DC and kW AC) for Police Headquarters and for City Hall (Lot 1 of **Appendix B)**.

a. Location of modules (including tilt)
b. Location of inverters
c. Any other site-specific information that will aid in overall evaluation

ii. Warranty: Describe any warranties associated with the installation, including full system coverage and/or warranties associated with individual components and warranties from both the Firm and manufacturers. The warranty for workmanship shall be for a minimum of three (3) years from project completion.

iii. Expected System Generation: Provide expected annual system generation (in kilowatt-hours) for each kW of system capacity.

2.8.11 A properly executed E-verify Affidavit which is included in this packet. (**Exhibit A)**

2.8.12 A properly executed Non-Collusion Affidavit also included in this packet. (**Exhibit B)**

2.8.13 A properly executed Drug Policy Affidavit which is included in this packet. **(Exhibit C)**

2.8.14 A properly executed Trench Safety Systems Affidavit which is included. **(Exhibit D)**

2.9 **STATE FORM 96 (Contractor's Bid for Public Work) (Exhibit E):** Each submittal shall also include a completed Form 96. The form is included with this packet and all sections are required to be completed and notarized. Bids submitted without proper signatures and notarization will be considered invalid and shall be deemed non-compliant.

GENERAL REQUIREMENTS
PART III

3.1 **BONDS:** Each Bid shall be accompanied by a cashier's check or a certified check drawn on an acceptable bank, or an acceptable Bidder's bond in an amount of not less than five percent (5%) of the total Bid. No personal and/or company checks will be accepted or the Bid shall be deemed responsive. The Bid guarantee shall be made payable without condition to the City of Bloomington, Indiana, hereinafter referred to as "Owner", and the amount of said Bid Guarantee may be retained by and forfeited to the Owner as liquidated damages if the Bid covered thereby is accepted and a contract based thereon is awarded and the Bidder should fail to enter into a contract in the form prescribed, with legally responsible sureties, within fifteen (15) days after such award is made and confirmed by the Owner. The Bid Guarantee deposit of each unsuccessful Bidder will be returned when their Bid is rejected. The Bid

Guarantee deposit of the Bidder to whom the Contract is awarded will be returned when the successful Bidder executes a contract and files a satisfactory performance bond and payment bond. The Performance and shall be in an amount at least equal to *100%* of the Contract Price.

3.2 **RETAINAGE (Exhibit F):** Contracts for public work in excess of $100,000 require retainage provisions. The retainage amount shall be placed in an escrow account. The City shall withhold five percent (5%) of the total contract dollar value for all work completed until the contract work is one hundred (100%) completed. A copy of the Escrow agreement is included in this packet.

3.3 **TAX EXEMPTION:** The City of Bloomington is exempt from payment of all state and federal sales taxes. Tax documents are available upon request.

3.4 **PAYMENT INFORMATION AND INVOICE SUBMITTAL:** Payment for invoices shall be processed upon receipt of an acceptable original invoice, and after the product has been received, and verified for accuracy.
Invoice(s) shall be submitted to the following address:

City of Bloomington
PO Box 100
Bloomington, IN 47402

3.4.1 Surcharges (i.e., fuel surcharges, restocking, etc.) shall NOT be added to invoices as an additional line item unless approved in writing from the Purchasing Manager.

3.4.2 The City is exempt from the payment of sales taxes. Any charges for taxes from which the City is exempt shall be deducted from invoices before payment is made.

3.5 **ABANDONMENT:** Notwithstanding any other provision of this Award, if funds for the continued fulfillment of the Award by the City are at any time not forthcoming or are insufficient, through failure of any entity to appropriate the funds or otherwise, then the City shall have the right to terminate this Award or Contract without penalty by giving written notice documenting the lack of funding in which instance, unless otherwise agreed by the City and Recipient, this Award shall terminate and become null and void. The City agrees that it shall make its best effort to obtain sufficient funds, including but not limited to, including in its budget for each fiscal period during the term of this Award a request for sufficient funds to meet its obligations under the Award in full.

3.6 **CONTRACT INFORMATION (Exhibit G):**
Any award will require a properly executed Agreement which is included in this packet. The contract includes the term of the contract and renewal options, insurance requirements, and general terms and conditions. Submission of a Bid indicates acceptance of the terms and conditions contained within this agreement unless clearly noted in the bid submittal documents.

3.7 **INSURANCE:** The Firm awarded a contract shall maintain insurance coverage reflecting the minimum amounts and conditions specified below. The firm must provide Certificates of Insurance in which the City shall be named as an additional insured.

Commercial General Liability: $1 million per occurrence, $2 million in the aggregate

Auto Insurance: $1 million combined
Worker's Compensation: Statutory limits
Professional Liability: $1 million
Umbrella: $5 million (over auto and commercial general liability)

3.8 **AFFIRMATIVE ACTION PLANS (Exhibit H) :** – (REQUIRED ON CONTRACTS OVER $10,000)
Each Bidder submitting an offer for over $10,000.00 shall submit and have approved by the City of Bloomington Contract Compliance Officer, Barbara McKinney, his/her written Affirmative Action Plan (AAP) at least twenty-four (24) hours prior to the deadline for submission of bids.

Each Bidder must insure that all employees and applicants for employment are not discriminated against because of race, religion, color, sex, national origin, ancestry, disability, sexual orientation, gender identity, veteran status or housing status. All the protected classes must be included in your Affirmative Action Plan for it to be acceptable.

In addition to other requirements, your plan MUST include a workforce breakdown, an internal grievance procedure, a non-retaliation statement, designation of a person by name or position who is responsible for implementation of the Plan, applicability to both applicants and employees, recruitment of minorities, equal access to training programs, and an explanation of your method of communicating the operations of your Affirmative Action Plan to employees and prospective applicants.

Barbara McKinney, Contract Compliance Officer, may be contacted at (812) 349-3429, 8:00 a.m. to 5:00 p.m. Monday through Friday. The Affirmative Action Plan paperwork is provided in this Invitation to Bid. *Affirmative Action Plans already on file are required to be updated every six (6) months.*

3.9 **E-VERIFY AFFIDAVIT (Exhibit A):** Bidders are required to enroll in and verify the work eligibility status of all newly-hired employees through the E-Verify program. The E-verify Affidavit must be properly executed and submitted with the bid documents.

3.10 **NON-COLLUSION AFFIDAVIT (Exhibit B):** Bidder is required, pursuant to Indiana Code 5-22-16-6, to affirm it has not, nor has any other member, representative, or agent of the firm, company, corporation or partnership represented by the Bidder, entered into any combination, collusion or agreement with any person relative to the price to be offered by any person nor to prevent any person from making an offer nor to induce anyone to refrain from making an offer and that this offer is made without reference to any other offer. The Non-Collusion Affidavit must be properly executed and submitted with the bid documents.

3.11 **DRUG POLICY AFFIDAVIT (Exhibit C)**: In accordance with Indiana Code 4-13-18-5, each Firm that submits a bid for a public works project that is estimated to cost $150,000 or more shall submit with his/her bid a written plan for an employee drug testing program to test the employees of the contracting firm and subcontractors for drugs.

3.12 **TRENCH SAFETY SYSTEMS AFFIDAVIT (Exhibit D):** In compliance with Indiana Code 36-1-12-20 all public works projects that may require the creation of a trench of at least five (5) deep in depth shall incorporate into the contract documents a properly executed Trench Safety Systems Affidavit.

3.13 **VENDOR REGISTRATION:** A Bidder must meet the vendor registration, and vetting approval requirements of the City before an award, or contract can be executed. Therefore, the Bidder shall be required to submit a current and completed Request for Taxpayer Identification Number and Certification form (IRS Form W-9) prior to a contract award.

3.14 **PAYMENT PREFERENCE:** The City's preferred method of payment is Electronic Funds Transfer (EFT). Payments processed through an EFT save dollars by increasing efficiency and streamlining the payment process. This eliminates the cost of paper, printing, postage, paperwork, and time. Bidders shall be required to submit a completed EFT form prior to award of a contract.

EXHIBIT A

STATE OF _____)
) SS:
COUNTY OF _____)

AFFIDAVIT REGARDING E-VERIFY

The undersigned, being duly sworn, hereby affirms and says that:

1. The undersigned is the _____ of _____.
(job title) (company name)

2. The company named herein that employs the undersigned:
- has contracted with or is seeking to contract with the City of Bloomington to provide services;

OR
- is a subcontractor on a contract to provide services to the City of Bloomington.

3. The undersigned hereby states that, to the best of his/her knowledge and belief, the company named herein does not knowingly employ an "unauthorized alien," as defined at 8 United States Code 1324a(h)(3).

4. The undersigned hereby states that, to the best of his/her knowledge and belief, the company named herein is enrolled in and participates in the E-verify program.

_____
Signature

_____
Printed name

STATE OF _____)
) SS:
COUNTY OF _____)

Before me, a Notary Public in and for said County and State, personally appeared _____ and acknowledged the execution of the foregoing this _____ day of _____, 20_____.

_____
Notary Public

_____
Printed name

My Commission Expires: _____
County of Residence: _____

EXHIBIT B

STATE OF _____)
) SS:
COUNTY OF _____)

NON-COLLUSION AFFIDAVIT

The undersigned offeror or agent, being duly sworn on oath, says that he has not, nor has any other member, representative, or agent of the firm, company, corporation or partnership represented by him, entered into any combination, collusion or agreement with any person relative to the price to be offered by any person nor to prevent any person from making an offer nor to induce anyone to refrain from making an offer and that this offer is made without reference to any other offer.

OATH AND AFFIRMATION

I affirm under the penalties of perjury that the foregoing facts and information are true and correct to the best of my knowledge and belief.

Dated this _____ day of _____, 20_____.

_____
(Name of Organization)

By: _____

_____
(Name and Title of Person Signing)

STATE OF _____)
) SS:
COUNTY OF _____)

Subscribed and sworn to before me this _____ day of _____, 20____.

My Commission Expires:

_____ _____
Notary Public Signature

Resident of _____ County _____
Printed Name

EXHIBIT C

COMPLIANCE AFFIDAVIT

REGARDING INDIANA CODE CHAPTER 4-13-18

DRUG TESTING OF EMPLOYEES OF PUBLIC WORKS CONTRACTORS

STATE OF INDIANA)

) SS:

COUNTY OF _____)

AFFIDAVIT

The undersigned, being duly sworn, hereby affirms and says that:

1. The undersigned is the _____ of
   (job title)
   _____.
   (company name)

2. The undersigned is duly authorized and has full authority to execute this Affidavit.

3. The company named herein that employs the undersigned:
   i. has contracted with or seeking to contract with the City of Bloomington to provide services; **OR**
   ii. is a subcontractor on a contract to provide services to the City of Bloomington.

4. The undersigned certifies that Contractor's submitted written plan for a drug testing program to test employees of the Contractor and Subcontractor for public works projects with an estimated cost of $150,000 is in accordance with Indiana Code 4-13-18 as amended.

5. The undersigned acknowledges that this Contract shall be subject to cancellation should Contractor fail to comply all provisions of the statute.

_____

Signature

_____

Printed Name

STATE OF INDIANA)
) SS:
COUNTY OF _____)

Before me, a Notary Public in and for said County and State, personally appeared _____ and acknowledged the execution of the foregoing this _____ day of _____, 20_____.

My Commission Expires: _____ _____
Signature of Notary Public

County of Residence: _____ _____
Printed Name of Notary Public

EXHIBIT D

BIDDER'S AFFIDAVIT IN COMPLIANCE WITH INDIANA CODE 36-1-12-20 TRENCH SAFETY SYSTEMS; COST RECOVERY

STATE OF INDIANA)
) SS:
COUNTY OF _____)

AFFIDAVIT

The undersigned, being duly sworn, hereby affirms and says that:

1. The undersigned is the _____ of
(job title)
_____.
(company name)

2. The undersigned is duly authorized and has full authority to execute this Bidder's Affidavit.

3. The company named herein that employs the undersigned:
   iii. has contracted with or seeking to contract with the City of Bloomington to provide services; **OR**
   iv. is a subcontractor on a contract to provide services to the City of Bloomington.

4. By submission of this Bid and subsequent execution of a Contract, the undersigned Bidder certifies that as successful Bidder (Contractor) all trench excavation done within his/her control (by his/her own forces or by his/her Subcontractors) shall be accomplished in strict adherence with OSHA trench safety standards contained in 29 C.F.R. 1926, Subpart P, including all subsequent revisions or updates to these standards as adopted by the United States Department of Labor.

5. The undersigned Bidder certifies that as successful Bidder (Contractor) he/she has obtained or will obtain identical certification from any proposed Subcontractors that will perform trench excavation prior to award of the subcontracts and that he/she will retain such certifications in a file for a period of not less than three (3) years following final acceptance.

6. The Bidder acknowledges that included in the various items listed in the Schedule of Bid Prices and in the Total Amount of Bid Prices are costs for complying with I.C. 36-1-12-20. The Bidder further identifies the costs to be summarized below*:

	Trench Safety Measure	**Units of Measure**	**Unit Cost**	**Unit Quantity**	**Extended Cost**
A.					
B.					
C.					
D.					
				Total	**$_____**

Method of Compliance (Specify) _____

_____

Date: _____, 20_____

_____
Signature

_____
Printed Name

STATE OF INDIANA)
) SS:
COUNTY OF _____)

Before me, a Notary Public in and for said County and State, personally appeared _____ and acknowledged the execution of the foregoing this _____ day of _____, 20_____.

My Commission Expires: _____ _____
Signature of Notary Public

County of Residence: _____ _____
Printed Name of Notary Public

*Bidders: Add extra sheet(s), if needed.

If Bidder fails to complete and execute this sworn affidavit, his/her Bid may be declared nonresponsive and rejected by the **CITY OF BLOOMINGTON**.

EXHIBIT E

CONTRACTOR'S QUOTE FOR PUBLIC WORK- **FORM 96**

State Form 52414 (R2 / 2-13) / Form 96 (Revised 2013)
Prescribed by State Board of Accounts

PART I

(To be completed for all quotes. Please type or print)

Date *(month, day, year):* _____

1. Governmental Unit (Owner):_____
2. County:_____
3. Quoter (Firm):_____
4. Address:_____

   City/State/ZIP code:_____
5. Telephone Number:_____
6. Agent of Quoter *(if applicable):*_____

Pursuant to notices given, the undersigned offers to furnish labor and/or material necessary to complete the public works project of_____

(Governmental Unit) in accordance with plans and specifications prepared by_____and

dated_____for the sum of $_____

The undersigned further agrees to furnish a bond or certified check with this bid for an amount specified in the notice of the letting. If alternative quotes apply, the undersigned submits a proposal for each in accordance with the notice. Any addendums attached will be specifically referenced at the applicable page.

If additional units of material included in the contract are needed, the cost of units must be the same as that shown in the original contract if accepted by the governmental unit. If the bid is to be awarded on a unit basis, the itemization of the units shall be shown on a separate attachment.

The contractor and his subcontractors, if any, shall not discriminate against or intimidate any employee, or applicant for employment, to be employed in the performance of this contract, with respect to any matter directly or indirectly related to employment because of race, religion, color, sex, national origin or ancestry. Breach of this covenant may be regarded as a material breach of the contract.

CERTIFICATION OF USE OF UNITED STATES STEEL PRODUCTS

(If applicable)

I, the undersigned quoter or agent as a contractor on a public works project, understand my statutory obligation to use steel products made in the United States (I.C. 5-16-8-2). I hereby certify that I and all subcontractors employed by me for this project will use U.S. steel products on this project if awarded. I understand that violations hereunder may result in forfeiture of contractual payments.

ACCEPTANCE

The above quote is accepted this_____day of_____, subject to the following conditions: _____

Contracting Authority Members:

_____ _____

_____ _____

_____ _____

PART II
(For projects of $150,000 or more -IC 36-1-12-4)

Governmental Unit: _____ Quoter (Firm) __

Date *(month, day, year):* _____

These statements to be submitted under oath by each quoter with and as a part of his quote.
Attach additional pages for each section as needed.

SECTION I EXPERIENCE QUESTIONNAIRE

1. What public works projects has your organization completed for the period of one (1) year prior to the date of the current quote?

Contract Amount	Class of Work	Completi on	Name and Address of Owner

2. What public works projects are now in process of construction by your organization?

Contract Amount	Class of Work	Expected Completi	Name and Address of Owner

3. Have you ever failed to complete any work awarded to you?_____If so, where and why?

_____

_____

_____

4. List references from private firms for which you have performed work.

_____

_____

_____

_____

_____

SECTION II PLAN AND EQUIPMENT QUESTIONNAIRE

1. Explain your plan or layout for performing proposed work. *(Examples could include a narrative of when you could begin work, complete the project, number of workers, etc. and any other information which you believe would enable the governmental unit to consider your quote.)*

_____

_____

_____

_____

2. Please list the names and addresses of all subcontractors *(i.e. persons or firms outside your own firm who have performed part of the work)* that you have used on public works projects during the past five (5) years along with a brief description of the work done by each subcontractor.

_____

_____

_____

3. If you intend to sublet any portion of the work, state the name and address of each subcontractor, equipment to be used by the subcontractor, and whether you will require a bond. However, if you are unable to currently provide a listing, please understand a listing must be provided prior to contract approval. Until the completion of the proposed project, you are under a continuing obligation to immediately notify the governmental unit in the event that you subsequently determine that you will use a subcontractor on the proposed project.

_____

_____

_____

4. What equipment do you have available to use for the proposed project? Any equipment to be used by subcontractors may also be required to be listed by the governmental unit.

_____

_____

_____

_____

5. Have you entered into contracts or received offers for all materials which substantiate the prices used in preparing your proposal? If not, please explain the rationale used which would corroborate the prices listed.

_____

_____

_____

_____

_____

SECTION III CONTRACTOR'S FINANCIAL STATEMENT

Attachment of quoter's financial statement is mandatory. Any quote submitted without said financial statement as required by statute shall thereby be rendered invalid. The financial statement provided hereunder to the governing body awarding the contract must be specific enough in detail so that said governing body can make a proper determination of the quoter's capability for completing the project if awarded.

SECTION IV CONTRACTOR'S NON- COLLUSION AFFIDAVIT

The undersigned quoter or agent, being duly sworn on oath, says that he has not, nor has any other member, representative, or agent of the firm, company, corporation or partnership represented by him, entered into any combination, collusion or agreement with any person relative to the price to be quote by anyone at such letting nor to prevent any person from quoting nor to include anyone to refrain from quoting, and that this quote is made without reference to any other quote and without any agreement, understanding or combination with any other person in reference to such quoting.

He further says that no person or persons, firms, or corporation has, have or will receive directly or indirectly, any rebate, fee, gift, commission or thing of value on account of such sale.

SECTION V OATH AND AFFIRMATION

I HEREBY AFFIRM UNDER THE PENALTIES FOR PERJURY THAT THE FACTS AND INFORMATION CONTAINED IN THE FOREGOING QUOTE FOR PUBLIC WORKS ARE TRUE AND CORRECT.

Dated at_____this_____day of_____

_____

(Name of Organization)

By

_____

_____

_____

(Title of Person Signing)

ACKNOWLEDGEMENT

STATE OF_____)

) ss

COUNTY OF_____)

Before me, a Notary Public, personally appeared the above-named_____and swore that the statements contained in the foregoing document are true and correct.

Subscribed and sworn to before me this_____day of_____

_____

Notary Public

My Commission Expires:_____

County of Residence:_____

Part of State Form 52414 (R2 / 2-13) / Form 96 (Revised 2013)

QUOTE OF

_____

(Contractor)

_____

(Address)

_____

FOR

PUBLIC WORKS PROJECTS OF

_____

_____

_____

_____

Filed_____

_____

Action taken_____

_____

_____

EXHIBIT F

ESCROW AGREEMENT

SOLAR PANEL AND ROOF REPLACEMENT PROJECT FOR CITY BUILDINGS AND "SOLARIZE BLOOMINGTON" INITIATIVE

THIS ESCROW AGREEMENT made and entered into this _____ day of _____, 2016, by and between the City of Bloomington Board of Public Works (the "Owner"), and _____, (the "Contractor"), and First Financial Bank (the "Escrow Agent").

WHEREAS, the Owner and Contractor have entered into a public construction contract in the amount of $100,000 or more, dated the _____ day of _____, 2016, for a public works project; and,

WHEREAS, said construction contract provides that portions of payments by Owner to Contractor shall be retained by Owner (herein called retainage) and placed in an escrow account;

NOW, THEREFORE, IT IS AGREED AS FOLLOWS:

To the extent that the Owner retains funds out of payments applied for by the Contractor under the provisions of the Contract providing for payments based on the value of the work in place and the materials stored, the Owner shall place the funds so retained in an escrow account.

The Escrow Agent shall open a "Money Market" account and deposit said funds promptly into the account and invest the retainage in such obligations as selected by the Escrow Agent at its discretion.

The income from and earnings on and all gains derived from the investment and reinvestment of the funds (escrow income) shall be held in the escrow account. The Escrow Agent shall deposit all funds and hold all investments in a separate escrow fund so that a quarterly accounting can be made to the Contractor of all deposits and investments made in such funds.

The Escrow Agent may commingle the escrow funds with other escrow funds or invested construction funds held by it pursuant to other escrow agreements or trust instruments to which the Owner and the Contractor are parties. To expedite the handling of the investments and reinvestments of the escrow funds, the Escrow Agent may cause all savings accounts, securities, obligations and investments (other than bearer instruments) to be registered in its own name, or in the name of its nominee or nominees, or in such form that title may pass by delivery.

The Escrow Agent shall pay over the net sum held by it hereunder as follows:

The Escrow Agent shall hold all of the escrow funds and shall release the principal thereof only upon the execution and delivery to it of a notice executed by the Owner and by the Contractor specifying the portion or portions of the principal of the escrow funds to be released and the person or persons to whom such portions are to be released. After receipt of said notice the Escrow Agent shall remit the designated part of escrowed principal and the same proportion of then escrowed income to the person specified in the notice. Such release of escrow funds shall be no more than thirty (30) days from the date of receipt by the Escrow Agent of the release executed by the Owner and Contractor. All income earned on the escrowed principal shall be paid to the Contractor with the exception of that amount necessary to pay any fee for the Escrow Agent's services. No escrow income shall be paid to the Contractor until the Escrow Agent's fee, if any, has been paid in full.

In the absence of such a joint written authorization, upon receipt from the Owner of a copy of certification from Owner's Engineer, that Owner has exercised its right to terminate the services of the Contractor pursuant to Article 16.02 of the General Conditions, then the Escrow Agent shall pay over to the Owner the net sum held by it hereunder.

In the absence of such a joint written authorization and in the absence of the termination of the Contractor as provided in "B", above, in the manner directed by a certified copy of a judgment of a court of record establishing the rights of the parties to said funds.

The “Commercial Quick Draw” account set up by the Escrow Agent to hold the retainage shall be a no fee account with no minimum balance required. The account shall earn interest at a variable rate.

This Agreement and anything done or performed hereunder by either the Contractor or Owner shall not be construed to prejudice or limit the claims which either party may have against the other arising out of the aforementioned construction agreement.

This instrument constitutes the entire agreement between the parties regarding the duties of the Escrow Agent with respect to the investment and payment of escrow funds. The Escrow Agent is not liable to the Owner and Contractor for any loss or damages not caused by its own negligence or willful misconduct.

OWNER:
City of Bloomington
Board of Public Works
By:

_____
Kyla Cox Deckard, President

ESCROW AGENT:
First Financial Bank
By:

_____
Name:_____
Title:_____

CONTRACTOR:
By:

_____
Name:_____
Title:_____
Tax I.D. Number

EXHIBIT G

AGREEMENT

BETWEEN

CITY OF BLOOMINGTON

AND

CONTRACTOR

FOR

SOLAR PANEL AND ROOF REPLACEMENT PROJECT FOR CITY BUILDINGS AND "SOLARIZE BLOOMINGTON" INITIATIVE

THIS AGREEMENT, executed by and between the City of Bloomington, Indiana through the Board of Public Works (hereinafter CITY), and _____, (hereinafter CONTRACTOR);

WITNESSETH THAT:

WHEREAS, CITY desires to retain CONTRACTOR'S services to install a light-colored reflective roof at City Hall and the Police Headquarters ("Roof Installation"), design, procure, and install photovoltaic panels at City Hall and the Police Headquarters ("City Solar Installation"), and design, procure, and install photovoltaic panels at residences and commercial residences through the "Solarize Bloomington" campaign ("Community Solar Installation") (more particularly described in Attachment A, "Scope of Work"; and

WHEREAS, CONTRACTOR is capable of performing work as per his/her Bid on the Bid Summary sheet; and

WHEREAS, in accordance with Indiana Code 5-16-13 *et seq*., incorporated herein by reference, Contractor is a Tier 1 or General Contractor for this project; and

WHEREAS, CONTRACTOR was determined to be the lowest responsible and responsive Bidder for said project.

NOW, THEREFORE, in consideration of the mutual promises hereinafter enumerated, the parties agree as follows:

ARTICLE 1. TERM

1.01 This Agreement shall be in effect upon execution of this Agreement by all parties. In accordance with Indiana Code 5-16-13 *et seq*., incorporated herein by reference, Contractor is a Tier 1 contractor or general contractor for this project.

ARTICLE 2. SERVICES

2.01 CONTRACTOR shall complete all work required under this Agreement by December 31, 2017, unless the parties mutually agree to a later completion date. Substantial Completion shall mean completion of all work.

2.02 It is hereby understood by both parties that time is of the essence in this Agreement. Failure of CONTRACTOR to complete all work as herein provided will result in monetary damages to CITY. It is hereby agreed that CITY will be damaged for every day the work has not been performed in the manner herein provided and that the measure of those damages shall be determined by reference Section 13.00 of the General Conditions for Each Day of Overrun in Contract Time. CONTRACTOR agrees to pay CITY said damages or, in the alternative, CITY, at its sole discretion, may withhold monies otherwise due CONTRACTOR. It is expressly understood by the parties hereto that these damages relate to the time of performance and do not limit CITY's other remedies under this Agreement, or as provided by applicable law, for other damages.

2.03 CONTRACTOR agrees that no charges or claims for damages shall be made by him for any delays or hindrances, from any cause whatsoever during the progress of any portion of the services specified in the Agreement. Such delays or hindrances, if any, may be compensated for by an extension of time for a reasonable period as may be mutually agreed upon between the parties, it being understood, however, that permitting CONTRACTOR to proceed to complete any service, or any part of the services / project, after the date to which the time of completion may have been extended, shall in no way operate as a waiver on the part of CITY of any of its rights herein.

ARTICLE 3. COMPENSATION

3.01 CONTRACTOR shall provide services as specified in Attachment A, "Scope of Work", attached hereto and incorporated into this Agreement.

3.02 Upon the submittal of approved claims for the Roof Installation and City Solar Installation, CITY shall compensate CONTRACTOR in a lump sum not to exceed _____. CITY may withhold payment, in whole or in part, to the extent necessary to protect itself from a loss on account of any of the following:

Defective work.

Evidence indicating the probable filing of claims by other parties against CONTRACTOR which may adversely affect CITY.

Failure of CONTRACTOR to make payments due to subcontractors, material suppliers or employees.

Damage to CITY or a third party.

Payment for the Community Solar Installation shall be made by the Community Solar Participant to CONTRACTOR. A sample contract between the Community Solar Participant and CONTRACTOR is attached to this Contract as Attachment ___. The City is not a party to the contract between any Community Solar Participant and the CONTRACTOR. Accordingly, it has no responsibility or obligation to make payment for any aspect of the Community Solar Installation.

3.03 The submission of any request for payment shall be deemed a waiver and release by CONTRACTOR of all liens and claims with respect to the work and period to which such payment request pertains except as specifically reserved and noted on such request.

3.04 CONTRACTOR shall maintain proper account records for the scope of all services of this Agreement and provide an accounting for all charges and expenditures as may be necessary for audit purposes. All such records shall be subject to inspection and examination by CITY's representatives at reasonable business hours.

3.05 For projects utilizing federal funding the CONTRACTOR shall submit time sheets (WH-347) for his own and all subcontracted employees, to City Engineer or his representative for approval and review, including review for compliance with Davis Bacon requirements, if federal funds are used.

3.06 **Engineer** The City Engineer shall act as the CITY's representative and assume all duties and responsibilities and have all the rights and authority assigned to the Engineer in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

ARTICLE 4. RETAINAGE

For contracts in excess of $100,000, the CITY requires that retainage be held set out below.

4.01 **Escrow Agent** The retainage amount withheld shall be placed in an escrow account. First Financial Bank, Bloomington, Indiana, shall serve as the escrow agent.

4.02 **Retainage Amount** The escrow agent, CITY, and CONTRACTOR shall enter into a written escrow agreement. Under that agreement, the CITY shall withhold five percent (5%) of the dollar value of all work satisfactorily completed until the Contract work is substantially complete. The escrow agent shall invest all escrowed principal in obligations selected by the escrow agent. The escrow agent shall be compensated for the agent's services by a reasonable fee, agreed upon by the parties, that is comparable with fees charged for the handling of escrow accounts of similar size and duration. The fee shall be paid from the escrow income. The escrow agent's fee may be determined by specifying an amount of interest the escrow agent will pay on the escrowed amount, with any additional earned interest serving as the escrow agent's fee. The escrow agreement may include other terms and conditions as deemed necessary by the parties.

4.03 **Payment of Escrow Amount** The escrow agent shall hold the escrowed principal and income until receipt of the notice from the CITY and CONTRACTOR that the Contract work has been substantially completed to the reasonable satisfaction of the CITY, at which time the CITY shall pay to the CONTRACTOR the balance to be paid under this Contract and execute such documents as are necessary to authorize the escrow agent to pay to the CONTRACTOR the funds in the escrow account, including both specifying the part of the escrowed principal to be released from the escrow and the person to whom that portion is to be released. After receipt of the notice, the escrow agent shall remit the designated part of the escrowed principal and the escrowed income, minus the escrow agent's fees, to the person specified in the notice. However, nothing in this section shall prohibit the CITY from requiring the escrow agent to withhold amounts necessary to complete minor items of the Contract, following substantial completion of the Contract in accordance with the provisions of paragraph 4.04.

4.04 **Withholding Funds for Completion of Contract** If, upon substantial completion of the Contract, there still remains minor Contract work that needs to be completed, or minor Contract work that needs to be performed to the satisfaction of the CITY, the CITY may direct the escrow agent to retain in the escrow account, and withhold from payment to the CONTRACTOR, an amount equal to two hundred percent (200%) of the value of said work. The value of said work shall be determined by the architect/engineer. The escrow agent shall release the funds withheld under this section after receipt of notice from the City that all work on the Contract has been satisfactorily completed. In the event that said work is not completed by the Contractor, but by CITY or another party under contract with the CITY, said funds shall be released to the CITY.

ARTICLE 5. GENERAL PROVISIONS

5.01 CONTRACTOR agrees to indemnify and hold harmless CITY and its officers, agents, officials and employees for any and all claims, actions, causes of action, judgments and liens arising out of any negligent act or omission by CONTRACTOR or any of its officers, agents, officials, employees, or subcontractors or any defect in materials or workmanship of any supply, materials, mechanism or other product or service which it or any of its officers, agents, officials, employees, or subcontractors has supplied to CITY or has used in connection with this Agreement and regardless of whether or not it is caused in part by a party indemnified herein under. Such

indemnity shall include attorney's fees and all costs and other expenses arising there from or incurred in connection therewith and shall not be limited by reason of the enumeration of any insurance coverage required herein.

CONTRACTOR shall indemnify and hold harmless CITY and its officers, agents, officials and employees for any and all damages, actions, costs, (including, but not limited to, attorney's fees, court costs and costs of investigation) judgments and claims by anyone for damage to property, injury or death to persons resulting from the collapse or failure of any trenches, ditches or other excavations constructed under or associated with this contract.

5.02 Abandonment, Default and Termination

5.02.01 CITY shall have the right to abandon the work contracted for in this Agreement without penalty. If CITY abandons the work described herein, CONTRACTOR shall deliver to CITY all surveys, notes, drawings, specifications and estimates completed or partially completed and these shall become the property of CITY. The earned value of the work performed shall be based upon an estimate of the proportion between the work performed by CONTRACTOR under this Agreement and the work which CONTRACTOR was obligated to perform under this Agreement. This proportion shall be mutually agreed upon by CITY and CONTRACTOR. The payment made to CONTRACTOR shall be paid as a final payment in full settlement of his services hereunder.

5.02.02 If CONTRACTOR defaults or fails to fulfill in a timely and proper manner the obligations pursuant to this Agreement, CITY may, after seven (7) days' written notice has been delivered to CONTRACTOR, and without prejudice to any other remedy it may have, make good such deficiencies and may deduct the cost thereof from the payment then or thereafter due to CONTRACTOR. In the alternative, CITY, at its option, may terminate this Agreement and take possession of the site and of all materials, equipment, tools and construction equipment and machinery thereon owned by CONTRACTOR, and may finish the project by whatever method it may deem expedient, and if the such action exceeds the unpaid balance of the sum amount, CONTRACTOR or his surety, shall pay the difference to CITY.

5.02.03 **Default**: If CONTRACTOR breaches this Agreement or fails to perform the work in an acceptable manner, he shall be considered in default. Any one or more of the following will be considered a default:

Failure to begin the work under this Agreement within the time specified.

Failure to perform the work with sufficient supervision, workmen, equipment and materials to insure prompt completion of said work within the time limits allowed.

Unsuitable performance of the work as determined by CITY ENGINEER or his representative.

Neglecting or refusing to remove defective materials or failure to perform anew such work as shall have been rejected.

Discontinuing the prosecution of the work or any part of it.

Inability to finance the work adequately.

If, for any other reason, CONTRACTOR breaches this Agreement or fails to carry on the work in an acceptable manner.

5.02.04 CITY shall send CONTRACTOR a written notice of default. If CONTRACTOR, or his Surety, within a period of ten (10) days after such notice, fails to remedy the default, then CITY shall have full power and authority, without violation of the Contract, to take the prosecution of the work out of the hands of said CONTRACTOR, to appropriate or use any or all materials and equipment on the ground as may be suitable and acceptable, and may, at its option, turn the work over to the Surety, or enter into an agreement with another Contractor for the completion of the Agreement according to the terms and provisions thereof, or CITY may use such other methods as, in its opinion, shall be required for the completion of said Contract in an acceptable manner.

5.02.05 All cost of completing the work under the Contract shall be deducted from the monies due or which may become due to said CONTRACTOR. In case the expenses so incurred by CITY shall be less than the sum which would have been payable under the Contract if it had been completed by said CONTRACTOR, CONTRACTOR shall be entitled to receive the difference. However, in case such expense shall exceed the sum which would have been payable under the Contract, CONTRACTOR and his Surety will be liable and shall

pay to CITY the amount of said excess. By taking over the prosecution of the work, CITY does not forfeit the right to recover damages from CONTRACTOR or his Surety for his failure to complete the work in the time specified.

5.02.06 Notwithstanding any other provision of this Agreement, if funds for the continued fulfillment of the Agreement by CITY are at any time not forthcoming or are insufficient, through failure of any entity to appropriate the funds or otherwise, then CITY shall have the right to terminate this Agreement without penalty by giving prior written notice documenting the lack of funding in which instance, unless otherwise agreed to by the parties, this Agreement shall terminate and become null and void.

5.02.07 CITY agrees that it will make its best effort to obtain sufficient funds, including but not limited to, including in its budget for each fiscal period during the term hereof a request for sufficient funds to meet its obligations hereunder in full.

5.03 Successors and Assigns

5.03.01 Both parties agree that for the purpose of this Agreement, CONTRACTOR shall be an Independent Contractor and not an employee of CITY.

5.03.02 No portion of this Agreement shall be sublet, assigned, transferred or otherwise disposed of by CONTRACTOR except with the written consent of CITY being first obtained. Consent to sublet, assign, transfer, or otherwise dispose of any portion of this Agreement shall not be construed to relieve CONTRACTOR of any responsibility of the fulfillment of this Agreement.

5.04 Extent of Agreement: Integration

5.04.01 This Agreement consists of the following parts, each of which is as fully a part of this Agreement as if set out herein:

1. This Agreement and its Attachments.
2. All Written Amendments and other documents amending, modifying, or supplementing the Contract Documents which may be delivered or issued after the Effective Date of the Agreement and are not attached hereto.
3. All Addenda to the Bid Documents.
4. The Invitation to Bidders.
5. The Instructions to Bidders.
6. The Special Conditions.
7. All plans as provided for the work that is to be completed.
8. The Supplementary Conditions.
9. The General Conditions.
10. The Specifications.
11. The current Indiana Department of Transportation Standard Specifications and the latest addenda.
12. CONTRACTOR'S submittals.
13. The Performance and Payment Bonds.
14. The Escrow Agreement.
15. Request for Taxpayer Identification number and certification: Substitute W-9.

5.04.02 In resolving conflicts, errors, discrepancies and disputes concerning the Scope of Work to be performed by CONTRACTOR, and other rights and obligations of CITY and CONTRACTOR, the document expressing the greater quantity, quality or other scope of work in question, or imposing the greater obligation upon CONTRACTOR and affording the greater right or remedy to CITY shall govern; otherwise the documents shall be given precedence in the order as enumerated above.

5.05 Insurance

5.05.01

CONTRACTOR shall, as a prerequisite to this Agreement, purchase and thereafter maintain such insurance as will protect him from the claims set forth below which may arise out of or result from CONTRACTOR'S operations under this Agreement, whether such operations be by CONTRACTOR or by any SUBCONTRACTORS or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

Coverage	Limits
A. Worker's Compensation & Disability	Statutory Requirements
B. Commercial General Liability (Occurrence Basis) Bodily Injury, personal injury, property damage, contractual liability, products-completed operations, General Aggregate Limit (other than Products/Completed Operations)	$1,000,000 per occurrence and $2,000,000 in the aggregate
C. Comprehensive Auto Liability (single limit, owned, hired and non-owned)	$1,000,000 combined
D. Professional Liability (Errors & Omissions)	$1,000,000 aggregate
E. Umbrella Excess Liability (over auto and commercial general liability)	$5,000,000 each occurrence and aggregate
The Deductible on the Umbrella Liability shall not be more than	$10,000

05.02 CONTRACTOR'S comprehensive general liability insurance shall also provide coverage for the following:

Premises and operations;

Contractual liability insurance as applicable to any hold-harmless agreements;

Completed operations and products; which also must be maintained for a minimum period of two (2) years after final payment and CONTRACTOR shall continue to provide evidence of such coverage to CITY on an annual basis during the aforementioned period;

Broad form property damage - including completed operations;

Fellow employee claims under Personal Injury; and

Independent Contractors.

5.05.03 With the prior written approval of CITY, CONTRACTOR may substitute different types or amounts of coverage for those specified as long as the total amount of required protection is not reduced.

5.05.04 Certificates of Insurance showing such coverage then in force (but not less than the amount shown above) shall be on file with CITY prior to commencement of work. These Certificates shall contain a provision that coverage afforded under the policies will not be canceled or non-renewed until at least sixty (60) days' prior written notice has been received by CITY. The CITY shall be named as an additional insured on the Commercial General Liability, Automobile Liability, and Umbrella Excess Liability policies. The CONTRACTOR shall agree to a waiver of subrogation on its Worker's Compensation policy.

5.06 **Necessary Documentation** CONTRACTOR certifies that it will furnish CITY any and all documentation, certification, authorization, license, permit or registration required by the laws or rules and regulations of the City of Bloomington, the State of Indiana and the United States. CONTRACTOR further certifies that it is now and will maintain in good standing with such governmental agencies and that it will keep its license, permit registration, authorization or certification in force during the term of this Agreement.

5.07 **Applicable Laws** CONTRACTOR agrees to comply with all federal, state, and local laws, rules and regulations applicable to CONTRACTOR in performing work pursuant to this Agreement, including, but not limited to, discrimination in employment, prevailing wage laws, conflicts of interest, public notice, accounting records and requirements. This Agreement shall be governed by the laws of the United States, and the State of Indiana, and by all Municipal Ordinances and Codes of the City of Bloomington. Venue of any disputes arising under this Agreement shall be in the Monroe Circuit Court, Monroe County, Indiana.

5.08 **Non-Discrimination**

5.08.01 CONTRACTOR and subcontractors shall not discriminate against any employee or applicant for employment, to be employed in the performance of this Agreement, with respect to hire, tenure, terms, training, conditions or privileges of employment, because of race, sex, color, religion, national origin, ancestry, disability, sexual orientation, gender identity, veteran status or housing status. Breach of this covenant may be regarded as a material breach of the Agreement.

5.08.02 CONTRACTOR certifies for itself and all its subcontractors compliance with existing laws of the State of Indiana and the United States regarding:

Prohibition of discrimination in employment practices on the basis of race, sex, color, religion, national origin, ancestry, disability, sexual orientation, gender identity, veteran status, housing status, or any other legally protected classification;

The utilization of Minority and Women Business Enterprises. CONTRACTOR further certifies that it:

a. Has formulated its own Affirmation Action plan for the recruitment, training and employment of minorities and women, including goals and timetable; which has been approved by the City's Contract Compliance Officer.

b. Encourages the use of small business, minority-owned business and women-owned business in its operations.

5.08.03 FURTHER, PURSUANT TO INDIANA CODE § 5-16-6-1, CONTRACTOR AGREES:

A) That in the hiring of employees for the performance of work under this Agreement or any sub agreement hereunder, no contractor, or subcontractor, nor any person acting on behalf of such CONTRACTOR or subcontractor, shall by reason of race, sex, color, religion, national origin, ancestry, or any other legally protected classification, discriminate against any citizen of the State of Indiana who is qualified and available to perform the work to which the employment relates.

B) That no contractor, subcontractor, or any person on their behalf, shall, in any manner, discriminate against or intimidate any employee hired for performance of work under this Agreement on account of race, religion, color, sex, national origin, ancestry, or any other legally protected classification.

C) That there may be deducted from the amount payable to CONTRACTOR, by CITY, under this Agreement, penalty of Five Dollars ($5.00) for each person for each calendar day during which such person was discriminated against or intimidated in violation of the provisions of this Agreement. Any such person discriminated against retains the right to file a discrimination complaint with the appropriate civil rights agency or court.

D) That this Agreement may be canceled or terminated by CITY and all money due or to become hereunder may be forfeited, for a second or any subsequent violations of the terms or conditions under this section of the Agreement.

5.09 Workmanship and Quality of Materials

5.09.01 CONTRACTOR shall guarantee the Roof Installation and the City Solar Installation for a period of three (3) years from the date of substantial completion. Failure of any portion of the work within three (3) years due to improper construction, materials of construction, or design may result in a refund to CITY of the purchase price of that portion which failed or may result in the forfeiture of CONTRACTOR's Performance Bond. (The Community Solar Installation shall have the warranties specified in the Community Solar Installation Agreement.)

5.09.02 OR EQUAL: Wherever in any of the Agreement Documents an article, material or equipment is defined by describing a proprietary product, or by using the name of a manufacturer or vender, the term "Or Equal" or the term "The Equivalent" if not inserted, shall be implied, and it is done for the express purpose of establishing a basis of durability and efficiency and not for the purpose of limiting completion. Whenever material or equipment is submitted for approval as being equal to that specified, the submittal shall include sufficient information and data to demonstrate that the material or equipment conforms to the Contract requirements. The decision as to whether or not such material or equipment is equal to that specified shall be made by the ENGINEER. The approval by the ENGINEER of alternate material or equipment as being equivalent to that specified, shall not in any way relieve CONTRACTOR of responsibility for failure of the material or equipment due to faulty design, material, or workmanship, to perform the function required by the Contract Documents. Specifications as determined by other entities within the City of Bloomington such as City Utilities shall only be substituted or changed by their approval which shall be submitted in writing to the ENGINEER.

5.09.03 CITY shall be the sole judge of the sufficiency of workmanship and quality of materials. Disputes shall be resolved by the Director of Public Works and are not subject to arbitration.

5.10 Safety. CONTRACTOR shall be responsible for the safety of employees at all times and shall provide all equipment necessary to insure their safety. CONTRACTOR shall ensure the enforcement of all applicable safety rules, regulations, ordinances and laws, whether federal, state or local. Contractor's Superintendent of Safety shall make daily inspections upon the arrival and leaving of the site at the close of each workday.

5.10.01 CONTRACTOR is required to comply with IOSHA regulations 29 C.F.R 1926, Subpart P, Excavations for all trenches of at least five (5) feet in depth. All cost for trench safety systems shall be the responsibility of the CONTRACTOR and included in the cost of the principal work with which the safety systems are associated. CONTRACTOR shall sign an affidavit, attached as Attachment B, affirming that CONTRACTOR shall maintain compliance with IOSHA requirements for excavations of at least five (5) in depth.

5.11 Amendments/Changes

5.11.01 Except as provided in Paragraph 5.11.02, this Agreement may be amended only by written instrument signed by both CITY and CONTRACTOR.

5.11.02 Without invalidating the Agreement and without notice to any surety, CITY may, at any time or from time to time, order, in writing, additions, deletions, or revisions in the work. Upon receipt of any such document, CONTRACTOR shall promptly proceed with the work involved, which will be performed under the applicable conditions of the Agreement Documents.

5.11.03 If CONTRACTOR believes that any direction of CITY under paragraph 5.11.02, or any other event or condition, will result in an increase in the Contract time or price, he shall file written notice with CITY no later than twenty (20) calendar days after the occurrence of the event giving rise to the claim and stating the general nature of the claim with supporting data. No claim for any adjustment of the Contract time or price will be valid if not submitted in accordance with this Paragraph.

5.11.04 CONTRACTOR shall carry on the work and adhere to the progress schedule during all disputes or disagreements with CITY. No work shall be delayed or postponed pending resolution of any dispute or disagreement except as CONTRACTOR and CITY may otherwise agree in writing.

5.12 Performance Bond and Payment Bond

5.12.01 For contracts in excess of $100,000, CONTRACTOR shall provide CITY with a Performance Bond and a Payment Bond in the amount of one hundred percent (100%) of the contract amount.

5.12.02 Failure by CONTRACTOR to perform the work in a timely or satisfactory fashion may result in forfeiture of CONTRACTOR'S Performance Bond.

5.12.03 If the surety on any bond furnished by CONTRACTOR becomes a party to supervision, liquidation, or rehabilitation action pursuant Indiana Code 27-9 et seq. or its right to do business in the State of Indiana is terminated, CONTRACTOR shall, within thirty (30) calendar days thereafter, substitute another bond and surety, both of which must be acceptable to CITY.

5.13 Payment of Subcontractors CONTRACTOR shall pay all subcontractors, laborers, material suppliers and those performing services to CONTRACTOR on the project under this Agreement. CITY may, as a condition precedent to any payment hereunder, require CONTRACTOR to submit satisfactory evidence of payments of any and all claims of subcontractors, laborers, material suppliers, and those furnishing services to CONTRACTOR. Upon receipt of a lawful claim, CITY shall withhold money due to CONTRACTOR in a sufficient amount to pay the subcontractors, laborers, material suppliers, and those furnishing services to CONTRACTOR.

5.14 Written Notice Written notice shall be considered as served when delivered in person or sent by mail to the individual, firm, or corporation, or to the last business address of such known to CONTRACTOR who serves the Notice. Notice shall be sent as follows:

TO CITY: TO CONTRACTOR:

City of Bloomington
Attn: Jacqui Bauer
P.O. Box 100 Suite 150
Bloomington, Indiana 47402

5.15 **Severability and Waiver** In the event that any clause or provision of this Agreement is held to be invalid by any court of competent jurisdiction, the invalidity of such clause or provision shall not affect any other provision of this Agreement. Failure of either party to insist on strict compliance with any provision of this Agreement shall not constitute waiver of that party's right to demand later compliance with the same or other provisions of this Agreement.

5.16 **Notice to Proceed** CONTRACTOR shall not begin the work pursuant to the "Scope of Work" of this Agreement until it receives an official written Notice to Proceed from the City. Contractor shall start active and continuous work on the Agreement within fifteen (15) calendar days after the date of the Notice to Proceed. In no case shall work begin prior to the date of the Notice to Proceed. If a delayed starting date is indicated in the proposal, the fifteen (15) calendar day limitation will be waived. Work day charges will then begin on a date mutually agreed upon, but not later than the delayed starting date specified. In the event that any Agreement is canceled after an award has been made but prior to the issuing of the Notice to Proceed, no reimbursement will be made for any expenses accrued relative to this contract during that period.

5.17 **Steel or Foundry Products**

5.17.01 To comply with Indiana Code 5-16-8, affecting all contracts for the construction, reconstruction, alteration, repair, improvement or maintenance of public works, the following provision shall be added: If steel or foundry products are to be utilized or supplied in the performance of any contract or subcontract, only domestic steel or foundry products shall be used. Should CITY feel that the cost of domestic steel or foundry products is unreasonable; CITY will notify CONTRACTOR in writing of this fact.

5.17.02 Domestic Steel products are defined as follows:

> "Products rolled, formed, shaped, drawn, extruded, forged, cast, fabricated or otherwise similarly processed, or processed by a combination of two (2) or more of such operations, from steel made in the United States by open hearth, basic oxygen, electric furnace, Bessemer or other steel making process."

5.17.03 Domestic Foundry products are defined as follows:

> "Products cast from ferrous and nonferrous metals by foundries in the United States."

5.17.04 The United States is defined to include all territory subject to the jurisdiction of the United States.

5.17.05 CITY may not authorize or make any payment to CONTRACTOR unless CITY is satisfied that CONTRACTOR has fully complied with this provision.

5.18 **Verification of Employees' Immigration Status**

Contractor is required to enroll in and verify the work eligibility status of all newly-hired employees through the E-Verify program. (This is not required if the E-Verify program no longer exists). Contractor shall sign an affidavit, attached as Attachment C, affirming that Contractor does not knowingly employ an unauthorized alien. "Unauthorized alien" is defined at 8 U.S. Code 1324a(h)(3) as a person who is not a U.S. citizen or U.S. national and is not lawfully admitted for permanent residence or authorized to work in the U.S. under 8 U.S. Code Chapter 12 or by the U.S. Attorney General.

Contractor and any of its subcontractors may not knowingly employ or contract with an unauthorized alien, or retain an employee or contract with a person that the Contractor or any of its subcontractors learns is an unauthorized alien. If the City obtains information that the Contractor or any of its subcontractors employs or retains an employee who is an unauthorized alien, the City shall notify the

Contractor or its subcontractors of the Agreement violation and require that the violation be remedied within thirty (30) calendar days of the date of notice. If the Contractor or any of its subcontractors verify the work eligibility status of the employee in question through the E-Verify program, there is a rebuttable presumption that the Contractor or its subcontractor did not knowingly employ an unauthorized alien. If the Contractor or its subcontractor fails to remedy the violation within the thirty (30) calendar day period, the City shall terminate the Agreement, unless the City determines that terminating the Agreement would be detrimental to the public interest or public property, in which case the City may allow the Agreement to remain in effect until the City procures a new contractor. If the City terminates the Agreement, the Contractor or its subcontractor is liable to the City for actual damages.

Contractor shall require any subcontractors performing work under this Agreement to certify to the Contractor that, at the time of certification, the subcontractor does not knowingly employ or contract with an unauthorized alien and the subcontractor has enrolled in and is participating in the E-Verify program. Contractor shall maintain on file all subcontractors' certifications throughout the term of this Agreement with the City.

5.19 Drug Testing Plan

in accordance with Indiana Code 4-13-18 as amended, the CONTRACTOR was required to submit with his/her bid a written drug testing policy for a public works project that is estimated to cost $150,000 or more. Among other things, the law sets forth specific requirements that must be in the plan for a program to test the employees of the CONTRACTOR and Subcontractors for drugs. The successful CONTRACTOR must comply with all provisions of the statute. This contract is subject to cancellation if CONTRACTOR fails to implement its testing program during the term of this contract, fails to provide information regarding this testing at the request of CITY; or provides false information to CITY regarding CONTRACTOR's employee drug testing program. CONTRACTOR shall sign an affidavit, attached as Attachment D, affirming that CONTRACTOR has and shall implement CONTRACTOR'S employee drug testing program throughout the term of this project.

IN WITNESS WHEREOF, the parties of this Agreement have hereunto set their hands.

DATE: _____

City of Bloomington
Bloomington Board of Public Works

BY:

_____
Kyla Cox Deckard, President

_____
Kelly M. Boatman, Vice President

_____
Dana Palazzo, Secretary

_____
John Hamilton, Mayor of Bloomington

BY:

_____
Contractor Representative

_____
Printed Name

_____
Title of Contractor Representative

"SCOPE OF WORK"

SOLAR PANEL AND ROOF REPLACEMENT PROJECT FOR CITY BUILDINGS AND "SOLARIZE BLOOMINGTON" INITIATIVE

This project shall include, but is not limited to the SCOPE OF WORK:

Roof Installation

On roof areas delineated by Lot 1 (approx. 35,000 sf) & Lot 3 (approx. 25,000 sf) in Appendix B of the Invitation to Bidders and for all of Police Headquarters, CONTRACTOR shall:

- Remove and dispose of fully adhered EPDM single-ply membrane and related flashings;
- Remove and dispose of mechanically attached ½-inch wood fiber, down to the existing polyisocyanurate roof insulation;
- Remove and replace any deteriorated foam insulation and/or gypsum board;
- Provide ¼-inch coverboard;
- Install plate-bonded, 60-mil Thermoplastic Polyolefin (TPO) Membrane system or equivalent material certified by the Cool Roof Rating Council with a minimum 3-year Solar Reflectance Index of 70 (www.coolroofs.org), with the first twelve feet from each edge being black in color (Showers Building only); and
- Accommodate all structures and roof modifications necessary to affix solar panels, including flashing, boots, or other materials as acceptable to the roof manufacturer for inclusion in the system warranty.

The Roof Installation shall be done pursuant to the Project Manual that was attached to the Invitation to Bidders.

City Solar Installation

Contractor shall design and install a photovoltaic system on City Hall (Lot 1 in Appendix A of the Invitation to Bidders) and on the Police Department. This shall include:

- Installation of all necessary modules, inverters, and mounting system to install _____ watts of PV capacity on the roof of City Hall and to install _____ watts of PV capacity on the roof of the Police Department ("PV System").
- The inverters in the PV System shall be transformerless and include power optimizers with online, individual-module performance monitoring.
- The electrical connection shall be on the load side of the meter with utility net metering.
- Metal conduit shall be used for all above ground wiring. Surface mounted metal conduit is acceptable, except in finished interior areas.
- Only copper wire shall be used in the PV System.
- The PV System shall include a revenue grade PV performance meter.

Community Solar Installation

The City and its partners will conduct pre-qualification assessments for prospective participants in the Community Solar Installation ("Qualified Participants").

Solar Installation Proposals

The City will provide CONTRACTOR with contact information, owner preferences, and a basic assessment report for Qualified Participants. Within one week of receiving contact information, CONTRACTOR will contact the Qualified Participant via either email or phone to schedule a site inspection. CONTRACTOR will perform the site inspection at no cost to the Qualified Participant or the City. If the site inspection determines that a solar installation is appropriate for the Qualified Participant, CONTRACTOR will provide a site-specific solar installation proposal to the Qualified Participant, which shall take into account any self-identified financial limitations of the Qualified Participant. CONTRACTOR will provide a copy of each site-specific solar installation proposal to the City (via email to sustain@bloomington.in.gov).

Solar Installation

In the event that the Qualified Participant decides to accept the site-specific solar installation proposal ("Community Solar Participant"), the CONTRACTOR and Qualified Participant will execute a contract ("Community Solar Installation Agreement"). A copy of the Community Solar Installation Agreement is attached to this Agreement as Attachment __. The City will not be a party to that contract, and will have no financial responsibility in the event of non-payment from the Community Solar Participant.

Solar Installation shall include:

1) Turnkey installation of a complete, fully functional photovoltaic system on Community Solar Participant's property, pursuant to the applicable site-specific solar installation proposal. This shall include all design services (including a Structural and Roofing Integrity Review for roof installed systems and an Electrical Review), permits, materials, labor, equipment, commissioning, and incidentals. System components shall minimize roof penetration for roof-mounted systems.
2) The photovoltaic system will be utility-grid-connected following the local electric utility's required design and installation standards for grid-tie and net metering.
3) Contractor will prepare applications for interconnection with the local utility and register the system with SRECTrade or another appropriate solar renewable energy certificate broker.
4) Contractor will provide each owner appropriate documentation and guidance for applying for the federal residential solar energy tax credit.
5) Contractor shall provide the homeowner with training regarding photovoltaic modules and all other equipment and system components (including the mounting system and any inverters).

Solar Installation will be carried out by the selected firm in conformance with all applicable laws and codes.

EXHIBIT H
(6 pages)

City of Bloomington Human Rights Commission

2016

RE: Affirmative Action and Living Wage Ordinance

To: Prospective Bidders/Vendors

Affirmative Action: All bidders and vendors with the City of Bloomington for projects in excess of $10,000.00 must submit an affirmative action plan to my office. This plan must insure that applicants are employed and that employees are treated in a manner that provides equal employment opportunity and tends to eliminate inequality based upon race, religion, color, sex, national origin, ancestry, disability, sexual orientation, gender identity, veteran status and housing status. Please note that the last four categories are new, adopted by the Common Council in September, 2015.

Even if your company already has a plan on file with the City, you must check with me to make sure that it complies with our current and recently updated requirements. If you already have a plan, but it does not cover all of the City's current requirements, you may submit a separate supplement with your plan to fill any gaps.

You must submit your written affirmative action plan (or supplement) to me at least twenty-four hours before the bid, quote or proposal deadline. You must submit your plan to me separately from your bid or quote. The twenty-four hours will give me sufficient time to review your and the other plans. I recommend that you submit your affirmative action plan to me earlier, if possible, so that you and I will have time to work out any problems that may be in your plan. Vendor's who fail to submit acceptable plans by the deadline are subject to disqualification.

I strongly advise you to confirm with me that I have received your plan and that it meets our requirements well before the submittal deadline. We will make every effort to work with you to clear up problems. But it remains your responsibility to confirm that I received your plan and that it complies with our requirements. If you fail to confirm that I received and approved your plan, you risk losing your eligibility to submit a bid or quote. We will be glad to provide a receipt upon request. Please let us know if you want a receipt when you submit your plan.

You must insure that all the protected classes listed above are included in your plan. In addition to other requirements, your plan MUST include a current workforce breakdown, an internal grievance procedure, a non-retaliation statement, designation of a person by name or position who is responsible for implementing the plan, applicability to both applicants and employees, recruitment of minorities, equal access to training programs, and an explanation of your methods of communicating the operations of your affirmative action plan to your employees and prospective applicants.

Accompanying this letter, you will find the following materials:

(1) A workforce breakdown form. You MUST submit a workforce breakdown (sometimes called a "utilization report") with your Affirmative Action plan. This form is provided for your convenience.

If you already have a current form you have completed for another jurisdiction that includes the same type of information, you may substitute a copy of that form instead of using our form. Your workforce breakdown figures must be updated every six months. Even if you already have an acceptable affirmative action plan on file with my office, you should submit a new workforce breakdown each time you bid for aCity Contract, to be sure we have up-to-date figures.

(2) An Affirmative Action Plan checklist. I will use this checklist to review your affirmative action plan. If you compare your plan with this list, you should be able to tell whether your plan fulfills the City's requirements. If you omit any of the elements on the checklist, your plan will not be approved.

(3) A sample affirmative action plans. These may be useful if your company has never designed an affirmative action plan before. Feel free to adopt this plan as your own or to amend it to meet your needs.

Additional materials, such as the City of Bloomington's Contract Compliance Regulations, are available from my office upon request.

Living Wage: Also, please be aware that you may be required to comply with the Bloomington Living Wage Ordinance. Whether the LWO applies to your project depends upon the size and type of your project and the number of people you employ. If you have questions about the applicability of the LWO, click on the LWO flow chart at: www.bloomington.in.gov/livingwage or call me. For 2016, the living wage for covered employees is $12.32 an hour.

If you have any questions, contact me at 812.349.3429 or email me at the following address: mckinneb@bloomington.in.gov. My office hours are Monday through Friday, 8-5.

Thank you.

Barbara E. McKinney, Human Rights Director/Contract Compliance Officer

BLOOMINGTON HUMAN RIGHTS COMMISSION

Model Affirmative Action Plan for

_____, Inc., declares its policy to provide equal opportunity in employment, training and advancement, and to administer its employment practices without regard to race, color, religion, sex, national origin, ancestry, disability, sexual orientation, gender identity, veteran status, or housing status. Our policy of nondiscrimination will prevail throughout every aspect of our employment practices, including recruitment, hiring, training and all other terms and conditions of employment. We shall implement an affirmative action plan to make it widely known that equal employment opportunities are available on the basis of individual merit. We shall survey and analyze our employment workforce annually to determine what steps, if any, are needed to conform effectively to this equal employment policy.

Responsible Officer

Mr. or Ms. _____ (or the _____officer) is the equal employment opportunity officer for our company and is responsible for implementing this affirmative action policy.

Publication of Policy

Our employees will be made aware of our commitment to affirmative action through the following procedures:

- posting notices on employee bulletin boards,
- including our policy statement and plan in our personnel manual,
- regularly sending out notice of our policy in paycheck envelopes,
- and training supervisors to recognize discriminatory practices.

We will make potential employees aware of our policy through the following procedures:

- including the words "Equal Opportunity Employer" in all of our advertisements and notices for job openings,
- notifying employment agencies about our commitment, and
- sending notice of our policy to unions.

Implementing Our Policy

Our affirmative action plan will be implemented by widening our recruitment sources. We shall advertise in newspapers and other media that reach people in protected classes. We shall send job notices to schools with large percentages of students in the protected classes and to local groups that serve these classes.

We shall examine our hiring practices periodically to insure that we consider only job-related qualifications in filling our positions. We shall discard irrelevant educational requirements and unnecessary physical requirements. We shall retain only job-related questions on our employment application.

We shall keep affirmative action information on each applicant, but separate from his or her application. We shall keep records on our hiring decisions to evaluate the success of our affirmative action measures. We shall decide placement, duties, benefits, wages, training prospects, promotions, layoffs and terminations without regard to race, sex, religion, color, national origin, ancestry, disability, sexual orientation, gender identity, veteran status or housing status.

Grievance Procedure

If an employee feels he or she has been discriminated against on the basis of race, sex, religion, color, national origin, ancestry, disability, sexual orientation, gender identity, veteran status or housing status, he or she may bring the complaint to his or her immediate supervisor. If the complaint is not resolved readily at that level, he or she may submit it to _____ (personnel officer, corporate president, other) who will make a final decision on its validity. This grievance process does not preclude his or her complaining to local, state or federal civil rights agencies. We will not retaliate against an employee or applicant for voicing a grievance or for filing a complaint with the appropriate agency.

Our current workforce breakdown is shown on the attached form.

_____ _____

Corporate President Date

AFFIRMATIVE ACTION PLAN CHECKLIST

NOTE: This is **not** an Affirmative Action Plan Effective Date: _____

Contractor: Plan MUST Include:		Yes	No	Comments:
Policy statement of equal employment opportunity		☐	☐	
Covers:	Applicants for employment	☐	☐	
	Employees	☐	☐	
On basis of:	Race	☐	☐	
	Religion	☐	☐	
	Color	☐	☐	
	Sex	☐	☐	
	National Origin	☐	☐	
	Ancestry	☐	☐	
	Disability	☐	☐	
	Sexual Orientation	☐	☐	
	Gender Identity	☐	☐	
	Veteran Status	☐	☐	
	Housing Status	☐	☐	
Designates a person responsible for implementation of the Plan		☐	☐	
Provides for communication of the policy:				
	Within the Organization	☐	☐	
	Outside the Organization	☐	☐	
	(e.g., recruitment sources, unions)			
Applies to all terms and conditions of employment (e.g., hiring, placement, promotion, duties, wages, benefits, use of facilities, layoff, discipline, termination)		☐	☐	
Provision for: Recruitment from minority groups		☐	☐	
Provision for: Equal access to training programs		☐	☐	
Grievance Procedure		☐	☐	
Prohibits retaliation for filing grievances		☐	☐	
Workforce Breakdown		☐	☐	
(figures up to date within 6 months)				

WORKFORCE BREAKDOWN FORM

COMPANY NAME: _____

ADDRESS: _____

_____

REPRESENTATIVE: _____

PHONE: _____

Position, Title Class or Category	Total Number Employees in Each Position	Total Number Minority Employees	Percent of Total	Total Number Female Employees	Percent of Total	Total Number Employees with Disabilities	Percent of Total

I swear or affirm under penalties of perjury that this workforce breakdown is accurate, to the best of my knowledge.

_____ _____

Signature and Title of Representative: Date:

INSTRUMENT NO. 503713 PLAT CABINET C , ENVELOPE 141

APPENDIX A

Scale: 1" = 50'

0 25 50 100 150

75

Rogers Street 30' R/W

N00 29' 15"E 20.03'

NOTE: The lot owners, their guests, invitees, licensees, employees, agents and tenants shall have a transferable easement over and across the sidewalk outside the buildings to gain access to the buildings

C S X RAILROAD

R=14896.5 L=417.21'

N24 00' 32"W 201.62'

8th St ROW

8th Street 50' R/W

MATCH LINE "D"

MATCH LINE "C"

MATCH LINE "A"

MATCH LINE "B"

LOT 4 (SEE PAGE 5 OF 6)

PART OF LOT #4 (SEE PAGE 4 OF 6)

LOT 3 .89 ACRES (SEE PAGE 4 OF 6)

CFC

SHOWERS BUILDING (2 STORY BRICK BUILDING)

LOT 2 1.24 ACRES (SEE PAGE 3 OF 6)

County

LOT 1 .87 ACRES (SEE PAGE 2 OF 6)

City

LOT 4 3.35 ACRES TOTAL (SEE PAGE 3 OF 6)

PLAZA AREA PART OF LOT # 1 (SEE PAGE 2 OF 6)

Morton Street 48' R/W

Recorded 12:50 pm March 13, 1995

DULY ENTERED FOR TAXATION March 10, 1995

LOCATION MAP N.T.S.

SHOWERS OFFICE AND RESEARCH CENTER

JOB NO. 1617A

PAGE 1 OF 6

PREPARED BY: SMITH NEUBECKER & ASSOCIATES INC. 4625 Morningside Drive Bloomington, Indiana 47408

Silver Creek Engineering, Inc.

August 24, 2016

City of Bloomington – City Hall
401 North Morton Street
Suite 150
Bloomington, IN 47402

Attn: Jacqueline Bauer
Re: Solar Panel Installation Structural Investigation
Job #16313

Dear Jacqueline,

As requested by the City of Bloomington, we have performed a structural investigation of the City Hall building located at 401 North Morton Street and the Police Headquarters at 220 East 3rd Street in Bloomington, Indiana. The objective of the investigation is to determine whether the roof structure of the City Hall, Police Headquarters, and City Hall parking lot awnings can support the weight of new solar panels.

Our evaluation is based on observations made by me during a visit to City Hall and Police Headquarters on July 27th, 2016, City Hall roof replacement drawings by Steves Roofing and Sheet Metal, an article titled "Roof Load Considerations for PV Arrays" provided by you, and joist tag information provided by Barry Collins on August 17th, 2016.

The results of my evaluation are summarized as follows:

- The City Hall roof trusses and roof joists can adequately support an evenly distributed load from new solar panels. If the panels are not installed with an even load distribution, the installation layout should be reviewed by a structural engineer.
- The Police Headquarters roof beams and roof joists can adequately support an evenly distributed load from new solar panels. If the panels are not installed with an even load distribution, the installation layout should be reviewed by a structural engineer.
- The City Hall parking lot awnings are not likely to adequately support an evenly distributed load from new solar panels based on assumed member thicknesses. Further investigation of awning member thicknesses will need to be done if there is a continued interest in mounting solar panels on this structure.

7225 Woodland Drive, Suite 200, Indianapolis, Indiana 46268 (317) 297-5610 · FAX (317) 297-2942
www.sceindy.com

Details of the structural evaluation and recommendations are presented in the following sections:

1. Observations
2. Evaluation and Recommendations

Observations

The following observations were made by myself during the July 27th, 2016 visit to City Hall and Police Headquarters. I was assisted during this visit by Barry Collins of City of Bloomington.

City Hall Observations

1. The City Hall building is part of the Showers Brothers Furniture Factory that was closed in 1955.
2. The Showers Building is located at 401 North Morton Street in Bloomington.
3. The building has brick exterior walls with a wood frame second floor and roof (see photo 1).
4. The City of Bloomington occupies the south east portion of the Showers Building.
5. We made observations of the roof structure only.
6. Existing roof deck thickness was not measurable.
7. Second floor wood columns are typically 7 ½″ square columns.
8. Column spacing is approximately twenty feet in each direction (see figure 1).
9. The sawtooth roof is framed with wood joists that span to built-up wood trusses (see photos 1 and 3 and figure 2).
10. Wood roof joists are sloped, span north to south, and are 2″ wide members spaced at approximately 16″ o.c. (see photo 3 and figure 2). This helps form the sawtooth configuration of the roof.
11. Built up wood roof trusses span east to west (see photo 2).
12. The wood trusses are generally 7 ½″ square top and bottom chord members with 3 ½″ by 7 ½″ web members (see figure 2).
13. The wood trusses have been reinforced with steel plates and angles at the column connection (see photo 4).
14. The vertical web members of the truss are 5/8″ diameter steel rods (see photos 2 and 4).
15. The roof of the City Hall will be replaced over the City of Bloomington area. The existing roof has 3 ½″ of ISO over wood deck and gypsum board. The new roof will include 4″ of new ISO with a ½″ ISO guard cover (see photo 5).

Police Headquarters Observations

1. The Police Headquarters building was constructed in the early 1960's.
2. The building is located at 220 East 3rd Street in Bloomington.

3. The building has exterior and interior load bearing masonry walls with steel roof joists.
4. We made observations of the roof structure only.
5. Existing roof deck thickness was not measurable.
6. The steel roof joists have three different spans: 33′-0″ on the north end of the building, 24′-0″ in the middle of the building, and 19′-0″ on the south end of the building (see figure 3).
7. Joist sizes in these three areas were obtained from tags removed from the existing joists by Barry Collins. Joist sizes are 16H7 joists for the 33′-0″ span, 14H5 joists for the 24′-0″ span, and 14H3 joists for the 19′-0″ span (see figure 3).
8. Steel roof joists typically bear on interior masonry walls (see photo 6).

City Hall Parking Lot Awning Observations

1. The City Hall parking lot awnings are typically framed of steel columns and beams with a roof deck (see photo 7).
2. No member thicknesses were obtained because all steel members were tubes and the thickness could not be observed.
3. Steel columns are typically HSS7x7 columns.
4. Column spacing is approximately twenty-seven feet (see figure 4).
5. Steel columns are attached with four anchor bolts to a concrete pier that extends 2′-6″ out of the ground (see photo 8).
6. The parking lot awnings are typically fourteen feet tall (see figure 5).
7. The support members for the roof framing are HSS4x4 steel tubes that cantilever approximately ten feet off of the column (see figure 5).
8. Roof framing members are HSS6x4 steel members at 3′-4″ centers (see photo 7 and figure 4).

Evaluation and Recommendations

The City Hall, Police Headquarters, and City Hall parking lot awning roof structures have all been analyzed for the existing loads and the addition of new solar panel arrays. Existing roof loads have been estimated based on observations during the investigation.

New solar panel array loads have been estimated based on past experience and an article titled "Roof Load Considerations for PV Arrays". Typical solar panel modules with 20 to 50 pounds each. The modules are supported by an underlying racking system. When divided out over the area of the modules, the solar panel array and support framing is about three to five pounds per square foot. For our analysis, we have assumed a distributed load on the roof structure because we do not have a specific panel mounting layout.

City Hall Building

The existing roof framing of the City Hall building consists of wood trusses and 2x12 joists at 16″ centers. The roof over the City Hall portion of the Showers Building will be replaced as part of this project. The existing deck and two layers of ISO will remain. Two layers of ISO will be added. The assumed weight of the new roof that the existing wood truss and wood joists will support is fourteen pounds per square foot. The weight of the solar panel arrays has been assumed as five pounds per square foot.

Our analysis shows that the existing wood trusses and wood roof joists can adequately support the addition of new solar panel arrays as long as their weight is under the assumed five pounds per square foot. According to our analysis, there will be no additional capacity in the roof structure if the solar panels and roofing are added.

I recommend adding the solar panel arrays and coordinating that with the roofing project. If the solar panel mounting points are limited and spread out, our assumption of a uniform distributed load may not be valid. Once a panel mounting diagram is obtained it should be reviewed by a structural engineer.

Police Headquarter Building

The roof of the Police Headquarters building consists of 14H3 joists that span 19′-0″, 14H5 joists that span 24′-0″, and 16H7 joists that span 33′-0″. The roof of the Police Headquarters will not be replaced as part of this project. The assumed weight of the roof that the existing steel joists support is fifteen pounds per square foot. The weight of the solar panel arrays has been assumed as five pounds per square foot.

Our analysis shows that the existing roof joists can adequately support the addition of new solar panel arrays as long as their weight is under the assumed five pounds per square foot. According to our analysis, the 14H3 and 14H5 joists have additional capacity after the solar panels are added. The 16H7 joists have no additional capacity after the solar panels are added. The roof deck was not analyzed because I was not able to measure its thickness during my site visit.

Solar panels can be added anywhere on the existing roof structure if the mounting track is supported by the roof joists. If the whole roof area is not to be covered with panels, I recommend adding panels anywhere on the 14H3 and 14H7 joists on the southern forty-three feet of the building first. The solar panel mounting points should be above the existing joists that are spaced at six foot centers. Mounting points should not be located on the roof deck between the existing joists. If the solar panel mounting points are limited and spread out, our assumption of a uniform distributed load may not be valid. Once a panel mounting diagram is obtained it should be reviewed by a structural engineer.

City Hall Parking Lot Awnings

The existing City Hall parking lot awning framing is HSS6x4 members and 3′-4″ centers. These are the controlling members in the analysis of the parking lot awnings. I could not determine the thickness of the steel tube framing. I have assumed the thickness of this tube to be 3/16″. The assumed weight of the roof that the existing steel beams support is three pounds per square foot. The weight of the solar panel arrays has been assumed as five pounds per square foot.

Our analysis shows that the existing steel beams will not support the addition of the solar panel arrays if they are 3/16″ thick. I recommend that the solar panel arrays not be added to the parking lot awnings. If you want to add solar panel arrays, the thickness of the steel supporting members must be determined.

Please give me a call if you have any questions.

Sincerely,
Silver Creek Engineering, Inc.

Jason A. Williams

Jason A. Williams, P.E.
Corporate Secretary

Attachments: Photos 1-8
Figures 1-5

Photo 1. East elevation of City Hall (Showers Building) from Morton Street.

Photo 2. Wood truss elevation at roof of City Hall (Showers Building).

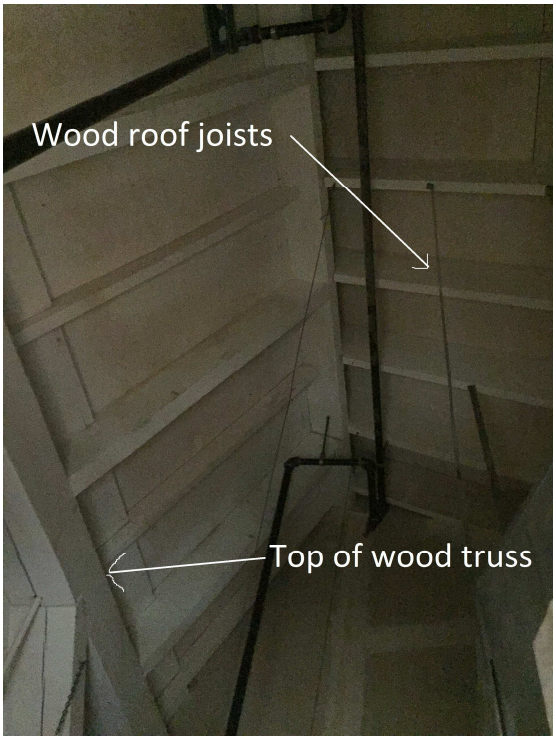


Photo 3. Wood roof structure at City Hall (Showers Building).

Photo 4. Typical steel reinforcement of wood truss at City Hall (Showers Building).

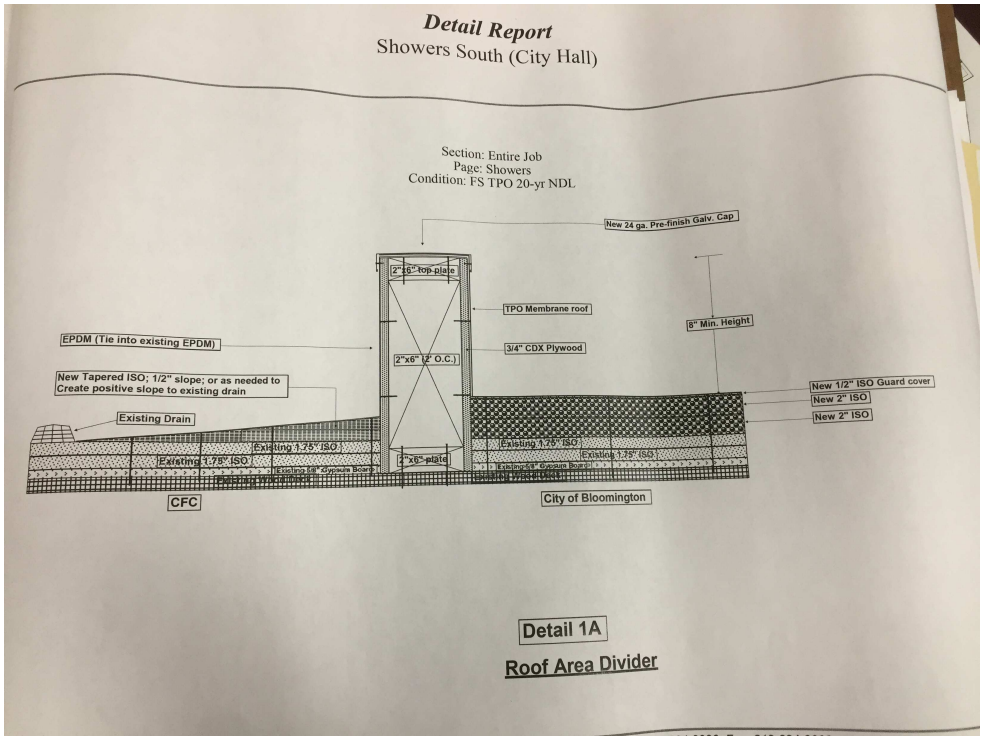


Photo 5. Steves Roofing and Sheet Metal proposed roof replacement on City Hall (Showers Building).

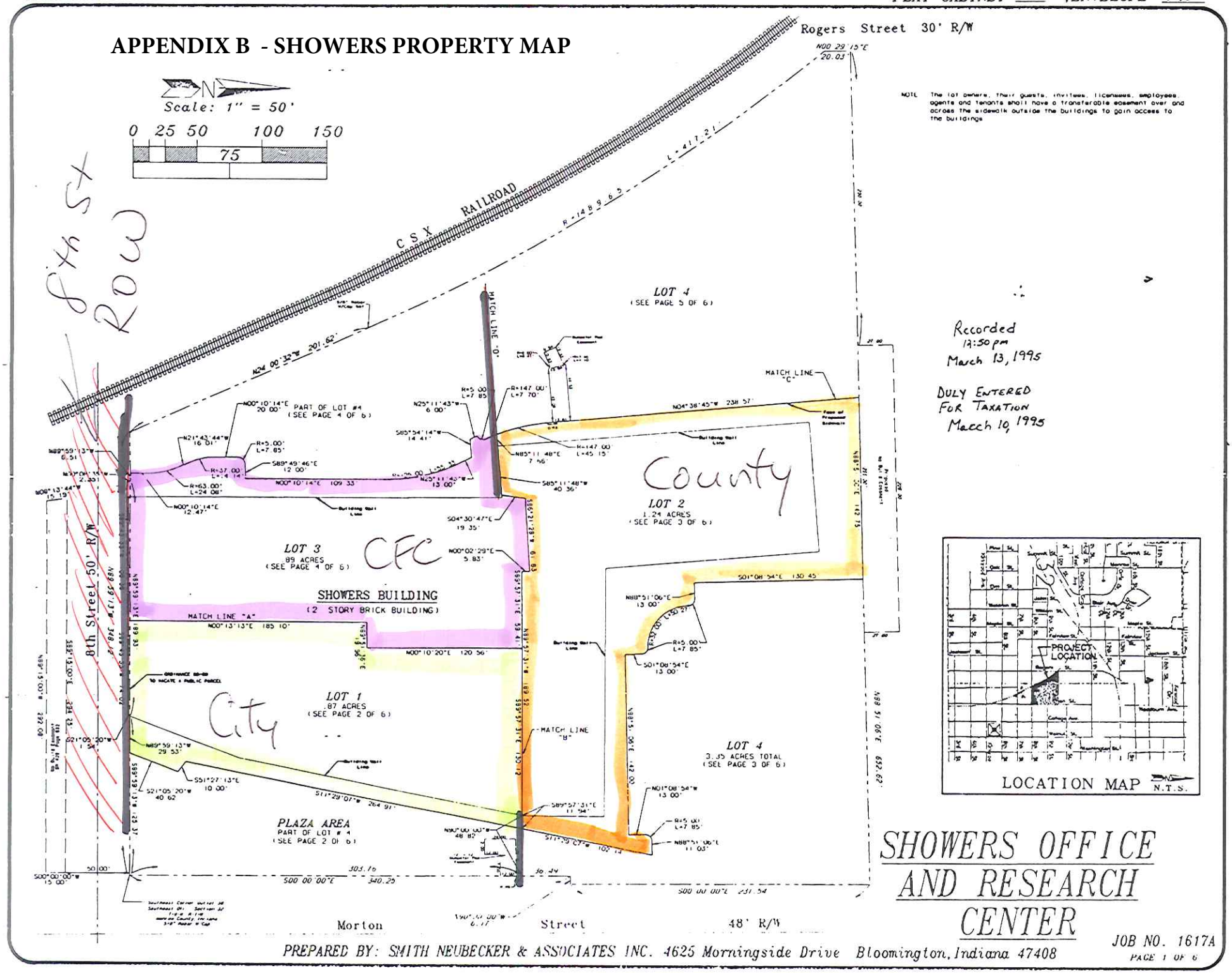
Photo 6. Joist roof framing bearing on interior masonry wall at Police Headquarters.

Photo 7. Typical City Hall parking lot awning elevation.

Photo 8. Connection of parking lot awning to concrete pier.

INSTRUMENT NO. 503713 PLAT CABINET C , ENVELOPE 141

APPENDIX B - SHOWERS PROPERTY MAP



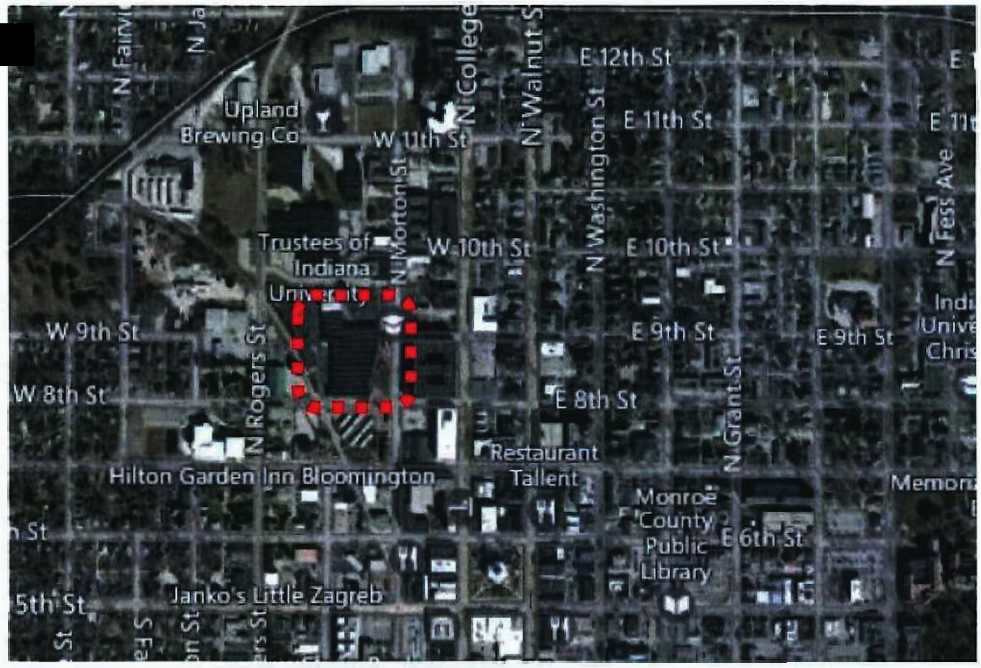
[redacted]

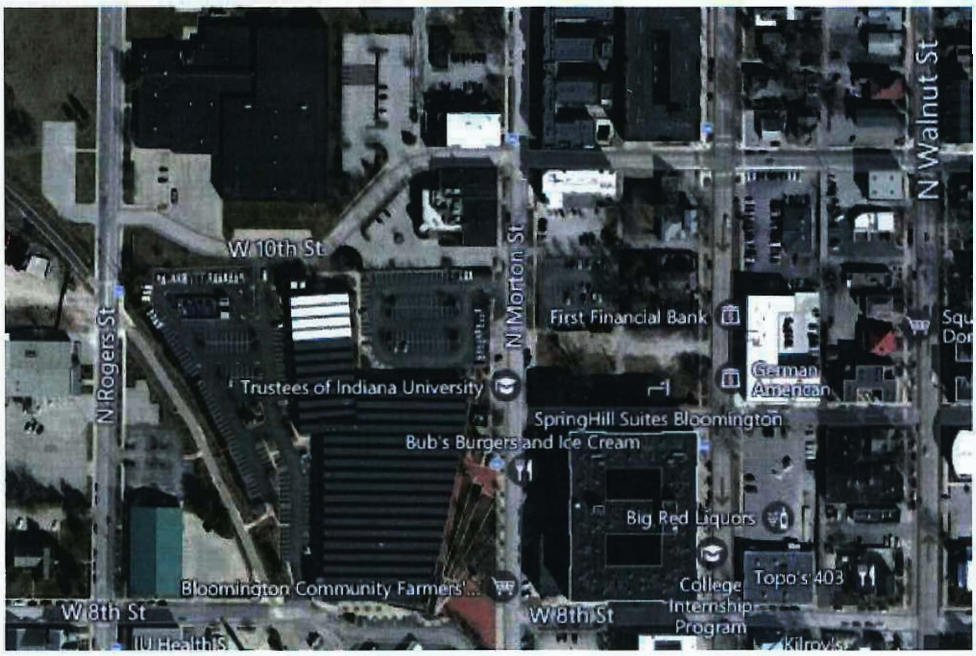
LOCATION MAP

MONROE COUNTY - SHOWERS BUILDING

[redacted] N. Morton – Bloomington, Indiana

[redacted]





DOCUMENT 00 01 15
LIST OF DRAWINGS
BOUND HEREIN

TITLE	SHEET NUMBER
ROOF PLAN	RP-1
DETAIL REFERENCE PLAN	RP-2
RAISED EDGE FLASHING	D-1
WALL FLASHING	D-2
RAKE EDGE FLASHING	D-3
ROOF EDGE FLASHING	D-4
RAISED EDGE FLASHING	D-5
TYPICAL SUPPORT FLASHING	D-6
PARAPET FLASHING	D-7
PARAPET FLASHING	D-8
GUTTER EDGE FLASHING	D-9
WALL FLASHING	D-10
TYPICAL CURB FLASHING	D-11
TYPICAL STACK FLASHING	D-12
TYPICAL PLUMBING VENT FLASHING	D-13
DRAIN FLASHING	D-14
TYPICAL PIPE FLASHING	D-15
WALL FLASHING	D-16
SCUPPER FLASHING	D-17

END OF LIST OF DRAWINGS

SECTION 01 10 00
SUMMARY OF WORK

PART 1 - GENERAL

1.01 PROJECT DESCRIPTION

A. Project Name: Police HQ & Showers Building - Roof Replacement.

B. Owner's Name: City of Bloomington

C. Consultant's Name:

D. The Project Work generally consists of the following:

1. On Lot 1 and Lot 3 and Police HQ:
   a. Removal and disposal of fully adhered EPDM single-ply membrane and related flashings;
   b. Removal and disposal of mechanically attached 1/2-inch wood fiber, down to the existing polyisocyanurate insulation;
   c. Removal and replacement of any deteriorated foam insulation and/or gypsum board, by Unit Pricing;
   d. Providing 1/4-inch coverboard;
   e. Providing plate-bonded, 60-mil Thermoplastic Polyolefin (TPO) Membrane roof system;
   f. Providing prefinished metal flashings at perimeter of all roof areas;
   g. Cutting and modifying the bottom edge of existing sheet metal panels, where indicated on Contract Drawings;

2. Contractor shall wet seal around all windows, window frames etc.

4. At the end of the project, the Contractor shall provide one additional walk-through, and completion of any punch-list items identified, after the solar panels are completed.

1.03 OWNER OCCUPANCY

A. Owner intends to continue to occupy the existing building during the entire construction period.

B. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.

C. Schedule the Work to accommodate Owner's access and occupancy.

1.04 CONTRACTOR USE OF SITE AND PREMISES

A. The building is a fully-occupied office environment. Owner intends to continue to occupy the existing building during the entire construction period.

B. Arrange use of site and premises to allow for:

1. Owner occupancy: Minimize conflict and facilitate Owner's operations.
2. Unimpeded performance of work by others.
3. Use of site and premises by the public.

C. No smoking will be allowed on premises.

D. Provide temporary toilet facility in work area.

1.05 WORK SCHEDULE

A. Contractor shall work with Owner's Operations Department and the Consultant to coordinate a schedule of work that provides the least possible impact to the Owner.

B. Contractor shall conduct work operations with the following restrictions:

1. Work hours shall be Monday through Friday between 6:00 a.m. and 6:00 p.m.
2. Weekend work may be conducted only with prior written agreement of the Owner no later than forty-eight (48) hours preceding the proposed weekend work.

1.06 WORK BY CONTRACTOR

A. All roof system detailing, at perimeters and projections, shall be constructed in accordance with the Construction Drawings provided or approved shop drawings.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 22 00
UNIT PRICES

PART 1 - GENERAL

1.01 SECTION INCLUDES

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

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

1.02 COSTS INCLUDED

A. Unit Prices included on the Bid Form shall include full compensation for all required labor, products, tools, equipment, plant, transportation, services and incidentals; erection, application or installation of an item of the Work; overhead and profit.

1.03 MEASUREMENT OF QUANTITIES

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

B. Take all measurements and compute quantities. Measurements and quantities will be verified by Owner.

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

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

E. Lineal Measurement: Measured by lineal dimension, at the item centerline or mean chord.

F. Measurement by Ton: Measured by ton of delivered and placed materials, to be verified by load tickets.

1.04 PAYMENT

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

1. Unit Prices are intended to be applied to small quantities of additional work.
2. The Owner or Construction Manager may, at any time, request to utilize time and materials (T&M) breakdown of additional work, in lieu of the Unit Prices.

B. Payment will not be made for any of the following:

1. Products/materials wasted or disposed of in a manner that is not acceptable.
2. Products/materials determined as unacceptable before or after placement.
3. Products/materials not completely unloaded from the transporting vehicle.
4. Products/materials placed beyond the lines and levels of the required Work.
5. Products/materials remaining on hand after completion of the Work.
6. Loading, hauling, and disposing of rejected Products/Materials.

1.05 SCHEDULE OF UNIT PRICES

A. **Item No. 1:** Replacement of 1x wood plank roof deck, per square foot. Cost for removal and disposal of damaged or deteriorated wood plank and replacement with new, matching materials; Section 06 10 53.

B. **Item No. 2:** Replacement of 1.75-inch polyisocyanurate insulation, per 4'x8' board. Cost for removal and disposal of deteriorated insulation and replacement with new, matching materials; Section 07 54 00

C. **Item No. 3:** Replacement of 5/8-inch gypsum-base board per 4'x8' board. Cost for removal and disposal of deteriorated wood members and replacement with new, matching materials; Section 07 54 00.

D. **Item No. 4:** Replacement of 2x6 or 2x8 wood nailers/blocking, per lineal foot. Cost for removal and disposal of deteriorated wood members and replacement with new, matching materials; Section 06 10 53.

MATERIALS LIST AND DESCRIPTIONS

PROJECT:

Roof Replacement, Lot 1 and Lot 3, Showers Building
City of Bloomington Police Headquarters

Contractor Name: _____

Address: _____

Phone/Fax: _____

	Product Name	Manufacturer
Masonry Components		
Non Shrink Grout	_____	_____
Galvanized Threaded Rod Anchors	_____	_____
Insulation Components		
Polyisocyanurate Roof Insulation	_____ (denote thicknesses)	_____
Cover Board	_____ (denote thickness)	_____
Coverboard/Insulation Fasteners	_____ (denote length)	_____
Membrane Components		
TPO Single-ply Roof System Manufacturer	_____	
Membrane Walkpads	_____	_____
Sealants		
Polyurethane Sealant	_____	_____
Silicone Sealant	_____	_____

END OF FORM

ROOFING CONTRACTOR'S INSTALLER CERTIFICATION

Owner's Name: City of Bloomington

Project Name: Roof Replacement Project - Lot 1 and Lot 3, Showers Building Police Headquarters

Roof Areas: _____
(for insertion by Contractor)

Be advised that as of this date _____ *the following*

Roofing Contractor _____,
(Contractor's name)

_____ *is fully certified to*
(Contractor's address)

install and repair any and all roofing systems warranted and without warranty as offered by

_____.
(name of manufacturer)

_____
(Manufacturer's Authorized Warranty Representative's Signature)

_____
(Print or Type Name)

_____
(Title)

_____
(Date)

END OF FORM

ROOFING SYSTEM MANUFACTURER'S CERTIFICATION

To be completed by the Specified Roofing System Material Manufacturer for each specified roofing system to be installed at the project.

Owner's Name:	City of Bloomington
Project Name:	Roof Replacement Project - Lot 1 and Lot 3, Showers Building Police Headquarters
Building Address(es):	401 N. Morton, 320 W. 8th St - Bloomington, IN

Material Manufacturer: _____

Installing Contractor: _____

Be advised that the technical department of the above named Material Manufacturer has examined the project drawings, specifications, and warranty requirements for the roofing work on this project as prepared by STR-SEG, bearing Project Number 13410, dated June 19, 2015, with regard to the replacement roofing system.

CERTIFICATION

We hereby certify that:

1. All materials will be furnished and delivered to this project in good merchantable quality, and will meet or exceed the specification requirements and will be applied in accordance with the manufacturer's instructions, to provide a sound weather/watertight system.
2. Upon completion of the installation, in accordance with the plans and specifications, being the recommended installation and inspection procedures, we certify that the manufacturer will issue the warranty as specified in the project manual.
3. The drawings and specifications follow the recommendations of the Material Manufacturer's manual for this type of system with:

_____ No Exception

_____ The Following Exceptions: (approval will be given upon correction of documents in accordance with these recommendations.) (Please include shop drawings if exceptions are noted.)

_____

_____

_____

4. The Installing Contractor has been an approved applicator of the Manufacturer's Material specified for a minimum of six months prior to the Bid opening and has at least five successful completed projects to date.

AUTHORIZED TECHNICAL REPRESENTATIVE OF MANUFACTURER:

BY: _____
(Print or Type Name)

SIGNATURE: _____
(Manufacturer's Authorized Technical Representative's Signature)

TITLE: _____

DATE: _____

END OF FORM

SCHEDULE OF VALUES OUTLINE

Subject to project requirements, the following shall serve as a schedule of values (continuation sheet) outline for the project. The Contractor shall be responsible for assigning a value for each respective item as it relates to roof construction. The outline is not all-inclusive, and should be tailored to fit the scope of work. A separate schedule of values (continuation sheet) shall be prepared for each respective roof area. An outline of this nature is required as part of the pre-construction submittal package; the approved outline should be changed to an AIA G703 (Continuation Sheet) prior to progress billing.

Roof Area: _____

_____ *square feet*

Mobilization:	$_____
Masonry (Material/Labor):	$_____
Roofing Tear-Off (Labor):	$_____
Wood Blocking/Plywood (Material/Labor):	$_____
Roof Insulation (Labor/Material):	$_____
Roof Membrane (Material):	$_____
Roof Membrane (Labor):	$_____
Sheet Metal (Labor/Material):	$_____
Sealant:	$_____
Roof Accessories:	$_____
Demobilization:	$_____
Allowance:	$_____
SUBTOTAL:	$_____

END OF FORM

SECTION 01 40 00
QUALITY REQUIREMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Regulatory requirements
B. References and standards
C. Installers quality assurance
D. Control of installation
E. Mock-ups
F. Tolerances
G. Manufacturer's field services
H. Defect assessment

1.03 REGULATORY REQUIREMENTS

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

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

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

D. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Consultant, in quantities specified for Product Data.

   1. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

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

1.04 REFERENCES AND STANDARDS

A. Contractor shall keep a complete Project Manual and any Addenda at the project site throughout the course of the project. In addition, copies of reviewed submittals and shop drawings, Change Orders and/or field modifications shall be kept available.

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

C. Conform to reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.

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

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

F. Should specified reference standards conflict with Contract Documents, request clarification from Consultant before proceeding.

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

1.05 INSTALLERS QUALITY ASSURANCE

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

B. The contractor shall notify the Owner in writing in case of discrepancies between existing work and drawings, and defects in such surfaces that are to receive the work. The Owner will evaluate the notice and direct what remedial action will be taken.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 CONTROL OF INSTALLATION

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

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

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

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

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

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

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

3.02 MOCK-UPS

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

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

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

3.03 TOLERANCES

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

B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Consultant before proceeding.

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

3.04 MANUFACTURERS' FIELD SERVICES

A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, as applicable, and to initiate instructions when necessary.

B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

3.05 DEFECT ASSESSMENT

A. The Owner may request testing of materials and/or installation to determine compliance with the specification.

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

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

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

E. If, in the opinion of Owner, it is not practical to remove and replace the Work, Owner will direct an appropriate remedy or adjust payment.

END OF SECTION

SECTION 01 42 16
DEFINITIONS

PART 1 - GENERAL

1.01 SUMMARY

A. This section supplements the definitions contained in the General Conditions.

B. Other definitions are included in individual specification sections.

1.02 DEFINITIONS

A. Furnish: To supply, deliver, unload, and inspect for damage.

B. Install: To unpack, assemble, erect, apply, place, finish, cure, protect, clean, start up, and make ready for use.

C. Product: Material, machinery, components, equipment, fixtures, and systems forming the work result. Not materials or equipment used for preparation, fabrication, conveying, or erection and not incorporated into the work result. Products may be new, never before used, or re-used materials or equipment.

D. Provide: To furnish and install.

E. Supply: Same as Furnish.

F. Substantial Completion of the Work: The completion of weathertight envelope and adequate protection of building occupants from hazards posed by operation of equipment and construction activities, or other potential harmful conditions that may exist or become evident during the final work effort by the Contractor, prior to completing the punchlist items and demobilizing per the Contract Documents.

1. The roof system (insulation, membrane and flashings) shall be complete;
2. All lifting activities requiring the use of a crane or other equipment shall be complete;
3. All life safety systems shall be complete and operational;
4. Sheet metal finishes/detailing work shall be complete or well underway.

G. Final Completion of the Work: Reached when the Work is found to be in full compliance with the Contract Documents.

1. Final Completion shall include the successful completion of any outstanding work items, or work requiring corrective action, as determined at the Final Review and published in punchlist reports.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Temporary Utilities

B. Temporary Construction

C. Temporary Sanitary Facilities

D. Temporary Controls: Barriers, Enclosures and Fencing

E. Security

F. Vehicular Access and Parking

G. Waste Removal

H. Removal of Utilities, Facilities and Controls

I. Special Site Controls

1.02 TEMPORARY UTILITIES

A. Temporary Electricity

1. Contractor shall provide generators for electrical power required during the performance of the Work.
2. The Contractor shall provide all means of conveyance required for carrying out the Work.

B. Temporary Lighting

1. Contractor shall supply any required supplemental lighting.

C. Mechanical Service

1. Contractor will provide all mechanical and electrical connections and disconnections required within the scope of the project. Contractor to coordinate with Owner regarding scheduled service interruptions.

D. Water Service

1. Water for construction purposes is available through the existing facility, free of charge. Contractor shall provide all extensions from existing service to project work area as required.
   a. Use trigger-operated nozzles for water hoses, to avoid waste of water.

1.03 TEMPORARY CONSTRUCTION

A. Erect and subsequently remove temporary construction as needed to accomplish work.

B. Patch attachment to remaining structure in a manner acceptable to the Owner.

C. Stairs and scaffolds

1. The Contractor shall furnish and maintain equipment such as temporary stairs, fixed ladders, ramps, chutes, runways, sidewalk overhead scaffold protection, and the like as required for proper execution of work by all trades. Underlay scaffolds with planking to prevent uprights from resting directly on the underlying surface.
2. Store materials on raised platforms; a minimum of three (3) inches off of impervious surfaces (i.e. concrete); a minimum of six (6) inches off of pervious surfaces (i.e. grass). Protect with coverings while providing for adequate air circulation. Coverings to extend down sides completely. Manufacturers shrink wrap is not an acceptable covering.

D. Signage

1. No project signage is required.

E. Enclosures and Fencing

1. Contractor options.

F. Noise Control

1. Provide methods, means and facilities to minimize noise produced by construction operations.
2. Perform portions of the Work which will generate excessive noise during hours when the building is unoccupied.

G. Dust Control

1. Execute work by methods to minimize raising dust from construction operations.

H. Fume and Odor Control

1. Provide methods and means to minimize fume and odor produced by construction operations, including the use of enclosed tanker asphalt bitumen storage and distribution equipment.
2. Cover building intakes, in conjunction with the Owner, to minimize fumes and odor produced by construction operations.

1.04 TEMPORARY SANITARY FACILITIES

A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.

B. Maintain daily in clean and sanitary condition.

C. At end of construction, return facilities to same or better condition as originally found.

1.05 BARRIERS

A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.

B. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building.

C. Provide protection for plants designated to remain. Replace damaged plants.

D. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.06 FENCING

A. Construction: Contractor's option.

1.07 VEHICULAR ACCESS AND PARKING

A. Comply with regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.

B. Coordinate access and haul routes with governing authorities and Owner.

C. Provide and maintain access to fire hydrants, free of obstructions.

1.08 WASTE REMOVAL

A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.

B. Provide containers with lids. Remove trash from site daily.

C. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.

D. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.09 SAFETY PLAN

A. Contractor shall consider the safe implementation of daily work activity paramount. Dynamics of the construction industry lend itself to daily attention to detail, quality and safety: therefore, it is imperative that all work is performed within the scope of known safety performance standards and directives with little to no deviance. At no time shall the safety of the worker be compromised to accommodate other construction constraints.

B. No Assumption of Duty: Notwithstanding any other provision of these Conditions, each Subcontractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs. In no case shall the Contractor or its employees and agents have either direct or indirect responsibility for the safety of the subcontractor's employees.

1.10 SPECIAL SITE CONDITIONS

A. Building Access: Generally, exterior access only is allowed for the project. Interior access to the facility shall be by project foreman or supervisor only on an as needed basis to review interior leaks, damage, etc., resulting from exterior work.

B. NO SMOKING or use of any other tobacco or tobacco containing product will be tolerated on any property owned by the City. This includes parking lots, rooftops and/or other areas set up and maintained by the Contractor within construction site.

C. Hours of Construction: Weekdays, Monday through Friday 7:00a.m. to 6:00p.m. Saturday and Sunday work may be performed upon 48 hour advance notice to Owner and Consultant.

D. The Owner will exercise a zero tolerance policy as it relates to safety and safe work practices at the site.

1. Contractor will be responsible for the safety and welfare of their employees and building occupants during the course of the Work.
2. Coordinate all work activities with the Owner during the course of the Work.
3. Contractor's employees shall be clearly identified while working at the project site.
4. Contractor is responsible for providing background checks on all employees that will be working at the project site.
   a. Contractor shall not permit unlawful employee near children by a sexual predator in accordance with Code 35-42-4-10.
   b. Contractor shall submit a list of employees and background checks to the Owner prior to the start of the Work.
   c. Contractor is responsible for all prices incurred as part of this request and shall submit documentation to the Owner prior to the start of the Work.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 60 00
PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. General product requirements.

B. Re-use of existing products.

C. Transportation, handling, storage and protection

D. Product option requirements.

E. Substitution limitations and procedures.

1.03 PRODUCT DELIVERY REQUIREMENTS

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

1.04 PRODUCT STORAGE AND HANDLING REQUIREMENTS

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

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

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

PART 2 – PRODUCTS

2.01 EXISTING PRODUCTS

A. Do not reuse materials removed from existing premises unless specifically required or permitted by the Contract Documents.

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

2.02 NEW PRODUCTS

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

2.03 PRODUCT OPTIONS

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

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

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

PART 3 - EXECUTION

3.01 SUBSTITUTION PROCEDURES

A. Product substitution requests may be made only by a Bidder who is an official Bidder of Record.

B. The Consultant will consider a substitute product only if it is in the same general classification of the specified product.

C. A "Request for Substitution" will be considered only if written request is received by the Consultant within seven (7) days prior to the Bid Due date.

1. Comply with requirements specified in this section.
2. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.

D. A request for substitution constitutes a representation that the submitter:

1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
2. Will provide the same warranty for the substitution as for the specified product.
3. Will coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner.
4. Waives claims for additional costs or time extension that may subsequently become apparent.
5. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.

E. Substitution Submittal Procedure:

1. Submit one (1) copy of request for substitution for consideration. Limit each request to one (1) proposed substitution.
2. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence. Burden of proof is on proposer.
3. The Consultant will notify Contractor in writing of decision to reject request. The Consultant's decision of approval or disapproval shall be final.

3.02 TRANSPORTATION AND HANDLING

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

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

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

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

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

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

3.03 STORAGE AND PROTECTION

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

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

C. Store with seals and labels intact and legible.

D. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.

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

F. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

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

END OF SECTION

SECTION 01 70 00
EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Examination, preparation, and general installation procedures.

B. Cutting and patching.

C. Cleaning and protection.

D. Closeout procedures, except payment procedures.

1.02 SUBMITTALS

A. Section 01 30 00 - Administrative Requirements: Submittal procedures.

B. Section 01 60 00 - Product Requirements: Substitution procedures.

1.03 COORDINATION

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

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

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

1.04 CLOSEOUT SUBMITTALS

A. Upon "Substantial Completion" of project, the Contractor shall submit the below listed item to the Consultant for presentation to the Owner.

1. Roofing System Manufacturer's Inspection Reports.
2. Twenty (20) year Manufacturer's no dollar limit (NDL) system warranty.
3. Roofing System Manufacturer's maintenance instructions.
4. Twenty (20) year sheet metal Manufacturer's finish warranty.
5. Contractor's material and labor warranty; MRCA form number 1987B, except for two (2) year period.
6. Waste manifests (for ACM), if applicable.
7. Notarized affidavits regarding the use of PCB and asbestos products.
8. Bonds; consent of surety to final payment.
9. Contractor's as-built drawings showing changes to the contract documents, if applicable.
10. Signed punch list, indicating completion of any outstanding items.
11. Such other written guarantees or warranties, as required by the technical sections.
12. Final Waivers of Lien.

PART 2 - PRODUCTS

2.01 PATCHING MATERIALS

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

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

C. Product Substitution: For any proposed change in materials, submit request for substitution described in *Section 01 60 00 - "Product Requirements".*

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.

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

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

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

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

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

3.02 PREPARATION

A. The Contractor shall take care to install protection to prevent marring or damage to building components adjacent to the Work.

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

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

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

3.03 GENERAL INSTALLATION REQUIREMENTS

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

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

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

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

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

3.04 CUTTING AND PATCHING

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

B. Perform whatever cutting and patching is necessary to:

1. Complete the work.
2. Fit products together to integrate with other work.
3. Provide openings for penetration of mechanical, electrical, and other services.
4. Match work that has been cut to adjacent work.
5. Repair areas adjacent to cuts to required condition.
6. Repair new work damaged by subsequent work.
7. Remove samples of installed work for testing when requested.
8. Remove and replace defective and non-conforming work.

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

D. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.

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

F. Restore work with new products in accordance with requirements of Contract Documents.

G. Fit work with new products, sleeves, ducts, conduit, and other penetrations through surfaces.

H. Patching:

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

3.05 PROGRESS CLEANING

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

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

3.06 PROTECTION OF INSTALLED WORK

A. Protect installed work from damage by construction operations.

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

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

3.07 FINAL CLEANING

A. Use cleaning materials that are nonhazardous.

B. Clean debris from roofs, gutters, downspouts, and drainage systems.

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

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

3.08 CLOSEOUT PROCEDURES

A. Make submittals that are required by governing or other authorities.

1. Provide copies to Consultant/Owner.

B. Notify Consultant when work is considered ready for Substantial Completion.

1. Submit written certification that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Consultant's review.

C. Correct items of work listed in executed Certificates of Substantial Completion and comply with requirements for access to Owner-occupied areas.

D. Notify Owner when work is considered finally complete.

E. Complete items of work determined by Owner's Final Review.

END OF SECTION

PROJECT CLOSE-OUT CHECKLIST

Subject to project requirements, the following shall serve as a project close-out checklist for the project. The Contractor shall be responsible for completing this checklist, in its entirety, and submitting it with the required documentation as outlined in this section. Items that are not applicable to this project shall be noted accordingly. Items that do not comply with the project requirements will be rejected.

_____ *Roofing System Manufacturer's Inspection Reports*
- *Start-up, intermediate and final review inspection reports*

_____ *Roofing System Manufacturer's Warranty(s)*
- *Warranty date shall match date of substantial completion*
- *Identify project, address, square footage and respective roof area(s)*
- *Properly identify the Owner*

_____ *Roofing Contractor's Warranty (2-year)*

_____ *Sheet Metal Finish Warranty*

_____ *Maintenance Instructions*

_____ *Final Waivers of Lien (matching requested amounts)*
- *Waiver of lien from Roofing Contractor*
- *Waiver of lien from all sub-Contractors*
- *Waiver of lien from all suppliers*

_____ *Application for Payment (Final)*

_____ *Statement accounting for changes to the contract sum*

_____ *Application for Payment (Retainage)*
- *'Balance to Finish' shall reflect -$0-*

_____ *Evidence of continuing insurance coverage complying with insurance requirements*

_____ *Sworn affidavit stating that no materials containing asbestos or Polychlorinated biphenyl (PCB) were used or installed under project*

_____ *Chain-of-custody reports and waste disposal receipts for all regulated materials*

_____ *Signed copy of the punchlist with project photographs*

END OF CHECKLIST

SECTION 02 90 00
LANDSCAPE RESTORATION AND REHABILITATION

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section covers the removal, and replacement with like materials, of lawns, plantings, and pavement damaged by the Contractor during the performance of the Work.

B. The cost of all repairs covered under this section shall be the sole responsibility of the Contractor. If the Contractor fails to make repairs to the Owner's satisfaction, the Owner reserves the right to retain, from moneys due the Contractor, such amount as necessary to repair the grounds to their previous condition.

1.02 REQUIREMENTS

A. Unless otherwise noted before construction begins, Contractor shall photo document the setup area(s) to show all observable pre-existing conditions prior to mobilization and provide such documentation to Owner and Consultant. Failure to provide such documentation shall result in any found damage to underground sprinklers, electrical, ground covers and vehicle and pedestrian pavements, will be considered the fault of the Contractor to be restored to pre-construction condition unless the submitted documentation shows a pre-existing condition existed.

B. Upon completion, restore grounds to its preconstruction condition including but not limited to property, utilities and landscaping or the Owner and adjacent property owners. In the event of the contractor's failure to repair or restore the surrounding premises, the Owner may do so, the cost of which, including fifteen percent (15%) for administration, will be deducted from sums due to the Contractor; or if insufficient, Contractor will reimburse the Owner for any shortfall.

1.03 WARRANTY

A. The Contractor shall maintain and warrant all work performed under this section for a period of ninety (90) days from the date of its completion. The Contractor shall be responsible for the correction of unsatisfactory landscaping materials or workmanship and shall repair such defects promptly upon notice, at no additional cost to the Owner.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 04 01 00
MAINTENANCE OF MASONRY

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Requirements for installation of new anchors into top cores of existing masonry parapet walls.

B. Products and requirements for repair/replacement of damaged or deteriorated unit masonry units.

1.02 RELATED REQUIREMENTS

A. Section 06 10 53 – Miscellaneous Wood Blocking: Substrate for architectural sheet metal.

B. Section 07 62 00 – Sheet Metal Flashing and Trim: Sheet metal flashings.

C. Section 07 90 05 – Joint Sealers: Control joint replacement.

1.03 REFERENCES

A. ASTM International Standards:

1. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.
2. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2009.
3. ASTM A563 - Standard Specification for Carbon and Alloy Steel Nuts; 2007a(Reapproved 2014).
4. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units; 2002.
5. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar; 2002.
6. ASTM C150 - Standard Specification for Portland Cement; 2002a.
7. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes; 1997.
8. ASTM C216 - Standard Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale); 2002.
9. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2014a.
10. ASTM C476 - Standard Specification for Grout for Masonry; 2010.
11. ASTM C1107 - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink); 2014a.
12. ASTM F436 - Standard Specification for Hardened Steel Washers; 2011.

B. American Concrete Institute (ACI): 530.1-88 / American Society of Civil Engineers (ASCE): 6-99, Masonry Standards Joint Committee, "Specifications for Masonry Structures".

C. Brick Institute of America (BIA): Technical Notes on Brick Construction.

D. International Masonry Institute: Recommended Practices and Guide Specifications for Cold Weather Masonry Construction.

E. National Concrete Masonry Association (NCMA): Joint reinforcing standards.

1.04 SUBMITTALS

A. The Contractor shall submit, for approval by the Owner, the following product samples:

1. Steel Anchors: Provide product information and installation procedure.
2. Mortar/Grout: Provide product information and installation procedure.

1.05 QUALITY ASSURANCE

A. Work shall be performed by a firm having a minimum of five (5) years' successful experience in comparable masonry restoration projects and employing personnel skilled in the restoration processes and operations indicated.

1. Use of power-operated, rotary hand saws/grinders or pneumatically-powered chisels for mortar removal will be permitted based on submission of a satisfactory quality-control program, to include proper supervision of work to prevent damage due to worker fatigue.

2. No allowance will be made for lack of skill on the part of the workmen in the acceptance or rejection of the work provided under this section.

1.06 ENVIRONMENTAL REQUIREMENTS

A. Cold weather conditions:

1. Do not perform masonry work when ambient air temperature is below 40°F or is expected to fall below 40°F within twenty-four (24) hours of placement.
2. When placing work in cold weather (40-50°F), mix mortar using warm water to maintain mortar temperature above 50°F at point of application.

B. Hot weather conditions:

1. When placing work in hot weather (above 80°F), comply with recommended standards to ensure proper hydration and curing of mortar materials.
2. Mortar shall be mixed and placed within one (1) hour when the temperature is above 80°F.

C. Protect completed work from precipitation until mortar joints are sufficiently hard enough to avoid damage.

1.07 WORK SEQUENCING

A. Proceed with masonry repairs as necessary to stay ahead of roofing and/or sheet metal work, where applicable.

PART 2 - PRODUCTS

2.01 ANCHORS

A. Unheaded Anchor Rods:

1. 1/2-inch steel threaded rod conforming to ASTM A36/A36M.
2. Configuration: Hooked.
3. Nuts: Heavy-hex carbon steel conforming to ASTM A563.
4. Plate Washers: Carbon steel conforming to ASTM A36/A36M.
5. Washers: Hardened carbon steel conforming to ASTM F436, Type 1.
6. Finish: Hot-dip zinc coating, conforming to ASTM A153/A153M, Class C.

B. Nonmetallic, Shrinkage-Resistant Grout: Conforming to ASTM C1107, factory-packaged, nonmetallic aggregate grout, noncorrosive and nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

2.02 MORTAR MATERIALS

A. Comply with ASTM C270, proportional-by-volume specification, for materials and mortar types to match existing:

B. Portland cement: ASTM C150, Type I or Type III, natural color.

C. Pressure-hydrated lime: ASTM C207, Type S.

D. Damp, loose mason's sand:

1. Shall conform to ASTM C144.
2. Clean, sharp, free from loam or silt, and free from deleterious amounts of oil, acid, alkalis, salts, or organic matter.

E. Water: Shall be potable, fresh, clean, clear and free from deleterious amounts of sewage, oil, acid, alkalis, salts, or organic matter.

F. Colored mortar pigments, if required: Natural and synthetic iron and chromium oxides, compounded for use in mortar mixes.

2.03 REPLACEMENT MASONRY UNITS

A. Concrete masonry units:

1. Shall conform to ASTM C90, Type N, Grade 2.

2. Shall match the existing units in size and weight/compressive strength.

B. Face brick:

1. Shall conform to ASTM C216, Grade SW, Type FBS.
2. Shall match the existing unit size and, as closely as possible, the existing color and texture.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine the project site and verify:

1. Environmental conditions are satisfactory for performance of the work.
2. Masonry surfaces are acceptable to receive the work.

B. Determine existing masonry support, attachment and integrity.

C. Determine existence and locations of above-ground utility lines, including exterior-mounted and/or enclosed conduit.

D. Notify the Consultant of pre-existing defects or conditions which may interfere with the requirements of this section. Absence of notice will constitute the Contractor's acceptance of the site.

3.02 PREPARATION

A. Protect surrounding elements from damage due to restoration procedures.

B. Carefully remove and store removable items located in areas to be restored.

C. Separate areas to be protected from restoration areas using means adequate to prevent damage.

D. Cover existing landscaping with tarpaulins or similar covers.

E. Protect roof membrane and flashings from damage with 1/2-inch minimum thickness plywood, laid over EPS insulation boards on roof surfaces over full extent of work area and traffic route.

F. Clean all project-related surfaces prior to proceeding with repairs.

G. When using cleaning methods that involve water or other liquids, install drainage devices to prevent runoff over adjacent surfaces unless those surfaces are impervious to damage from runoff.

3.03 TEMPORARY WORK

A. Temporary enclosures: As weather and/or site conditions warrant, construct wood-frame enclosures, cover with reinforced polyethylene sheeting, secure edges and interior.

1. The cost of all such enclosures shall be the sole responsibility of the Contractor.

B. Temporary repairs: Shall be made only as approved by the Consultant.

3.04 DEMOLITION

A. Remove and disposal of existing limestone coping caps.

B. Removal and disposal of the existing bed joint mortar to provide level and true surface for subsequent materials.

3.05 MORTAR AND GROUT MIXING

A. Grout for unit masonry fills shall comply with ASTM C476 for coarse and fine aggregate combined and measured in a damp, loose condition, and shall not exceed four (4) times the volume of the cementitious materials.

B. Measure materials for mixing, in accordance with ASTM C270, by volume. Measure by the use of a container of known capacity. Proportions for Portland cement, lime, and aggregate, respectively, are as follows: Type "N" - 1:1:6.

C. Mix only such amounts of mortar that will be used within the following time frame, based on ambient temperature. Discard mortar that has reached its initial set or has not been used within that time frame.

1. 80°F or less: Two (2) hours.
2. 80°F or above: One (1) hour.

D. In cold weather (40-50°F), heat sand and/or water to maintain mortar temperature of 50°F at point of

use. Mortar which falls below this temperature may be retempered with hot water if consistency is not impaired. Water or sand shall, in no case, be heated above 160°F.

3.06 MASONRY UNIT REPLACEMENT

A. General:

1. Replace masonry units which are chipped, stained, or damaged, or if units do not match adjoining units as intended.
2. Cut new and existing masonry units with a dry, motor-driven saw designed to cut masonry with clean, sharp, unchipped edges. Cut new units as required to fit adjoining work neatly. Use full units without cutting wherever possible.

B. Cut out mortar joints surrounding masonry units that are to be removed and replaced.

1. Units to be removed may be broken to facilitate removal, providing surrounding units to remain are not damaged. Exercise care to prevent debris falling into cavity, where applicable.
2. Once the units are removed, carefully chisel out the surrounding mortar.
3. Where deterioration extends to the masonry units of the back-up wall, remove sufficient units from the face wythe to allow for proper replacement of back-up units.
4. Remove dust and debris by brushing, blowing with air or rinsing with water.

C. Dampen surfaces of the surrounding masonry units before new units are placed. Allow existing masonry to absorb surface moisture prior to starting installation of the new replacement units.

D. Where applicable, install replacement reinforcement between units to match existing.

E. Butter contact surfaces of existing masonry and new replacement masonry units with sufficient mortar to fill head joints. Center replacement masonry units in opening and press into position.

F. Remove excess mortar with a trowel. Point around replacement masonry units to ensure full bed, head and collar joints.

G. Repoint new mortar joints in repair area to comply with requirements for repointing existing masonry, except rake out joints before mortar sets.

1. When mortar becomes "thumbprint hard", proceed with tooling joints.

H. Tool joints with a jointing tool to produce a smooth, compacted, concaved joint and as follows:

1. Match existing joint style to produce a consistent, uniform appearance.
2. Hold tooled joint back from unit masonry face where existing unit edges have eroded or weathered to “round” edges or corners. Match existing or modify new joint as required to produce a textural match with existing masonry.

3.07 ANCHOR INSTALLATION

A. Lay out new anchor locations with maximum spacing of twenty-four (24) inches, on center, along parapet wall.

1. Anchors adjacent to building corners shall not be more than twelve (12) inches from exterior edge.
2. Where existing masonry coursing precludes anchor installation at specified layout, shorten spacing and install additional anchors as required.

B. Install backing material in cores below existing concrete masonry unit top course to prevent infiltration of grout into lower courses of wall.

C. Set hooked anchor into place and fill core solid with mixed grout.

D. Reposition to ensure vertical placement and proper spacing. Trowel grout level and flush with top of concrete masonry unit.

3.08 FIELD QUALITY CONTROL

A. Allow _____ Owner’s representative’s use of scaffolding and lift devices as needed to observe progress of work. Notify Owner in advance when scaffolds and lifts will be relocated. Do not relocate until Owner has had reasonable time to observe work.

3.09 CLEANING

A. Clean all mortar smears, droppings, etc. from wall with dry brush as work proceeds.

B. Immediately remove stains, efflorescence, or other excess resulting from the work of this section.

C. Clean mortar from the face of masonry no later than end of following work day after the mortar is set:

1. Remove large mortar particles by hand with wooden paddles or nonmetallic scrapers, hoes, or chisels.
2. Test cleaning methods on concealed area prior to applying to the entire area.
3. Use bucket and stiff fiber hand brush cleaning method, with appropriate cleaner (solution of 1/2 cup trisodium phosphate per gallon, or commercial alkaline masonry cleaner), as described in BIA-Technical Note No. 20.
4. Use of acidic-based products for cleaning will **not** be permitted.

D. Exterior masonry cleaning:

1. Use controlled solution of hydrofluoric acid, wetting agents and catalytic inhibitors (Muriatic acid cleaning will not be permitted).
2. Contractor shall pre-wet wall, dilute cleanser and properly rinse wall (400-600 psi) under manufacturer's written directions for the specific application.

E. Flush masonry wall with clean, pressurized water after completion of Work.

F. Clean all surrounding surfaces to preconstruction condition.

END OF SECTION

SECTION 06 10 53
MISCELLANEOUS ROUGH CARPENTRY

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Roofing nailers, blocking and plywood panels.

1.02 RELATED REQUIREMENTS

A. Section 07 54 00 - Thermoplastic Membrane Roofing

B. Section 07 62 00 - Sheet Metal Flashing and Trim; Finish architectural flashings.

1.03 REFERENCE STANDARDS

A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2009.

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2011.

C. PS 1 - Structural Plywood; 2009.

D. PS 20 - American Softwood Lumber Standard; National Institute of Standards and Technology, Department of Commerce; 2010.

1.04 DELIVERY, STORAGE, AND HANDLING

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

PART 2 - PRODUCTS

2.01 GENERAL REQUIREMENTS

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

1. Provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.
2. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.

2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

A. Sizes: Nominal sizes as indicated on drawings.

B. Moisture Content: S-dry or MC19;

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

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

2.03 CONSTRUCTION PANELS

A. Other Applications:

1. Plywood Concealed From View But Located Within Exterior Enclosure: PS 1, C-C Plugged or better, Exterior grade.
2. Plywood Exposed to View But Not Exposed to Weather: PS 1, A-D, or better.
3. Other Locations: PS 1, C-D Plugged or better.

2.04 FASTENERS AND ANCHORS

A. Carpentry/plywood to wood substrate:

1. Common wire nails with hot-dipped galvanized coating.
2. #8, coarse galvanized, sharp point, dual-torque deck screw with bugle head.

3. Length as necessary to penetrate the substrate by a minimum of 1-1/2 inches.

B. Carpentry to wood roof decking:

1. #14 steel roofing screw with corrosion-protective coating.
   a. Roofgrip screw with Climaseal coating, by Buildex Division of ITW, Inc., Itasca, IL; itwbuildex.com.
   b. Heavy Duty Roofing Fastener with CR-10 coating, by OMG, Inc., Agawam, MA; olyfast.com.
   c. #14 Dekfast with gray e-coat coating, by SFS intec, Inc., Wyomissing, PA; sfsintecusa.com.
   d. Trufast #14 HD Roofing Fastener with black e-coat coating, by Altenloh, Brinck & Co. U.S., Inc., Bryan, OH; trufast.com.
   e. Approved equal.
2. Length shall be sufficient to penetrate wood decking by one (1) inch.

C. Carpentry to concrete or solid masonry substrate:

1. 1/4-inch diameter, Phillips-head masonry screw.
   a. Tapcon, 1/4-inch diameter, Phillips-head screw, by Buildex Division of ITW, Inc., Itasca, IL; itwbuildex.com.
   b. Tapper, 1/4-inch diameter, Phillips-head screw, by Powers Fastening, Inc., Brewster, NY; powers.com.
   c. Titen, 1/4-inch diameter, Phillips-head screw, by Simpson Strong-Tie, Pleasanton, CA; strongtie.com.
   d. Approved equal.
2. Zinc Alloy nail-drive expansion anchor, 1/4-inch diameter, with stainless steel pin.
3. Length as necessary to provide a minimum of one (1) inch embedment.

D. Carpentry to hollow masonry substrate:

1. 1/4-inch diameter sleeve anchor; length as necessary to penetrate a minimum of one (1) inch into the interior of the hollow masonry units.
   a. Sleeve Anchor, by Hilti Fastening Systems, Tulsa, OK.
   b. Approved equal.
2. 1/4-inch diameter, Phillips-head masonry screw; length as necessary to provide a minimum of one (1) inch embedment.
   a. Tapcon, 1/4-inch diameter, Phillips-head screw, by Buildex Division of ITW, Inc., Itasca, IL; itwbuildex.com.
   b. Tapper, 1/4-inch diameter, Phillips-head screw, by Powers Fastening, Inc., Brewster, NY; powers.com.
   c. Titen, 1/4-inch diameter, Phillips-head screw, by Simpson Strong-Tie, Pleasanton, CA; strongtie.com.
   d. Approved equal.

E. Carpentry to sheet metal substrate:

1. Self-drilling sheet metal screws, cadmium plated.
   a. 10-24 wafer-head Plymetal TEKS/3 with wings, by Buildex Division of ITW, Inc., Itasca, IL; itwbuildex.com.
   b. Approved equal.
2. Length shall penetrate the substrate by a minimum of one (1) inch.

F. Carpentry to structural steel:

1. Self-drilling sheet metal screws, cadmium plated.

a. 12-24 flat-head TEKS/4, by Buildex Division of ITW, Inc., Itasca, IL; itwbuildex.com.

b. Approved equal.

2. Length shall penetrate the substrate by a minimum of one (1) inch.

PART 3 - EXECUTION

3.01 PREPARATION

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

B. Examine existing nailers and blocking which conforms to the Contract Drawings at walls, edges, expansion joints, hatches, pipes or curbs:

1. Replace deteriorated sections with new dimensional lumber of the same size.

2. Verify existing fastening to comply with specified requirements for new work; enhance to secure as required.

3.02 INSTALLATION – GENERAL

A. Do not use lumber or materials which are unsound, warped, bowed, twisted, inadequately seasoned, or too small to fabricate the work with a minimum of joints.

B. Fit carpentry work to other work. Produce joints which are tight, true and well fastened.

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

D. Attach carpentry to substrates in accordance with recognized standards.

E. Countersink new fastener heads flush with top of wood members. Hollow out bottom of new wood members, if necessary, to fit over existing exposed bolt heads that are not countersunk.

3.03 ROOF-RELATED CARPENTRY

A. Provide wood blocking and nailers as indicated on the Contract Drawings.

B. Coordinate installation of roofing carpentry with other construction, framing of roof openings, and roofing assembly installation.

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

D. Provide wood curb extensions at all existing curbs, except where specifically indicated otherwise, to achieve a minimum of eight (8) inch flashing height above finished roof surface. Form corners with alternating, lapping side members.

E. When using multiple nailer courses, weave corners and stagger end joints a minimum of three (3) feet from underlying course.

3.04 PLYWOOD PANELS

A. Provide plywood panels as indicated on the Contract Drawings.

B. Space panels with 1/8-inch joints at butt joints. Provide back-splice support of lumber or sheet metal behind unsupported panel joints greater than twelve (12) inches in length, and at corners

C. Bevel-cut edges at 45-degree angle, where required for smooth transition of roof flashings.

3.05 ATTACHMENT

A. Fasten 2x material to decking at a maximum of sixteen (16) inches on center, staggered, and 1x material at a maximum of twelve (12) inches on center, staggered.

B. Fasten 2x material to concrete or masonry at a maximum of twenty-four (24) inches on center, staggered, and 1x material at a maximum of sixteen (16) inches on center, staggered.

C. Fasten 2x material together with 3-inch long screws at sixteen (16) inches on center, staggered.

D. Within ten (10) feet of building corners, increase fastening rate to at a maximum of eight (8) inches on center, staggered.

E. Provide addition fasteners, as required, to counteract minor warpage or variances in substrate, and to hold tight and true to lines.

F. Fasteners shall be placed no closer than one (1) inch from panel edges. Fasten panels at all edges; spacing shall be no greater than twelve (12) inches on center.

G. Where applicable at large panels, fasten center in horizontal rows on twenty-four (24) inch maximum centers. Fastener spacing shall be no greater than twelve (12) inches on center and staggered from adjacent rows or edges.

3.06 TOLERANCES

A. Framing Members: 1/4 inch from true position, maximum.

B. Variation from Plane: 1/4 inch in ten (10) feet, maximum, and 1/2 inch in thirty (30) feet, maximum.

END OF SECTION

SECTION 07 01 50.19
PREPARATION FOR RE-ROOFING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Removal of existing roofing system in preparation for a new membrane roof system.

B. Remediation work involving various cladding systems on adjacent wall surfaces to accommodate appropriate flashing components.

1.02 RELATED SECTIONS

A. Section 04 01 00 – Maintenance of Masonry;

B. Section 06 10 53 – Miscellaneous Rough Carpentry;

1.03 PRICE AND PAYMENT PROCEDURES

A. See *Section 01 22 00 - "Unit Prices"*, for unit price requirements relating to replacement of deteriorated, existing components.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate with affected mechanical and electrical work associated with roof penetrations.

B. Coordinate with affected plumbing work associated with storm drainage system.

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

1.05 FIELD CONDITIONS

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

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

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that existing roof surface is clear and ready for work of this section.

3.02 PREPARATION

A. Perform cutting/raising and remediation of metal panels, where indicated on and in accordance with the Contract Drawings, to accommodate new roof flashing heights.

3.03 MATERIAL REMOVAL

A. Reroofing Work, once begun, will leave building subject to leakage and therefore must be considered in state of emergency when weather threatens.

   1. Existing building shall be protected by Contractor from water infiltration through any roof, parapet, or wall area under repair for the life of the project.

B. Remove only as much roofing, flashings and insulation as can be made watertight each day.

   1. Make an effective watertight seal between the existing roof system and new roof system at the end of each day's Work.

C. Remove sheet metal flashings from areas involved in the Work, unless specifically indicated to remain on the Contract Drawings.

D. Remove existing roof membrane(s), flashings, insulation (partial, as indicated) and fasteners.

E. Refer to Contract Drawings for removals of existing perimeter blocking. Where scheduled to remain, remove damaged or deteriorated sections, as required.

F. Load roofing debris directly into trucks by means of approved chutes or other controlled means.

   1. Throwing or dropping will not be permitted.

2. Pick up debris continuously to prevent straying.
3. All such aggregate, rubbish, and debris shall be removed from the site and legally disposed of by Contractor.

3.04 ADJUSTMENTS

A. Refer to Contract Drawings for additions and/or changes to perimeter blocking configuration.

B. Replace deteriorated components removed with new materials; provide documentation for unit pricing.

C. Repair or replace existing roof decking as required to provide smooth working surface for new roof system; provide documentation for unit pricing.

D. Projections and penetrations within the roof system less than eight (8) inches in height shall be modified and raised to a height of eight (8) inches, minimum, above the finished height of the roof system.

1. Plumbing vent piping shall be raised using no-hub connectors and Schedule 40 plastic piping to a height of not less than eight (8) inches nor more than twelve (12) inches above the finished height of the roof system.

3.05 FIELD QUALITY CONTROL

A. Contractor shall verify that:

1. The substrate is smooth, dry, and properly installed and ready to accept the new roof system.
2. Items not specified to be removed and replaced, but necessary for proper installation of the Work, have been properly coordinated for removal and replacement.

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

END OF SECTION

SECTION 07 54 00
THERMOPLASTIC MEMBRANE ROOFING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Thermoplastic membrane roofing system, including all components specified.

B. Disposal of demolition debris and construction waste is the responsibility of Contractor. Perform disposal in manner complying with all applicable federal, state, and local regulations.

C. Asbestos-containing materials may be present in the existing roofing system. Remove, handle, and dispose of asbestos-containing material in manner complying with all applicable federal, state, and local regulations.

D. Comply with the published recommendations and instructions of the roofing membrane manufacturer, at http://manual.fsbp.com.

E. Commencement of work by Contractor shall constitute acknowledgement by Contractor that this specification can be satisfactorily executed, under the project conditions and with all necessary prerequisites for warranty acceptance by roofing membrane manufacturer. No modification of the Contract Sum will be made for failure to adequately examine the Contract Documents or the project conditions.

1.02 RELATED REQUIREMENTS

A. Section 06 10 53 - Miscellaneous Rough Carpentry: Wood nailers associated with roofing and roof insulation.

B. Section 07 62 00 - Sheet Metal Flashing and Trim: Formed metal flashing and trim items associated with roofing.

1.03 DEFINITIONS

A. Roofing Terminology: Refer to ASTM D1079 for definition of terms related to roofing work not otherwise defined in the section.

B. LTTR: Long Term Thermal Resistance, as defined by CAN-ULC S770.

1.04 REFERENCE STANDARDS

A. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board; 2013.

B. ASTM D638 - Standard Test Method for Tensile Properties of Plastics; 2010.

C. ASTM D1004 - Standard Test Method for Tear Resistance (Graves Tear) of Plastic Film and Sheeting; 2009.

D. ASTM D1079 - Standard Terminology Relating to Roofing and Waterproofing; 2013.

E. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2012.

F. ASTM D6878/D6878M - Standard Specification for Thermoplastic Polyolefin Based Sheet Roofing; 2011a.

G. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2013a.

H. ASTM E136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace At 750 Degrees C; 2012.

I. CAN-ULC-S770 - Standard Test Method Determination of L-Term Thermal Resistance Of Closed-Cell Thermal Insulating Foams; 2009.

J. FM DS 1-28 - Wind Design; Factory Mutual System; 2007.

K. FM DS 1-29 - Roof Deck Securement and Above-Deck Roof Components; Factory Mutual System; 2006.

B. SPRI ES-1 – Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems; 2003. (ANSI/SPRI ES-1).

L. Underwriters Laboratories Inc. (UL):

1. UL (RMSD) - Roofing Materials and Systems Directory; current edition.
2. UL (FRD) - Fire Resistance Directory; current edition.

1.05 ADMINISTRATIVE REQUIREMENTS

A. Pre-Installation Conference: Before start of roofing work, Consultant shall hold a meeting to discuss the proper installation of materials and requirements to achieve the warranty.

1. Require attendance with all parties directly influencing the quality of roofing work or affected by the performance of roofing work.

1.06 SUBMITTALS

A. See *Section 01 30 00 - "Administrative Requirements"*, for submittal procedures.

B. Product Data:

1. Provide membrane manufacturer's printed data sufficient to show that all components of roofing system, including insulation and fasteners, comply with the specified requirements and with the membrane manufacturer's requirements and recommendations for the system type specified; include data for each product used in conjunction with roofing membrane.
2. Where UL or FM requirements are specified, provide documentation that shows that the roofing system to be installed is UL-Classified or FM-approved, as applicable; include data itemizing the components of the classified or approved system.
3. Installation Instructions: Provide manufacturer's instructions to installer, marked up to show exactly how all components will be installed; where instructions allow installation options, clearly indicate which option will be used.

C. Shop Drawings: Provide:

1. The roof membrane manufacturer's standard details customized for this project for all relevant conditions, including flashings, base tie-ins, roof edges, terminations, expansion joints, penetrations, and drains.

D. Specimen Warranty: Submit prior to starting work.

E. Installer Qualifications: Letter from manufacturer attesting that the roofing installer meets the specified qualifications.

F. Pre-Installation Notice: Copy to show that manufacturer's required Pre Installation Notice (PIN) has been accepted and approved by the manufacturer.

G. Executed Warranty.

1.07 DELIVERY, STORAGE AND HANDLING

A. Deliver products in manufacturer's original containers, dry and undamaged, with seals and labels intact and legible.

B. Store materials clear of ground and moisture with weather protective covering.

C. Keep combustible materials away from ignition sources.

1.08 WARRANTY

A. See *Section 01 70 00 - "Execution and Closeout Requirements"*, for additional warranty requirements.

B. Comply with all warranty procedures required by manufacturer, including notifications, scheduling, and inspections.

C. Warranty: Firestone Limited Warranty covering membrane, roof insulation, and other indicated components of the system, for the term indicated.

1. Limit of Liability: No dollar limitation.
2. Scope of Coverage: Repair leaks in the roofing system caused by:
   a. Ordinary wear and tear of the elements.
   b. Manufacturing defect in Firestone brand materials.

c. Defective workmanship used to install these materials.

d. Damage due to winds up to 55 mph.

3. Not Covered:

a. Damage due to winds in excess of 55 mph.

b. Damage due hurricanes or tornadoes.

c. Hail.

d. Intentional damage.

e. Unintentional damage due to normal rooftop inspections, maintenance, or service.

D. Warranty period shall be:

1. Twenty (20) years from the date of completion

PART 2 - PRODUCTS

2.01 MANUFACTURES

A. Acceptable Manufacturer - Roofing System: Firestone Building Products LLC, Carmel, IN: www.firestonebpco.com.

1. Roofing systems manufactured by others are acceptable provided the roofing system is completely equivalent in materials and warranty conditions and the manufacturer meets the following qualifications:

a. Specializing in manufacturing the roofing system to be provided.

b. Roofing systems manufactured by the companies listed below are acceptable provided they are completely equivalent in materials and warranty conditions:

1) Carlisle.

B. Manufacturer of Insulation and cover board: Same manufacturer as roof membrane.

C. Substitutions: See *Section 01 60 00 - "Product Requirements"*.

1. Submit evidence that the proposed substitution complies with the specified requirements.

2.02 ROOFING SYSTEM DESCRIPTION

A. Roofing System: Thermoplastic Polyolefin (TPO) single-ply membrane.

1. Membrane Attachment: Induction welded mechanically fastened.

2. Comply with applicable local building code requirements.

3. Provide assembly complying with Factory Mutual Corporation (FM) Roof Assembly Classification, FM DS 1-28 and 1-29, and meeting minimum requirements of FM 1-90 uplift rating.

B. Roofing System Components: Listed in order from the top of the roof down:

a. Membrane: Thickness as specified.

b. Insulation Cover Board: Gypsum-based board, 1/4-inch thick; mechanically fastened.

c. Insulation:

1) Crickets: Tapered polyisocyanurate insulation; slope 1/2-inch per lineal foot.

2) Two (2) existing layers of 1.75-inch polyisocyanurate insulation.

d. Existing layer 5/8 inch gypsum-based board.

e. Existing wood deck, structurally sloped.

2.03 MEMBRANE MATERIALS

A. Membrane: Flexible, heat-weldable sheet composed of thermoplastic polyolefin polymer and ethylene propylene rubber; complying with ASTM D6878, with polyester weft inserted reinforcement and the following additional characteristics:

1. Thickness: 0.060 inch plus/minus 10 percent, with coating thickness over reinforcement of 0.024 inch plus/minus 10 percent.

2. Puncture Resistance: 300 lbf, minimum, when tested in accordance FTM 101C Method 2031.
3. Solar Reflectance Index (3 year) of at least 70 except for the area within 12' of the roof edge, which should be black
4. Acceptable Product: UltraPly TPO.

B. Membrane Fasteners and plates: Coated heavy-duty type and size as required by roof membrane manufacturer for roofing system and warranty to be provided; use only fasteners furnished by roof membrane manufacturer.
   1. Membrane-Coated Plates: Three (3) inch round, specially coated galvalume: Ultraply TPO Invisiweld Plates.
      a. Heavy-duty screw with square drive and with a 3/4 inch (19mm) extended self-drilling tip, length as required for 1-1/2 inch (38 mm) penetration through purlin; Firestone Purlin Fasteners Black E-Coated.
   2. Perimeter Securement Fastener:
      a. Membrane manufacturer Heavy Duty Fastener through Seam Plate.

C. Curb and Parapet Flashing: Same material as membrane, with encapsulated edge which eliminates need for seam sealing the flashing-to-roof splice; precut to 18 inches wide.

D. Formable Flashing: Non-reinforced, flexible, heat weldable sheet, composed of thermoplastic polyolefin polymer and ethylene propylene rubber.
   1. Thickness: 0.060 inch plus/minus 10 percent
   2. Tensile Strength: 1550 psi, minimum, when tested in accordance with ASTM D638 after heat aging.
   3. Elongation at Break: 650 percent, minimum, when tested in accordance with ASTM D638 after heat aging.
   4. Tearing Strength: 12 lbf, minimum, when tested in accordance with ASTM D1004 after heat aging.
   5. Color: White.
   6. Acceptable Product: UltraPly TPO Flashing.

E. Tape Flashing: 5-1/2 inch nominal wide TPO membrane laminated to cured rubber polymer seaming tape, overall thickness 0.065 inch nominal;.

F. Bonding Adhesive: Neoprene and SBR rubber blend, formulated for compatibility with the membrane other substrate materials, including masonry, wood, and insulation facings;

G. Pourable Sealer: Two-part polyurethane, two-color for reliable mixing;

H. Termination Bars: Aluminum bars with integral caulk ledge; 1.3 inches wide by 0.10 inch thick;

I. Cut Edge Sealant: Synthetic rubber-based, for use where membrane reinforcement is exposed;

J. General Purpose Sealant: EPDM-based, one part, white general purpose sealant;

K. Coated Metal Flashing and Edgings: Galvanized steel with roofing manufacturer's bonded TPO coating;

L. Molded Flashing Accessories: Unreinforced TPO membrane pre-molded to suit a variety of flashing details, including pipe boots, inside corners, outside corners, etc.;

M. Roof Walkway Pads: Non-reinforced TPO walkway pads, 0.130 inch by 30 inches by 40 feet long with patterned traffic bearing surface;

2.04 ROOF INSULATION AND COVER BOARDS

A. Polyisocyanurate Board Insulation: Closed cell polyisocyanurate foam with black glass reinforced mat laminated to faces, complying with ASTM C1289 Type II Class 1, with the following additional characteristics:
   1. Thickness: 1.75 inches
   2. Replace existing insulation as necessary.
   3. Size: 48 inches by 96 inches, nominal.

4. Compressive Strength: 20 psi when tested in accordance with ASTM C1289.
5. Ozone Depletion Potential: Zero; made without CFC or HCFC blowing agents.
6. Recycled Content: 19 percent post-consumer and 15 percent post-industrial, average.
7. Acceptable Product: ISO 95+ GL Polyisocyanurate Insulation.

B. Gypsum-Based Deck Cover Board: Non-combustible, water resistant gypsum core with embedded glass mat facers, complying with ASTM C1177/C1177M, and with the following additional characteristics:
1. Size: 48 inches by 96 inches, nominal.
2. Thickness: 1/4 inch.
3. Surface Water Absorption: 2.5 g, maximum, when tested in accordance with ASTM C473.
4. Surface Burning Characteristics: Flame spread of 0, smoke developed of 0, when tested in accordance with ASTM E84.
5. Combustibility: Non-combustible, when tested in accordance with ASTM E136.
6. Factory Mutual approved for use with FM 1-90 rated roofing assemblies.
7. Mold Growth Resistance: Zero growth, when tested in accordance with ASTM D3273 for minimum of 4 weeks.
8. Acceptable Product: DensDeck – provided by roof membrane manufacturer.

C. Insulation Fasteners: Heavy-Duty type and size as required by roof membrane manufacturer for roofing system and warranty to be provided; use only fasteners furnished by roof membrane manufacturer.

PART 3 - INSTALLATION

3.01 GENERAL

A. Install roofing, insulation, flashings, and accessories in accordance with roofing manufacturer's published instructions and recommendations for the specified roofing system. Where manufacturer provides no instructions or recommendations, follow good roofing practices and industry standards. Comply with federal, state, and local regulations.

B. Obtain all relevant instructions and maintain copies at project site for duration of installation period.

C. Do not start work until Pre-Installation Notice has been submitted to manufacturer as notification that this project requires a manufacturer's warranty.

D. Perform work using competent and properly equipped personnel.

E. Temporary closures, which ensure that moisture does not damage any completed section of the new roofing system, are the responsibility of the applicator. Completion of flashings, terminations, and temporary closures shall be completed as required to provide a watertight condition.

F. Install roofing membrane only when surfaces are clean, dry, smooth and free of snow or ice; do not apply roofing membrane during inclement weather or when ambient conditions will not allow proper application; consult manufacturer for recommended procedures during cold weather. Do not work with sealants and adhesives when material temperature is outside the range of 60 to 80 degrees F.

G. Protect adjacent construction, property, vehicles, and persons from damage related to roofing work; repair or restore damage caused by roofing work.
1. Protect from spills and overspray from bitumen, adhesives, sealants and coatings.
2. Particularly protect metal, glass, plastic, and painted surfaces from bitumen, adhesives, and sealants within the range of wind-borne overspray.
3. Protect finished areas of the roofing system from roofing related work traffic and traffic by other trades.

H. Until ready for use, keep materials in their original containers as labeled by the manufacturer.

I. Consult membrane manufacturer's instructions, container labels, and Material Safety Data Sheets (MSDS) for specific safety instructions. Keep all adhesives, sealants, primers and cleaning materials away from all sources of ignition.

3.02 EXAMINATION

A. Examine roof deck to determine that it is sufficiently rigid to support installers and their mechanical equipment and that deflection will not strain or rupture roof components or deform deck.

B. Verify that surfaces and site conditions are ready to receive work. Correct defects in the substrate before commencing with roofing work.

C. Examine roof substrate to verify that it is properly sloped to drains.

D. Verify that the specifications and drawing details are workable and not in conflict with the roofing manufacturer's recommendations and instructions; start of work constitutes acceptable of project conditions and requirements.

3.03 PREPARATION

A. Refer to *Section 07 01 50.19 - "Preparation for Re-Roofing"*.

3.04 INSULATION AND COVER BOARD INSULATION

A. Install insulation in configuration and with attachment method(s) specified in PART 2, under Roofing System.

B. Install only as much insulation as can be covered with the completed roofing system before the end of the day's work or before the onset of inclement weather.

C. Lay roof insulation in courses parallel to roof edges.

D. Tapered insulation layout: Refer to Contract Drawings and/or approved shop drawings.

1. Provide tapered sumps around roof drains.
2. At projections greater than twelve (12) inches in width, provide tapered insulation crickets on upslope side.
   a. Lay out boards with leading edges of cricket a minimum of six (6) inches out from curb corners to extend beyond edges of roof flashings.

E. Neatly and tightly fit insulation to all penetrations, projections, and nailers, with gaps not greater than 1/4 inch. Fill gaps greater than 1/4 inch with acceptable insulation. Do not leave the roofing membrane unsupported over a space greater than 1/4 inch.

F. Mechanical Fastening: Using specified fasteners and insulation plates engage fasteners through insulation into deck to depth and in pattern required by membrane manufacturer.

1. Field attachment spacing: six (6) fasteners per 48" by 96" board.
2. Perimeter (10'-0" from roof edge): ten (10) fasteners per 48" by 96" board.
3. Corner (10'-0" square at corners): sixteen (16) 48" by 96" board.

G. Apply in accordance with membrane manufacturer's instructions and recommendations; "walk-in" individual roof insulation boards to obtain maximum adhesive contact.

3.05 SINGLE-PLY MEMBRANE INSTALLATION

A. Beginning at low point of roof, place membrane without stretching over substrate and allow to relax at least 30 minutes before attachment or splicing; in colder weather allow for longer relax time.

B. Install membrane without wrinkles and without gaps or fish mouths in seams; bond and test seams and laps in accordance with membrane manufacturer's instructions and details.

C. Mechanical Attachment: Install fasteners with coated plates, covered by membrane.

1. Induction weld membrane to plates. Test attachment after membrane has cooled.

D. Edge Securement: Secure membrane at all locations where membrane terminates or goes through an angle change greater than 2 in 12 inches using mechanically fastened reinforced perimeter fastening strips, plates, or metal edging as indicated or as recommended by roofing manufacturer.

1. Exceptions: Round pipe penetrations less than 18 inches in diameter and square penetrations less than 4 inches square

2. Metal edging is not merely decorative; ensure anchorage of membrane as intended by roofing manufacturer.

3.06 FLASHING AND ACCESSORIES INSTALLATION

A. Install flashings, including laps, splices, joints, bonding, adhesion, and attachment, as required by membrane manufacturer's recommendations and details.

B. Metal Accessories: Install metal edgings and copings in locations indicated on the drawings, with horizontal leg of edge member over membrane and flashing over metal onto membrane.

1. Follow roofing manufacturer's instructions.
2. Remove protective plastic surface film immediately before installation.
3. Install water block sealant under the membrane anchorage leg.
4. Flash with manufacturers recommended flashing sheet unless otherwise indicated.
5. Where single application of flashing will not completely cover the metal flange, install additional piece of flashing to cover the metal edge.
6. If the roof edge includes a gravel stop and sealant is not applied between the laps in the metal edging, install an additional piece of self-adhesive flashing membrane over the metal lap to the top of the gravel stop; apply seam edge treatment at the intersections of the two flashing sections.
7. When the roof slope is greater than 1:12, apply seam edge treatment along the back edge of the flashing.

C. Flashing at Walls, Curbs, and Other Vertical and Sloped Surfaces: Install weather tight flashing at all walls, curbs, parapets, curbs, skylights, and other vertical and sloped surfaces that the roofing membrane abuts to; extend flashing at least 8 inches high above membrane surface.

1. Use the longest practical flashing pieces.
2. Evaluate the substrate and overlay and adjust installation procedure in accordance with membrane manufacturer's recommendations.
3. Complete the splice between flashing and the main roof sheet with specified splice adhesive before adhering flashing to the vertical surface.
4. Provide termination directly to the vertical substrate as shown on roof drawings.

D. Flashing at Penetrations: Flash all penetrations passing through the membrane; make flashing seals directly to the penetration.

1. Pipes, Round Supports, and Similar Items: Flash with specified pre-molded pipe flashings wherever practical; otherwise use specified self-curing elastomeric flashing.
2. Pipe Clusters and Unusual Shaped Penetrations: Provide penetration pocket at least 2 inches deep, with at least 1 inch clearance from penetration, sloped to shed water.
3. Structural Steel Tubing: If corner radii are greater than 1/4 inch and longest side of tube does not exceed 12 inches, flash as for pipes; otherwise, provide a standard curb with flashing.
4. Flexible and Moving Penetrations: Provide weather tight gooseneck set in sealant and secured to deck, flashed as recommended by manufacturer.
5. High Temperature Surfaces: Where the in-service temperature is, or is expected to be, in excess of 180 degrees F (82 degrees C), protect the elastomeric components from direct contact with the hot surfaces using an intermediate insulated sleeve as flashing substrate as recommended by membrane manufacturer.

3.07 FINISHING AND WALKWAY INSTALLATION

A. Install walkways at access points to the roof, around rooftop equipment that may require maintenance, and where indicated on the drawings.

1. Use specified walkway pads unless otherwise indicated.

B. Walkway Pads: Adhere to the roofing membrane, spacing each pad at minimum of 1.0 inch and maximum of 3.0 inches from each other to allow for drainage.

1. If installation of walkway pads over field fabricated splices or within 6 inches of a splice edge

cannot be avoided, adhere another layer of flashing over the splice and extending beyond the walkway pad a minimum of 6 inches on either side.

2. Prime the membrane, remove the release paper on the pad, press in place, and walk on pad to ensure proper adhesion.

3.08 FIELD QUALITY CONTROL

A. See Section 01 40 00 - "Quality Requirements", for additional requirements.

B. Inspection by Manufacturer: Provide final inspection of the roofing system by a Technical Representative employed by roofing system manufacturer specifically to inspect installation for warranty purposes (i.e. not a sales person).

1. Inspect all field seams and flashing seams; make appropriate repairs.

C. Perform all corrections necessary for issuance of warranty.

3.09 CLEANING

A. Clean all contaminants generated by roofing work from building and surrounding areas, including bitumen, adhesives, sealants, and coatings.

B. Repair or replace building components and finished surfaces damaged or defaced due to the work of this section; comply with recommendations of manufacturers of components and surfaces.

C. Remove leftover materials, trash, debris, equipment from project site and surrounding areas

3.10 PROTECTION

A. Where construction traffic must continue over finished roof membrane, provide durable protection and replace or repair damaged roofing to original condition.

END OF SECTION

SECTION 07 62 00
SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Fabricated sheet metal items, including copings, counter flashings and thru-wall drip edge/receiver.

1.02 RELATED REQUIREMENTS

A. Section 04 01 00 – Maintenance of Masonry:

B. Section 06 10 53 – Miscellaneous Rough Carpentry: Substrate for flashings.

C. Section 07 54 00 – Thermoplastic Membrane Roofing

D. Section 07 71 00 – Roof Specialties: Preformed roof edge flashings.

E. Section 07 90 05 – Joint Sealers.

1.03 REFERENCE STANDARDS

A. American Architectural Manufacturers Association (AAMA):

1. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels; 2011.

B. ASTM International Standards:

1. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2009.
2. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2011.
3. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2010.
4. ASTM B32 - Standard Specification for Solder Metal; 2008.

C. National Roofing Contractors Association (NRCA) – The NRCA Roofing and Waterproofing Manual, ML104; Fifth Edition, with interim updates.

D. SMACNA (ASMM) - Architectural Sheet Metal Manual; Sheet Metal and Air Conditioning Contractors' National Association; 2012.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Pre-Installation Meeting: Convene one week before starting work of this section.

1.05 SUBMITTALS

A. See Section 01 30 00 - "Administrative Requirements", for submittal procedures.

B. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations and installation details.

C. Mock-Ups: Contractor to provide ten (10) foot sections of finished product, including continuous cleats.

D. Submit manufacturer's standard color chart for Owner's selection.

1.06 QUALITY ASSURANCE

A. Perform work in accordance with SMACNA Architectural Sheet Metal Manual requirements and standard details, except as otherwise indicated.

B. Contractor shall coordinate and be responsible for removal and reinstallation of items not specified to be removed and replaced as may be necessary for proper installation of its Work.

C. Work, once begun, will leave building subject to leakage and therefore must be considered in state of emergency when weather threatens.

1. Existing building shall be protected by Contractor from water entering through any roof, parapet or wall area under repair for the life of the project.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

B. Prevent contact with materials that could cause discoloration or staining.

PART 2 - PRODUCTS

2.01 SHEET MATERIALS

A. Galvanized Steel: ASTM A653/A653M, with G90/Z275 zinc coating; minimum 22 gauge thick base metal.

B. Pre-Finished Galvanized Steel: ASTM A653/A653M, with G90/Z275 zinc coating; 24 gauge thick base metal, shop pre-coated with PVDF coating.

1. PVDF (Polyvinylidene Fluoride) Coating: Superior Performance Organic Finish, AAMA 2605; multiple coat, thermally cured fluoropolymer finish system.
2. Color: As selected by Owner from manufacturer's standard colors.

C. Membrane-Coated Sheet Metal: 24 gauge (minimum) galvanized steel, factory laminated with thermoplastic membrane. Material supplied or approved by the roof system manufacturer.

2.02 ACCESSORIES

A. Fasteners: Same material and finish as flashing metal, with soft neoprene washers.

B. Sealant: Type polyurethane water tight sealants specified in Section 07 90 05.

C. Fasteners and Anchors: Where not specified, size fasteners to suit conditions and materials.

1. Metal to Wood Concealed Fasteners:
   a. Ring shank nails: Hot-dipped galvanized steel per ASTM A153/A153M.
2. Metal to Wood Exposed Fasteners:
   a. Number ten (10) nonmetallic stainless steel screws with neoprene bonded washer.
3. Metal to Metal Concealed Fasteners:
   a. Cadmium-plated, bugle-head sheet metal screws.
4. Metal to Metal Exposed Fasteners:
   a. Screw anchors:
      1) Nonmetallic stainless steel; pop rivets; same finish as sheet metal.
      2) Number ten (10) nonmetallic stainless steel screws with neoprene bonded washer.
5. Metal to Concrete and Masonry Concealed Fasteners:
   a. Nail-drive expansion anchor.
      1) Zinc alloy (nylon not allowed) with stainless steel pin.
   b. Screw anchors.
      1) Zinc-plated carbon steel.
6. Metal to Concrete and Masonry Exposed Fasteners:
   a. One-quarter (1/4) inch nonmagnetic stainless steel screw anchors with bonded neoprene washer.

2.03 MANUFACTURER PRODUCTS

A. 7.2 inch corrugated metal panel with exposed fasteners

1. Product – Builtite II by Firestone Building Products

2.04 FABRICATION

A. Deliver shop fabricated and manufactured products to site ready for designed installation. Field fabricate to fit applications indicated and perform optimally with respect to weather resistance,

watertightness, durability, strength and uniform appearance.

B. Fabricate to allow controlled expansion in running lengths not only for movement of metal components in relationship to one another, but also to adjoining dissimilar materials in a manner sufficient to prevent water infiltration, deformation, or damage.

C. Contractor shall fabricate all items in maximum lengths and hold all joints to a minimum. At no time shall any piece be shorter than three (3) feet in length unless piece makes up an entire run.

D. Unless otherwise noted, drip edges, where shown, shall be three-quarters (1/2) inches with all exposed edges hemmed one-half (1/2) inch.

E. Do not "punch" brake points.

F. Form sections true to shape, accurate in size, square, and free from distortion or defects.

G. Form pieces in longest possible lengths from 8'-0 or 10'-0 flat stock sheets.

H. Hem exposed edges on underside 1/2 inch; miter and seam corners.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine the areas and conditions under which Work of this section will be installed.

1. Bring to Owner's attention any conditions detrimental to the proper and timely completion of the Work.
2. Do not proceed until satisfactory conditions have been corrected.

B. Verify roofing termination and base flashings are in place, sealed, and secure.

C. Sheet Metal Contractor shall counter flash, with architectural sheet metal, all vertical surfaces base flashed with roof system membrane.

3.02 PREPARATION

A. Contractor shall remove and dispose of existing architectural sheet metal flashing, as indicated in the Contract Drawings, from areas to receive new; *Section 07 01 50.19 - "Preparation for Re-Roofing".*

B. Verify that wood blocking and nailers are securely anchored and that roof projections and penetrations are in place and set and braced.

3.03 INSTALLATION

A. Coordinate with installation of roof system and substrates to receive Work of this section which are required to assure each element of the Work performs properly and combines elements in waterproof and watertight system.

B. Anchor substrates to withstand lateral and thermal stresses, and loading pressures.

1. Conceal fasteners where possible and as indicated on Contract Drawings.
2. Use exposed fasteners only where permitted.

C. Secure flashings in place using concealed fasteners whenever possible. Use exposed fasteners only where permitted.

D. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.

E. Collector Boxes;

1. Fabricate as indicated on the construction drawings. Seal and provide outlet tube.
   a. Downspouts:
      1) Provide new architectural sheet metal downspouts where shown on Roof Plan.
         a) Fabricate using 8'-0" or 10"-0" flat stock sheets as shown on Contract Drawings.
         b) Downspouts to be 3" x 4" square.
         c) Longitudinal seam shall be mechanically seamed and sealed.
         d) Lap joints one and one-half (1-1/2) inches in direction of flow and rivet.

e) Provide fabricated brackets and install ten (10) feet on center; with additional bracket(s) located within twelve (12) inches of the top, bottom and elbows.

f) Provide downspout PVC hubs.

F. Edge Metal with splice plate joints:

1. Provide new architectural sheet metal fascia cover where shown on Contract Drawings. Installed sample is required for review by Owner
2. Provide splice-plate joints between sections.
   a. Splice plate to be minimum four (6) inches wide.
   b. 1/4 inch gap from ends of fascia.
   c. Do not fasten through joints.
3. Stagger all joints between fascia and edges.
4. Corners shall be mitered, seamed and sealed.
5. Fasten roof side edge of edge metal three (3) inches staggered and according to manufacturer's recommendations.

G. Fascia with splice plate joints:

1. Provide new architectural sheet metal fascia cover where shown on Contract Drawings. Installed sample is required for review by Owner
2. Provide splice-plate joints between sections.
   a. Splice plate to be minimum four (6) inches wide.
   b. 1/4 inch gap from ends of fascia.
   c. Do not fasten through joints.
3. Stagger all joints between fascia and edges.
4. Corners shall be mitered, seamed and sealed.
5. Fasten top edge of fascia eight (8) inches, on center, through slotted holes.

H. Coping:

1. Provide new architectural sheet metal coping where shown on Contract Drawings. Installed sample required for review by Owner
2. Provide drive cleat joints between sections.
   a. Tab portion of cleat bent over to be single thickness rounded and even. Notch drive cleat overlaps.
3. Stagger all joints between fascia, flashing and edges.
4. Corners shall be mitered, seamed and sealed.
5. Secure outside edges with a continuous cleat fastened eight (8) inches, on center. Secure inside face with stainless sheet metal screws with weather tight washers twenty-four (24) inches, on center, through slotted holes.
6. Where coping abuts a wall, turn coping up three (3) inches and counter flash with a separate piece of metal set into a reglet.

I. Concealed Continuous Cleats:

1. Provide one-quarter (1/4) inch space between sections.
2. Secure to substrate eight (8) inches on center, maximum.

J. Closure/Receiver:

1. Provide new architectural sheet metal receiver as shown on Contract Drawings.
2. Unless otherwise noted, receiver flashing shall be run in a straight line.
3. Provide one and one-half (1-1/2) inch loose locked laps at joints.

4. Corners shall be mitered, seamed and sealed.
5. Secure receiver flashing to existing screen wall at twelve (12) inches on center, maximum.
6. Secure flashing to receiver twelve (12) inches on center.

K. Surface Mount Counter Flashing:
1. Provide new architectural sheet metal counter flashing as shown on Contract Drawings.
2. Unless otherwise noted counter flashing shall run in a straight line and shall lap top of base flashing a minimum of three (3) inches.
3. Brake counter flashing longitudinally to provide spring action; holding bottom firmly against roof flashing.
4. Provide one and one-half (1-1/2) inch loose locked laps at joints by removing hem and taper cutting drip edge on underlying section.
   a. Counter flashing shall be notched and lapped one and one-half (1-1/2) inches at inside corners.
   b. Outside corners shall be notched and seamed.
5. Back surface mounted counter flashing fastening leg with tape caulk prior to installing
6. Front surface mounted counter flashing fastening leg with termination bar prior to installing.
7. Fasten surface mounted counter flashing with concrete or masonry screw type fasteners, as required, twenty-four (24) inches on center, maximum; with an additional fastener one inch from each end.
   a. Do not fasten through joints.
8. Fill and seal sealant lip where required; force sealant into all voids and tool joint to provide water-shed surface.

L. Penetration Pans:

M. Exposed Fastener Panel:
1. Provide manufacturers product.
2. Provide 22 gauge galvanized hat channel two (2) feet on center, fasten to existing substrate
3. Install panels lapped in accordance with Manufacturers written instructions.
4. Provide fasteners with weather tight washer and similar in color.
5. Provide manufacturers product.

N. Tall Cone Base Flashing Flanges and Sleeves:
1. Provide new architectural sheet metal sleeves as shown on Contract Drawings.
2. Fabricate sleeves lapping, riveting and fully soldering.
3. Fabricate sleeves to provide minimum eight (8) height above finished roof system.
4. Fasten sleeves to substrate eight (8) inches on center.

O. Storm Collars/Umbrellas:
1. Provide new architectural sheet metal sleeves as shown on Contract Drawings.
2. Fabricate storm collars lapping, riveting and soldering solid.
3. Secure to vent pipe with stainless steel gear drive clamp.
4. Seal with sealant and tool complete

P. Seal metal joints watertight.

3.04 FIELD QUALITY CONTROL

A. Inspection will involve surveillance of work during installation to ascertain compliance with specified requirements.

END OF SECTION

SECTION 07 72 00
ROOF ACCESSORIES

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section covers acceptable manufacturers and products of miscellaneous roof accessories to be installed in conjunction with the new roofing system.

PART 2 - PRODUCTS

2.01 ACCEPTABLE PRODUCTS

A. Concrete splashblocks, 12-inches by 24 inches by 2-1/2 inches, reinforced concrete channel.
   1. Splash Block by Americast Concrete Products Corp., Woodstock, IL, (815) 338-2244.
   2. Model 45-40020 by Interlock Concrete Products, Inc., Jordan, MN, (800) 780-7212.
   3. Approved equal.

B. Membrane walkpads (TPO single-ply roof system):
   1. TPO Walkway Pad; as manufactured or approved for use by the roof system manufacturer.

PART 3 - EXECUTION

3.01 ROOF SYSTEM PROTECTION INSTALLATION

A. At access points, top and bottom of ladders, downspout locations, and set-on equipment, install membrane walkpads as follows:
   1. Access points, ladders and set-on equipment: minimum 60" x 60" area;

B. Around all serviceable equipment, install membrane walkpads in a continuous fashion, minimum 30-inches wide.

C. Install membrane walkpads in layout provided on Contract Drawings.

D. At downspouts location(s), place splashblock over the installed membrane walkpad.

END OF SECTION

SECTION 07 90 05
JOINT SEALERS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Sealants and joint backing.

1.02 REFERENCE STANDARDS

A. ASTM International Standards:

1. ASTM C920 – Standard Specification for Elastomeric Joint Sealants; 2011.
2. ASTM C1193 – Standard Guide for Use of Joint Sealants; 2011a.
3. ASTM D1056 – Standard Specification for Flexible Cellular Materials--Sponge or Expanded Rubber; 2007.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the work with other sections referencing this section.

1.04 SUBMITTALS

A. See *Section 01 30 00 - "Administrative Requirements"*, for submittal procedures.

B. Product Data: Provide data indicating sealant chemical characteristics, performance criteria, substrate preparation, limitations, and color availability.

C. Samples: Submit one sample, 6 inches (150 mm) in length, or manufacturer's standard color chart, illustrating sealant color(s) for selection by Owner.

1.05 FIELD CONDITIONS

A. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

1.06 WARRANTY

A. See *Section 01 70 00 - "Execution and Closeout Requirements"*, for additional warranty requirements.

B. Correct defective work within a five year period after Date of Substantial Completion.

C. Warranty: Include coverage for installed sealants and accessories which fail to achieve airtight seal and watertight seal, exhibit loss of adhesion or cohesion, or do not cure.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Polyurethane Sealants:

1. Sika Corporation, Lyndhurst, NJ; usa.sika.com.
2. MasterSeal NP 1, by BASF
3. Tremco Commercial Sealants & Waterproofing, Beachwood, OH; tremcosealants.com.

B. Silicone Sealants:

1. Tremco Commercial Sealants & Waterproofing, Beachwood, OH; tremcosealants.com.

C. Butyl Sealant:

1. Sika Corporation, Lyndhurst, NJ; usa.sika.com.
2. Tremco Commercial Sealants & Waterproofing, Beachwood, OH; tremcosealants.com.

2.02 SEALANTS

A. Nonsag Polyurethane Sealant: Polyurethane; ASTM C920, Grade NS, Class 25, Uses NT, I, M, G, O and A; single-component, chemical curing, non-staining, non bleeding, capable of continuous water immersion.

1. Movement Capability: plus and minus twenty five percent.

2. Service Temperature Range: -40 to 180 degrees F.
3. Color: To be selected by Owner from manufacturer's standard range.
4. Applications: Use for:
   a. Control, expansion, and soft joints in masonry.
   b. Joints between concrete and other materials.
   c. Joints between metal and other materials.
   d. Other exterior joints for which no other sealant is indicated.
5. Polyurethane Products:
   a. MasterSeal NP 1, by BASF.
   b. Sikaflex 1a, by Sika.
   c. Dymonic, by Tremco.
6. Substitutions: See *Section 01 60 00 - "Product Requirements"*.

B. Butyl Sealant: ASTM C920, Grade NS, Class 12-1/2, Uses NT, M, A, G, O, single component, solvent release, non-skinning, non-sagging.
1. Color: To be selected by Consultant from manufacturer's standard range.
2. Movement Capability: Plus and minus 12-1/2 percent.
3. Service Temperature Range: -13 to 180 degrees F (-25 to 82 degrees C).
4. Shore A Hardness Range: 10 to 30.
5. Applications: Use for:
   a. Concealed sealant bead in sheet metal work.
6. Products:
   a. PTI 707 Architectural Butyl Sealant, by C.R. Laurence.
   b. Sikalastomer-511, by Sika.
   c. Trempro JS 773, by Tremco.
7. Substitutions: See *Section 01 60 00 - "Product Requirements"*.

C. Silicone Sealant: ASTM C920, Grade NS, Class 25, Uses NT, A, G, M, O, single component, solvent curing, non-sagging, non-staining, fungus resistant, non-bleeding.
1. Color: To be selected by Consultant from manufacturer's standard range.
2. Movement Capability: Plus and minus 25 percent.
3. Service Temperature Range:
   a. Architectural applications: -65 to 180 degrees F (-54 to 82 degrees C).
   b. High-temperature applications: Up to 500 degrees F (260 degrees C) continuous, and 600 degrees F (315 degrees C) intermittent.
4. Shore A Hardness Range: 15 to 35.
5. Applications: Use for:
   a. Joints between aluminum components.
   b. Joints between aluminum components and glazing.
   c. High-service temperature joints adjacent to sheet metal.
6. Products (Architectural Applications):
   a. Proglaze, by Tremco.
7. Products (High-Temperature Applications):
   a. Red RTV, 736H Heat Resistant Silicone Sealant, by Dow Corning.

b. Red Devil; 100% Silicone Heat Resistant RTV Sealant, by Red Devil.

8. Substitutions: See *Section 01 60 00 - "Product Requirements"*.

2.03 ACCESSORIES

A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.

B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

C. Joint Backing: Round foam rod compatible with sealant; ASTM D1056, sponge or expanded rubber; oversized 30 to 50 percent larger than joint width.

D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that substrate surfaces and joint openings are ready to receive work.

B. Verify that joint backing and release tapes are compatible with sealant.

3.02 PREPARATION

A. Plan Work and take whatever action is necessary to prevent dirt and debris from contaminating or preventing proper applications. It is the responsibility of this applicator to verify all conditions exist in accordance with the manufacturer's requirements for proper installation and performance.

B. Remove loose materials and foreign matter that could impair adhesion of sealant.

C. Clean and prime joints in accordance with manufacturer's instructions.

D. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.

E. Protect elements surrounding the work of this section from damage or disfigurement.

3.03 INSTALLATION

A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Perform installation in accordance with ASTM C1193.

C. Perform acoustical sealant application work in accordance with ASTM C919.

D. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.

E. Install bond breaker where joint backing is not used.

F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

G. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

H. Tool joints concave.

3.04 CLEANING

A. Clean adjacent soiled surfaces.

B. Remove all debris from site.

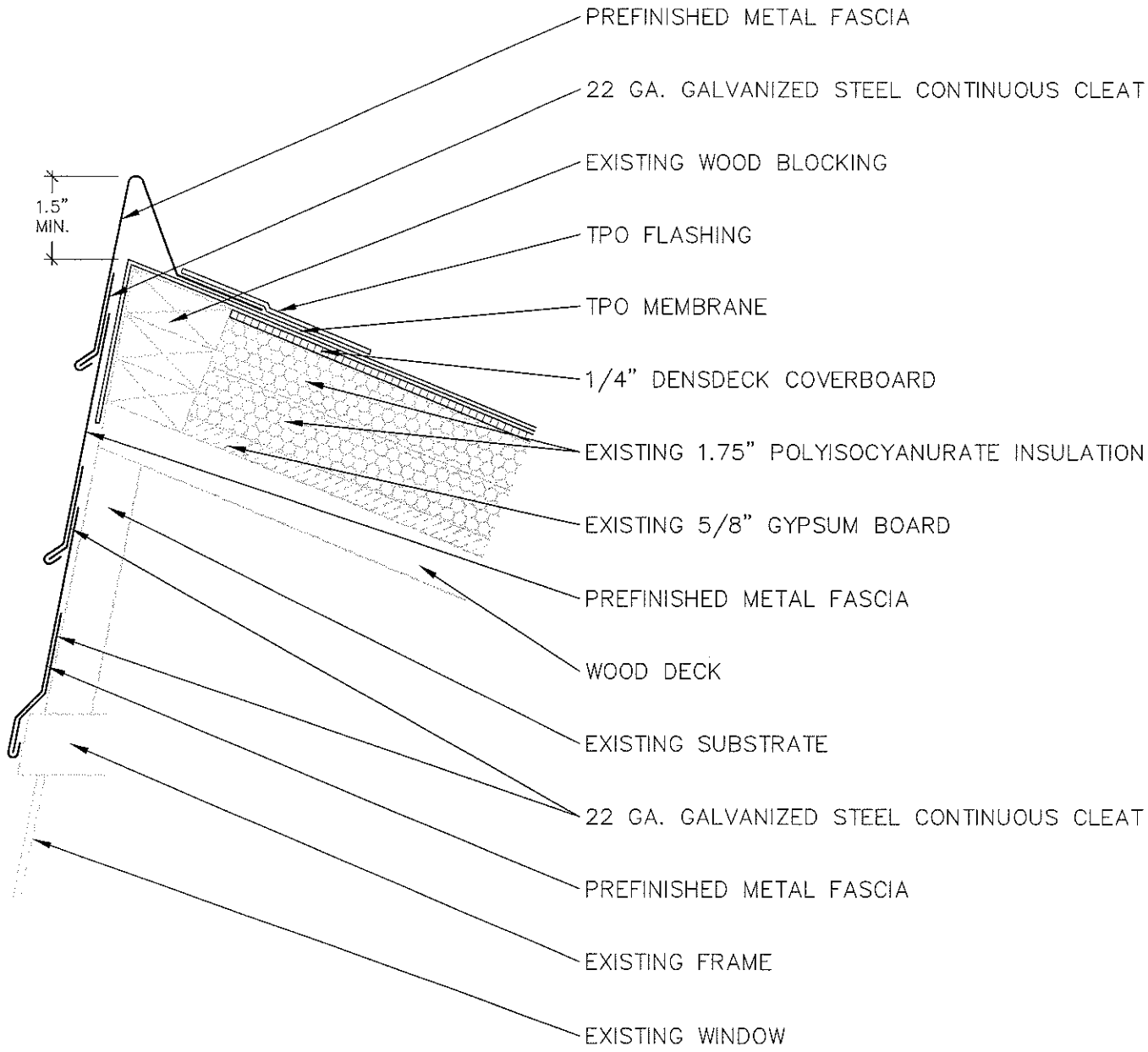
3.05 PROTECTION

A. Protect elements surrounding the Work of this section from damage or disfigurement.

B. Repair or replace defaced and/or disfigured finishes caused by Work of this section.

C. Protect sealants until cured.

END OF SECTION



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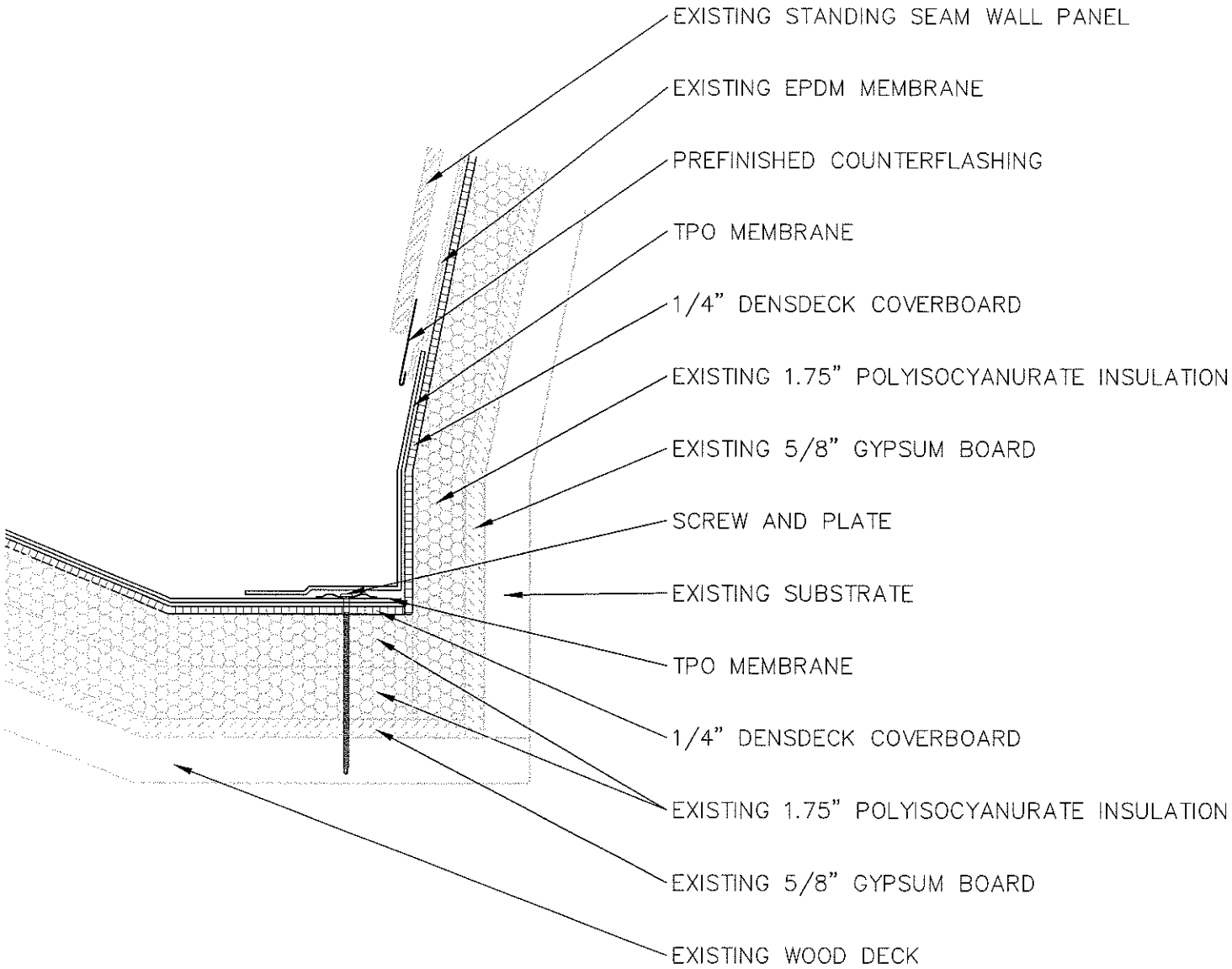
		6/22/15	Project No. 13410	RAISED EDGE FLASHING	D-1



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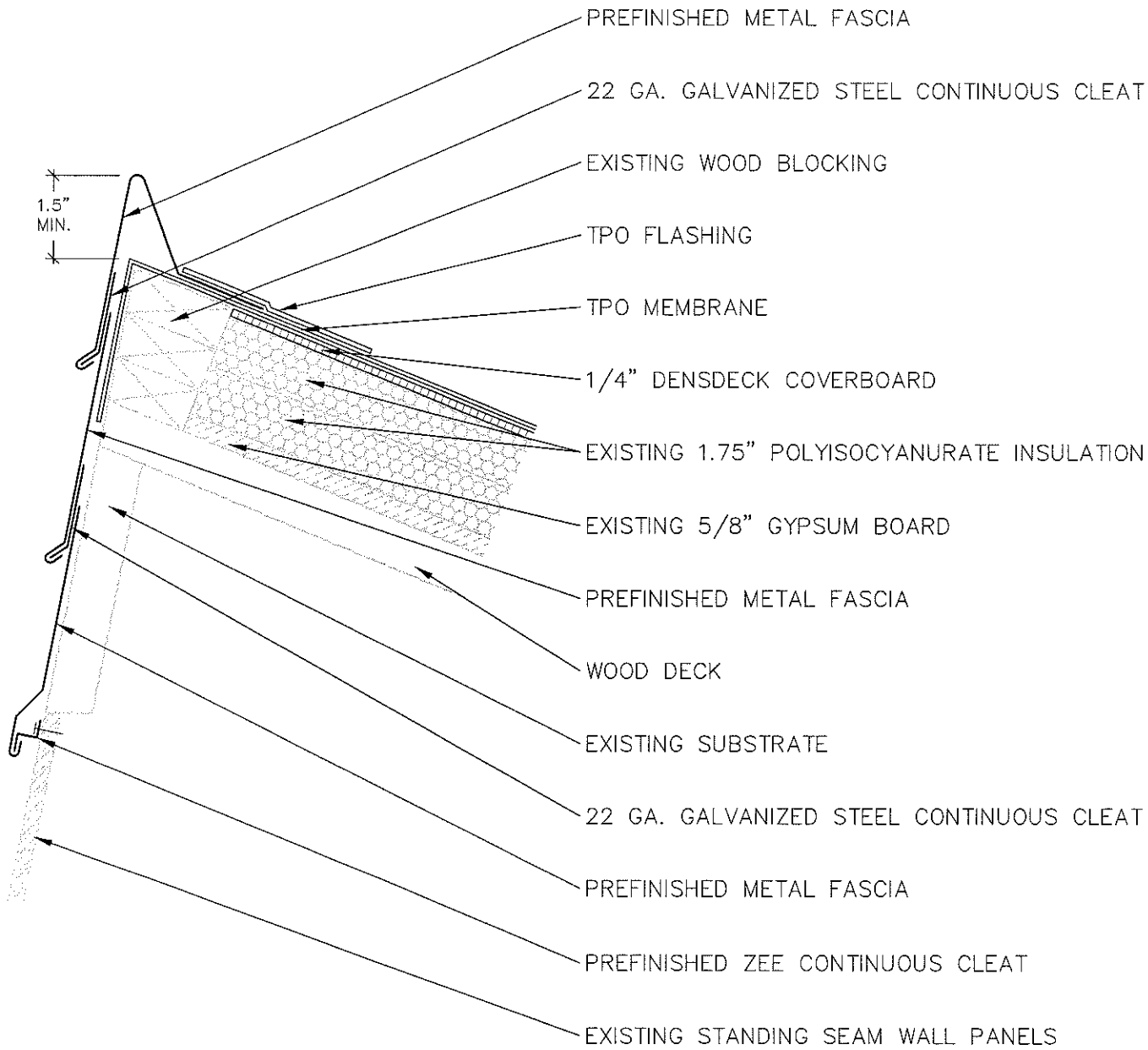

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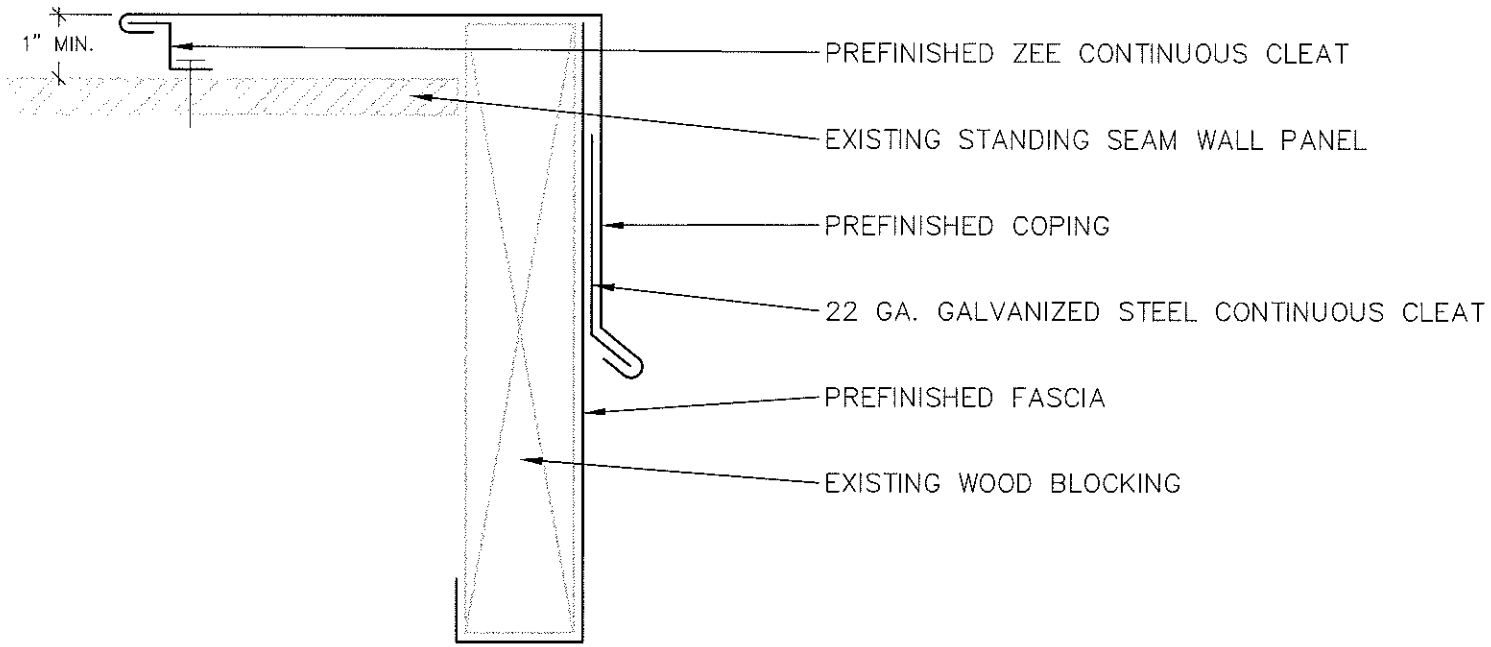
		6/22/15	Project No. 13410	RAKE EDGE FLASHING	D-3



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ROOF EDGE FLASHING

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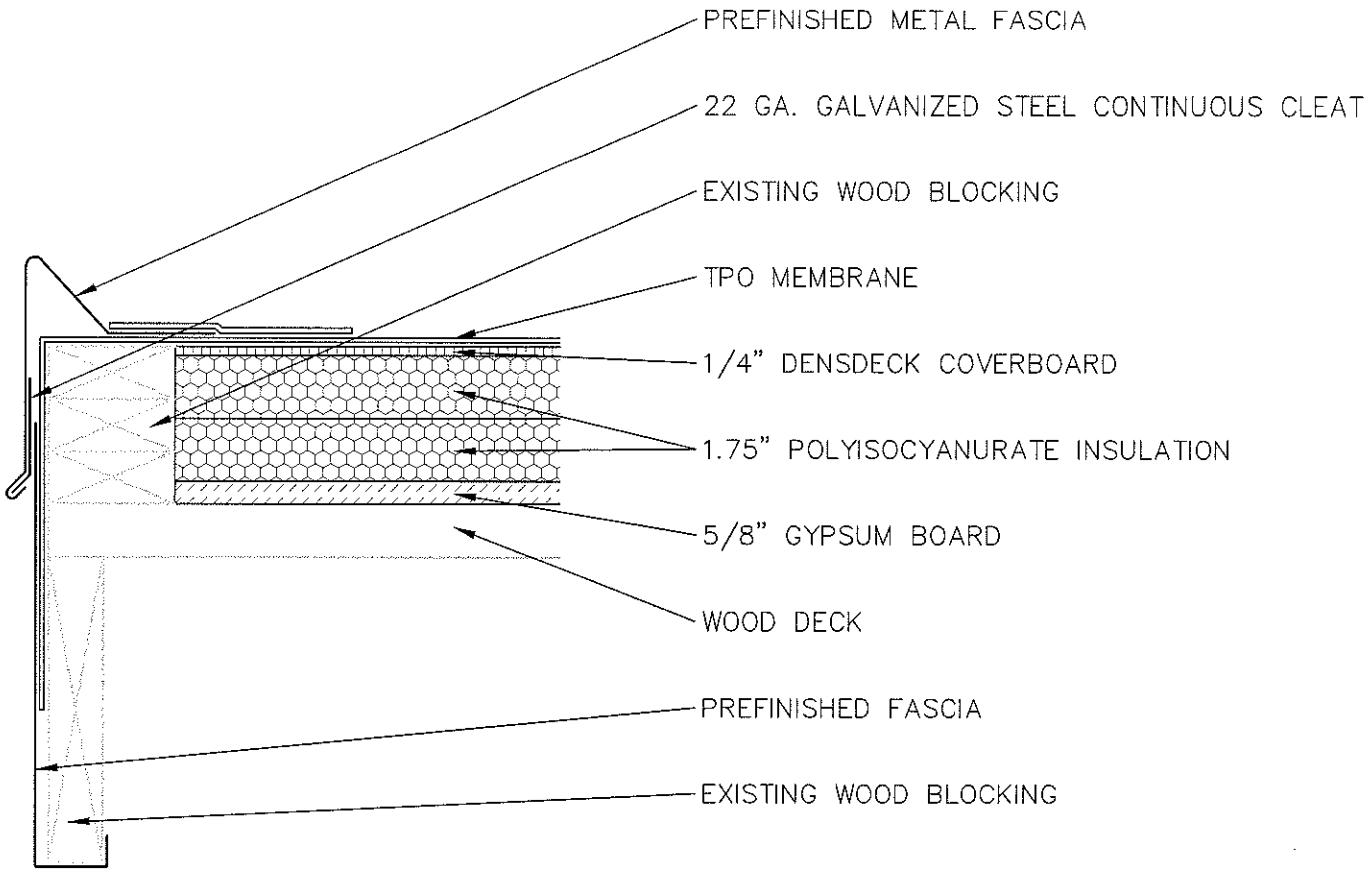
Sheet No.
D-4



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RAISED EDGE FLASHING

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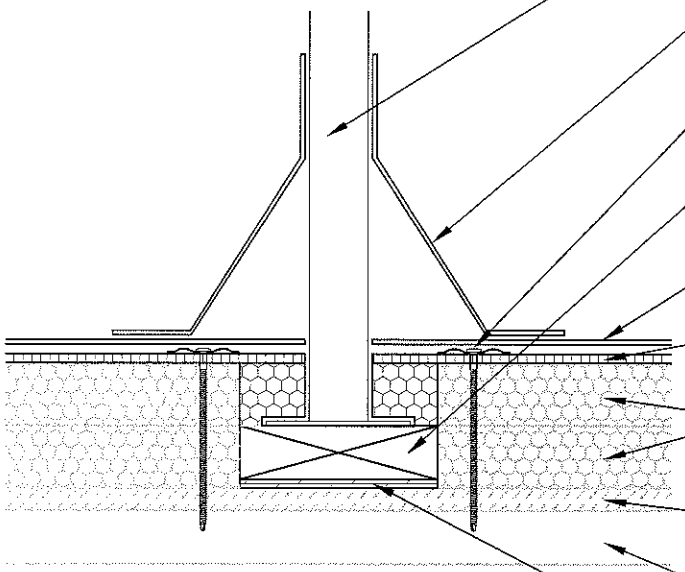
D-5

Need to confirm if this is how we want to mount the panels



SOLAR PANEL STAND
– BY OTHERS

PIPE BOOT OR FORM–FLASH

SCREW AND PLATE

2x6 WOOD BLOCKING
– PROVIDED BY OTHERS

TPO MEMBRANE

1/4" DENSDECK COVERBOARD

EXISTING 1.75" POLYISOCYANURATE INSULATION
– REMOVE AND REPLACE AS REQUIRED TO ALLOW FOR BLOCKING

EXISTING 5/8" GYPSUM BOARD

EXISTING WOOD DECK

1/4" PLYWOOD
– PROVIDED BY OTHERS

NOTE: TYPICAL FOR ROOF AREAS 6–11

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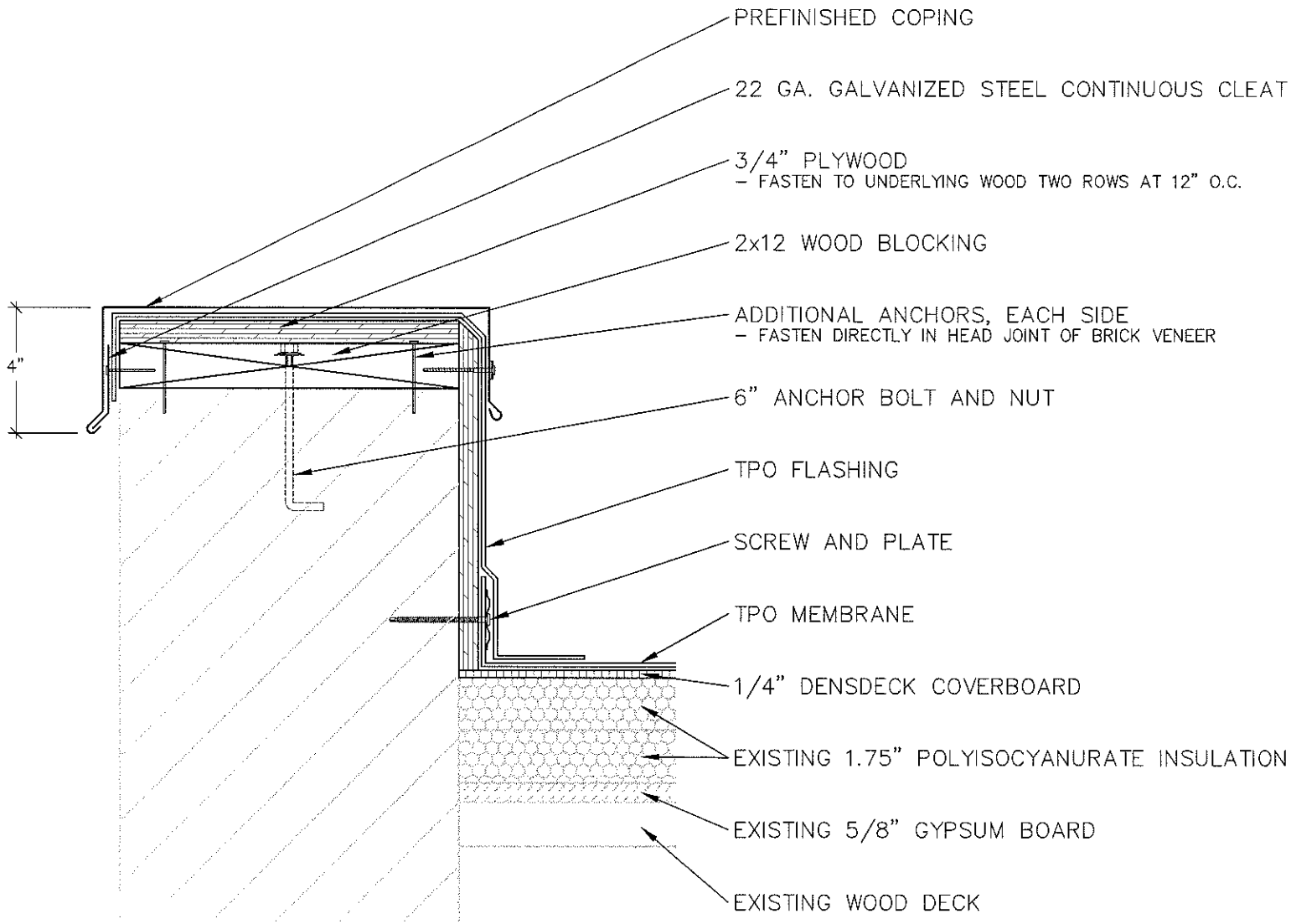
		6/22/15	Project No. 13410	TYPICAL SUPPORT FLASHING	D-6



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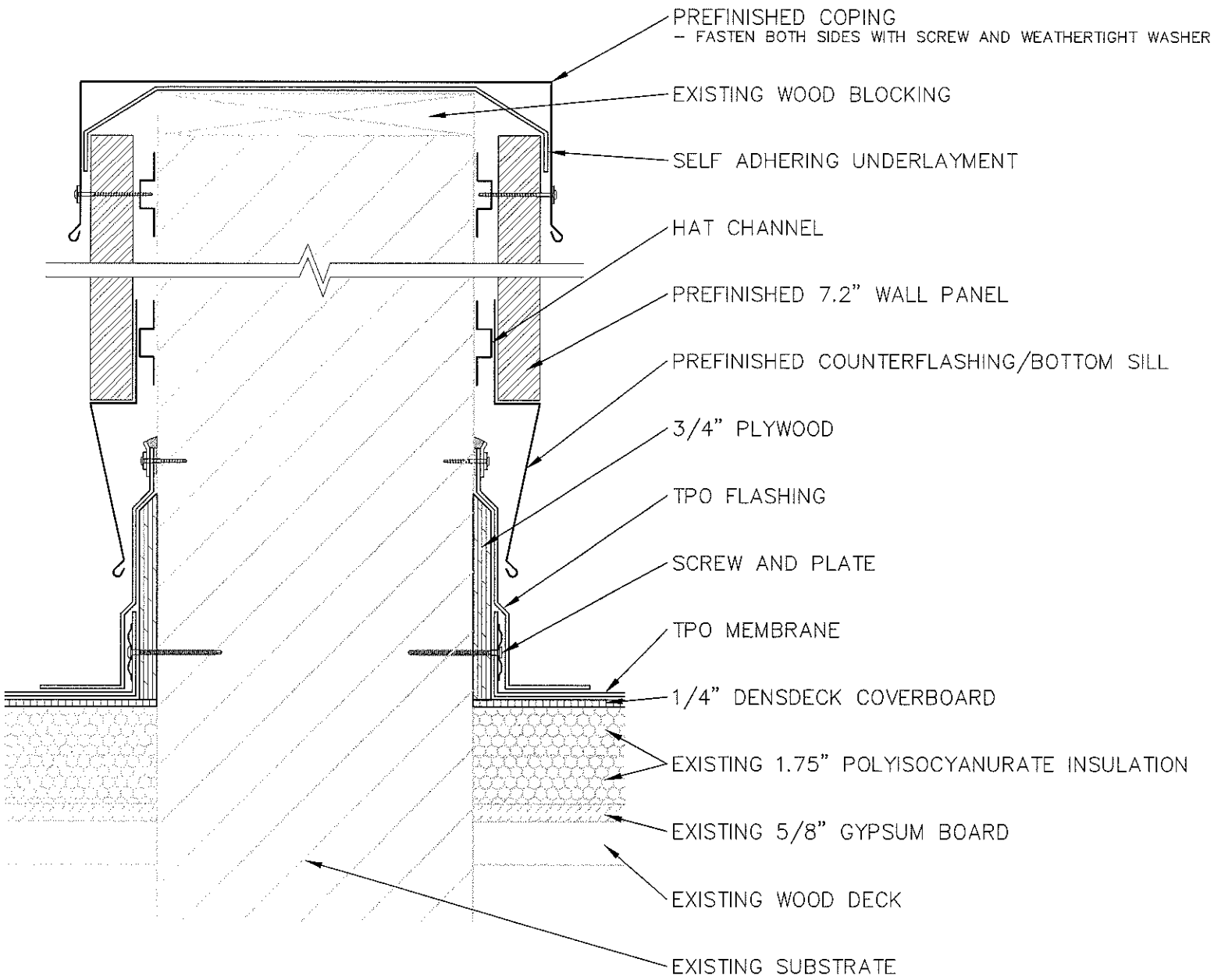
		6/22/15 | Project No. 13410	PARAPET FLASHING		D-7



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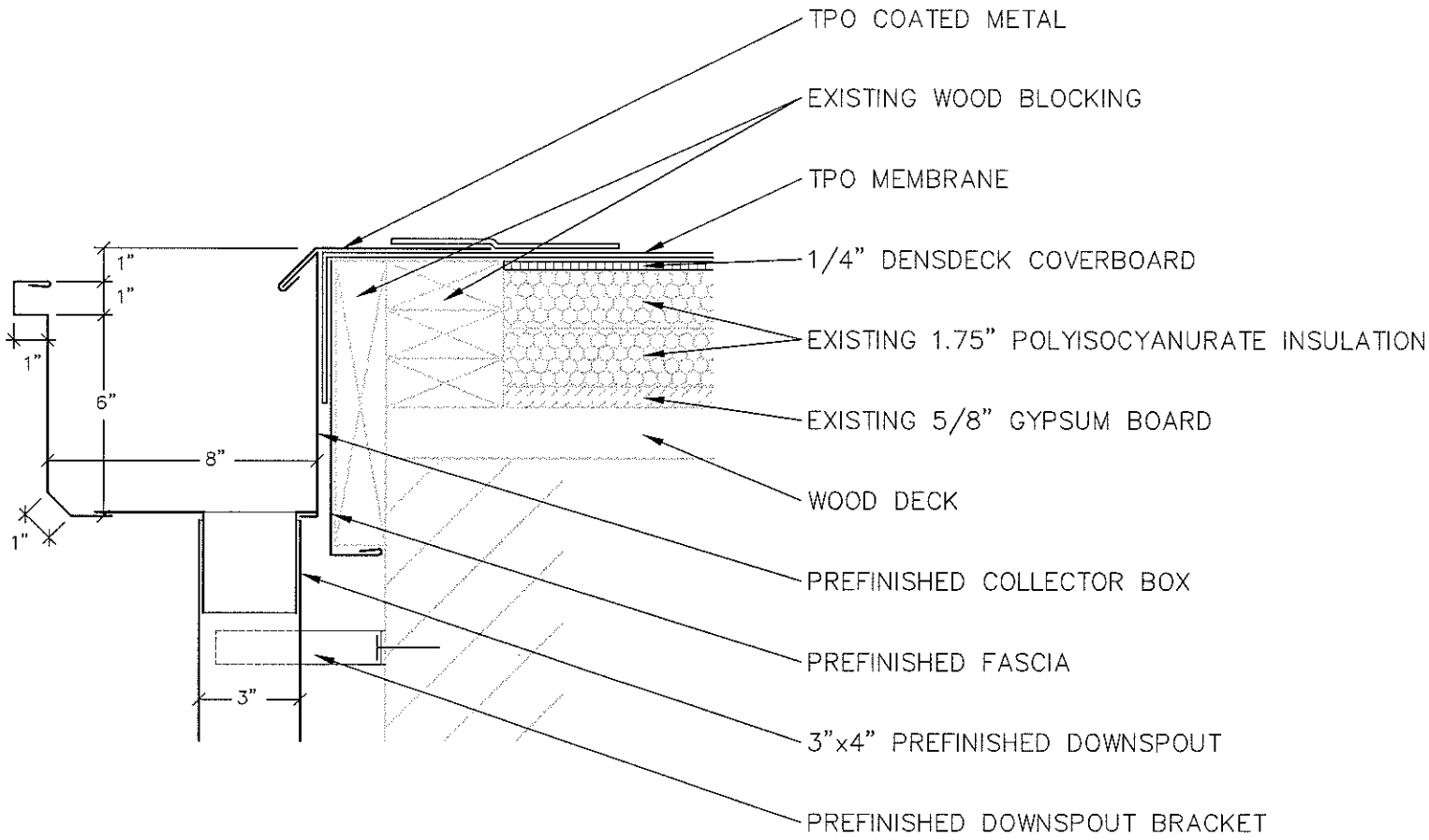
		6/22/15	Project No. 13410	PARAPET FLASHING	D-8



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GUTTER EDGE FLASHING

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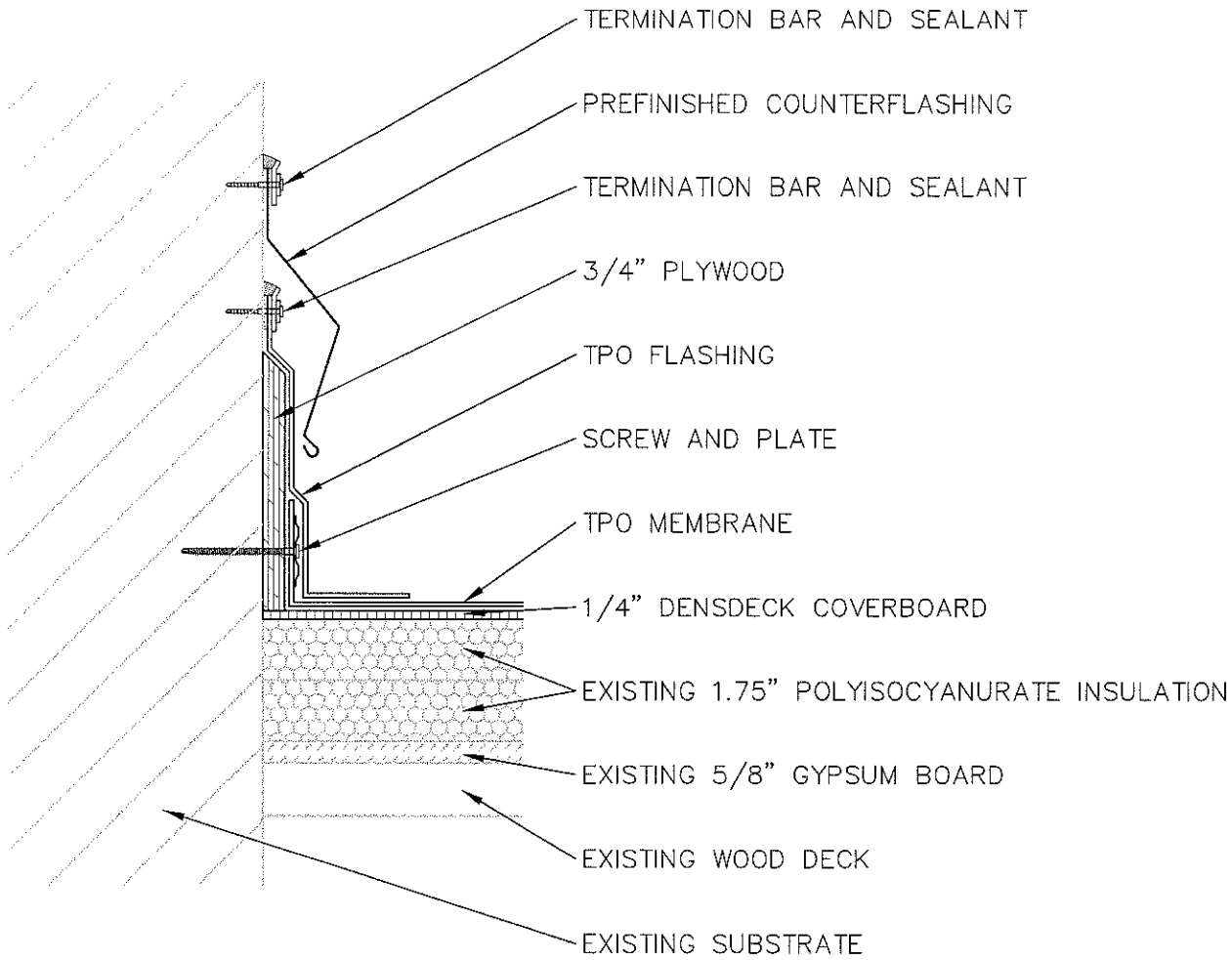
D-9



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WALL FLASHING

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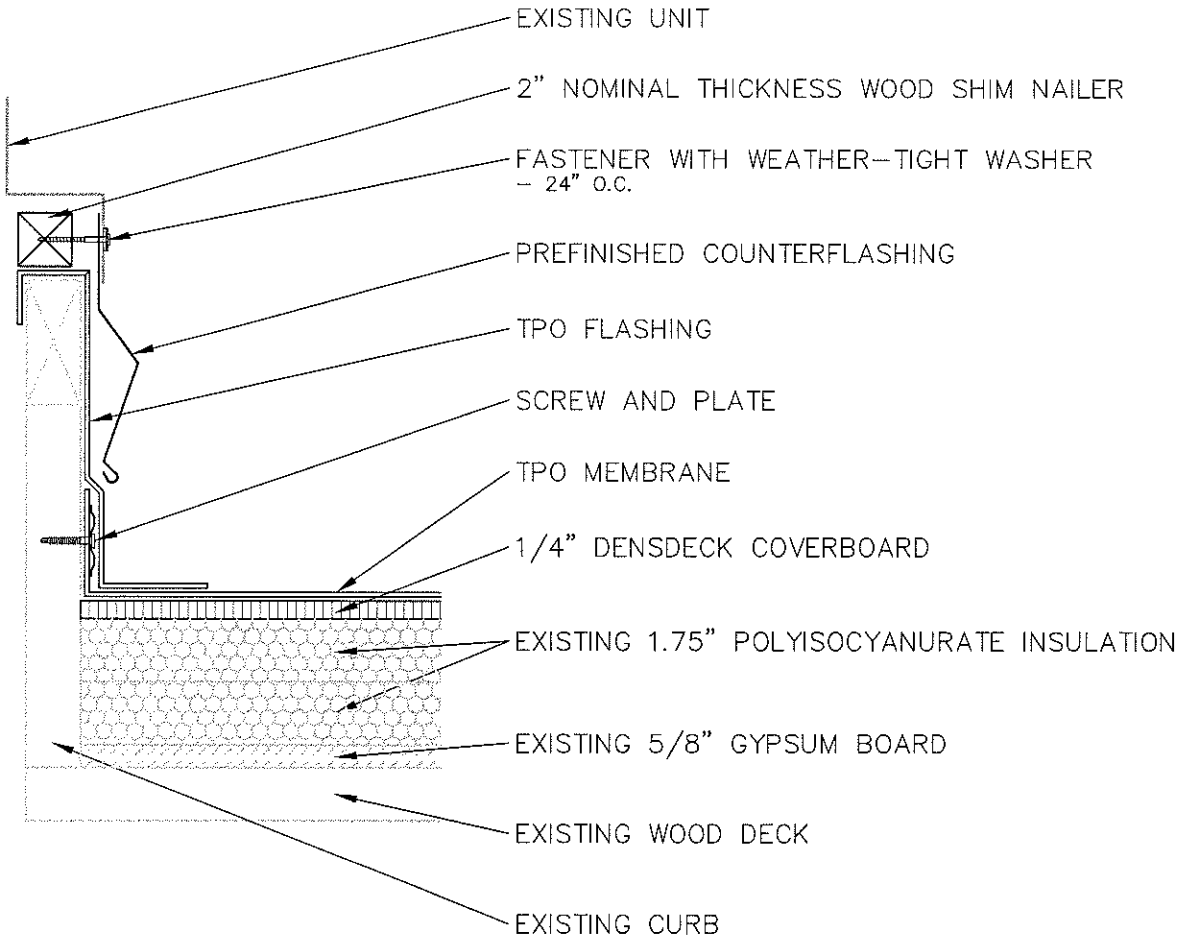
D-10



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TYPICAL CURB FLASHING

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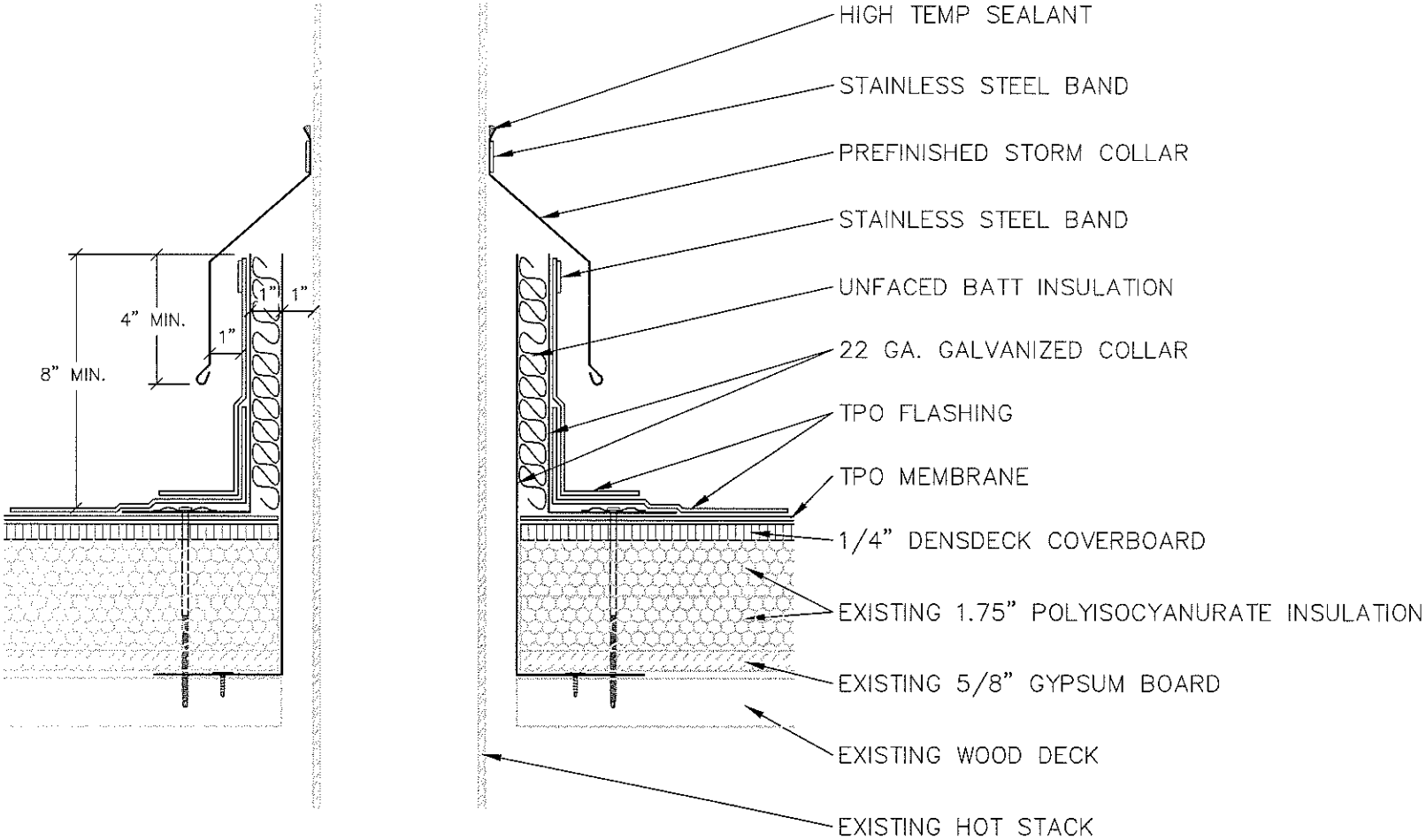

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TYPICAL STACK FLASHING

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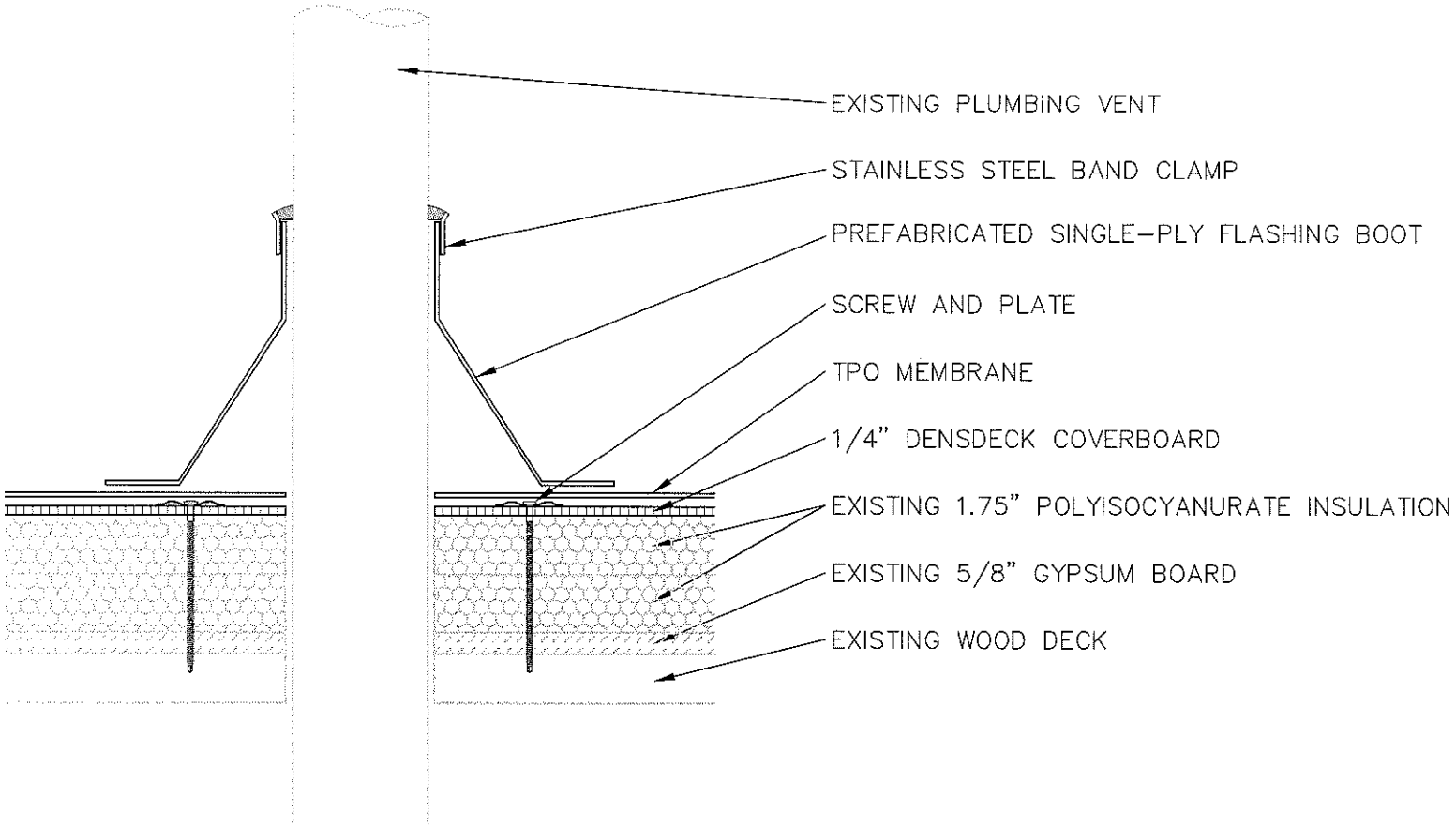
D-12



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TYPICAL PLUMBING VENT FLASHING

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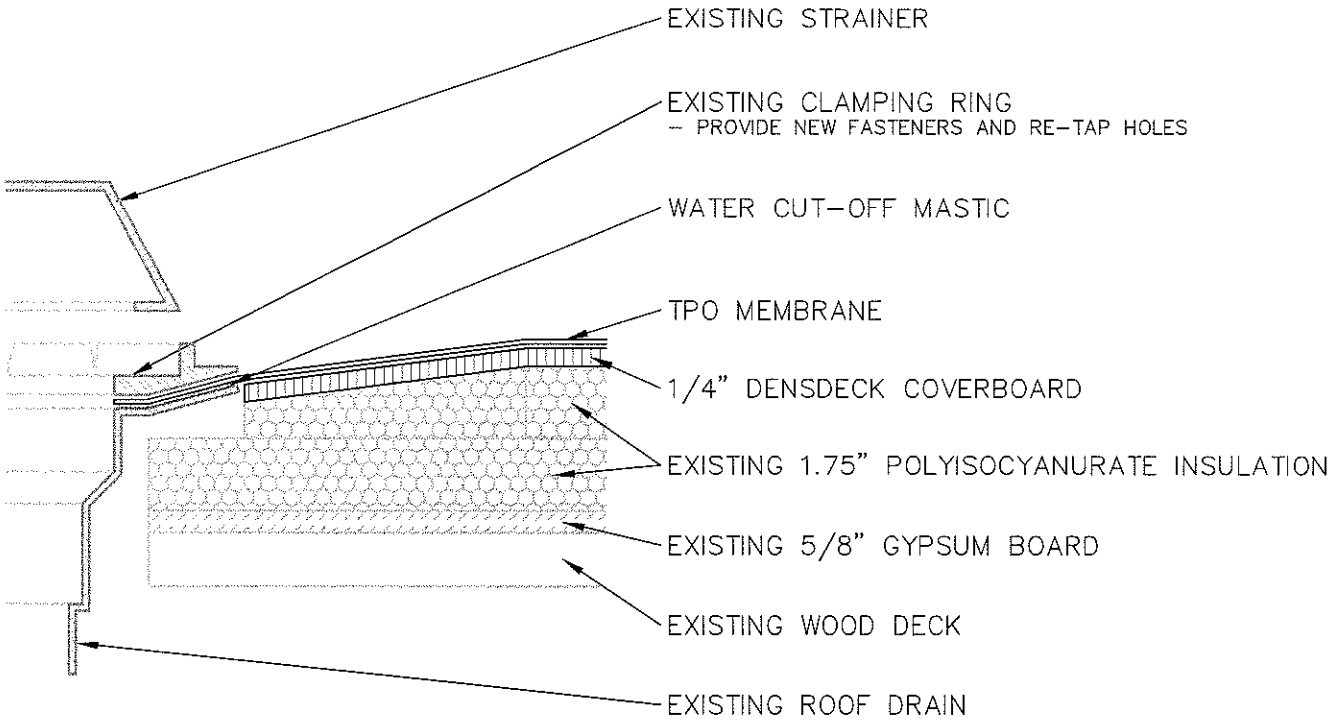
D-13



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DRAIN FLASHING

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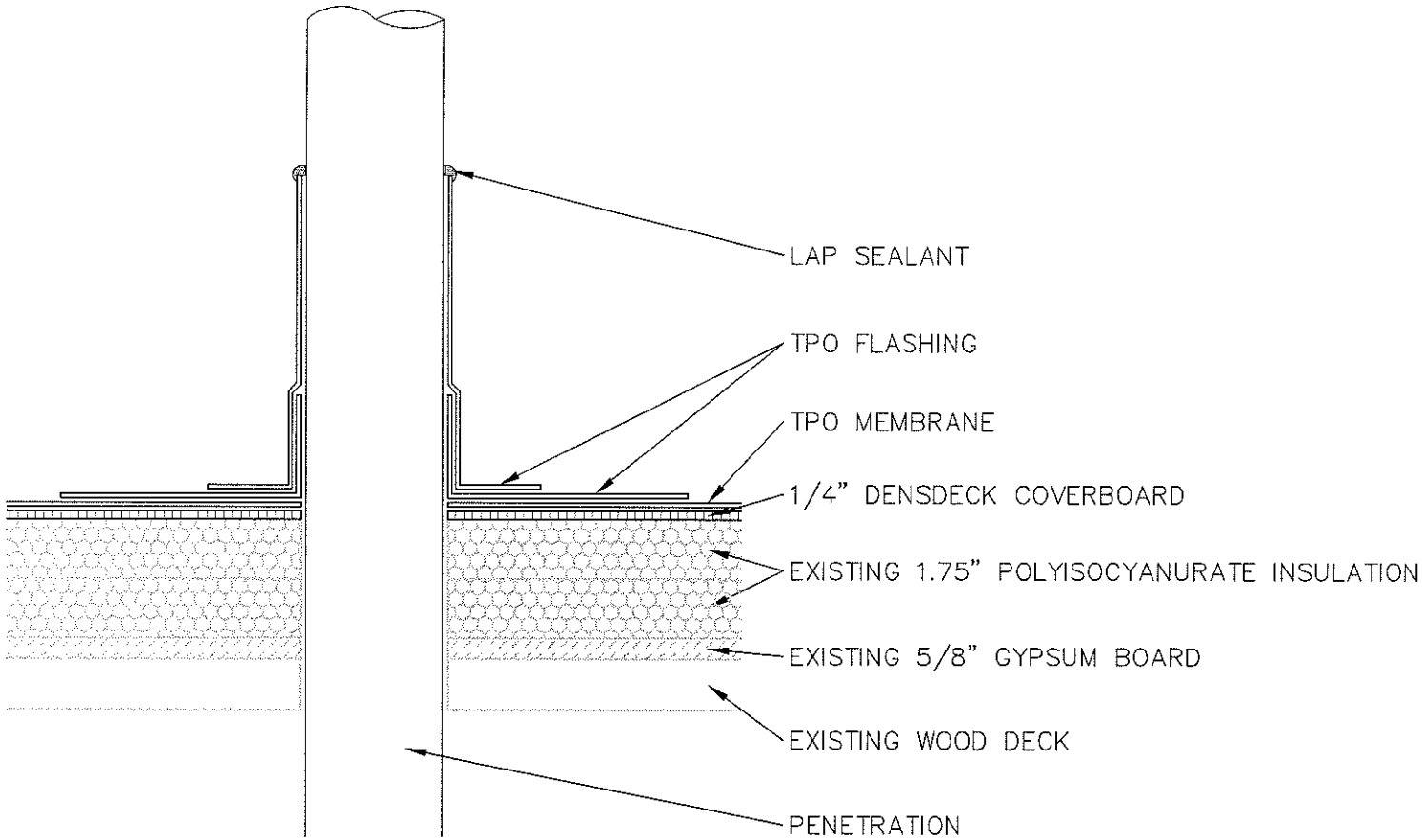
D-14



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TYPICAL PIPE FLASHING

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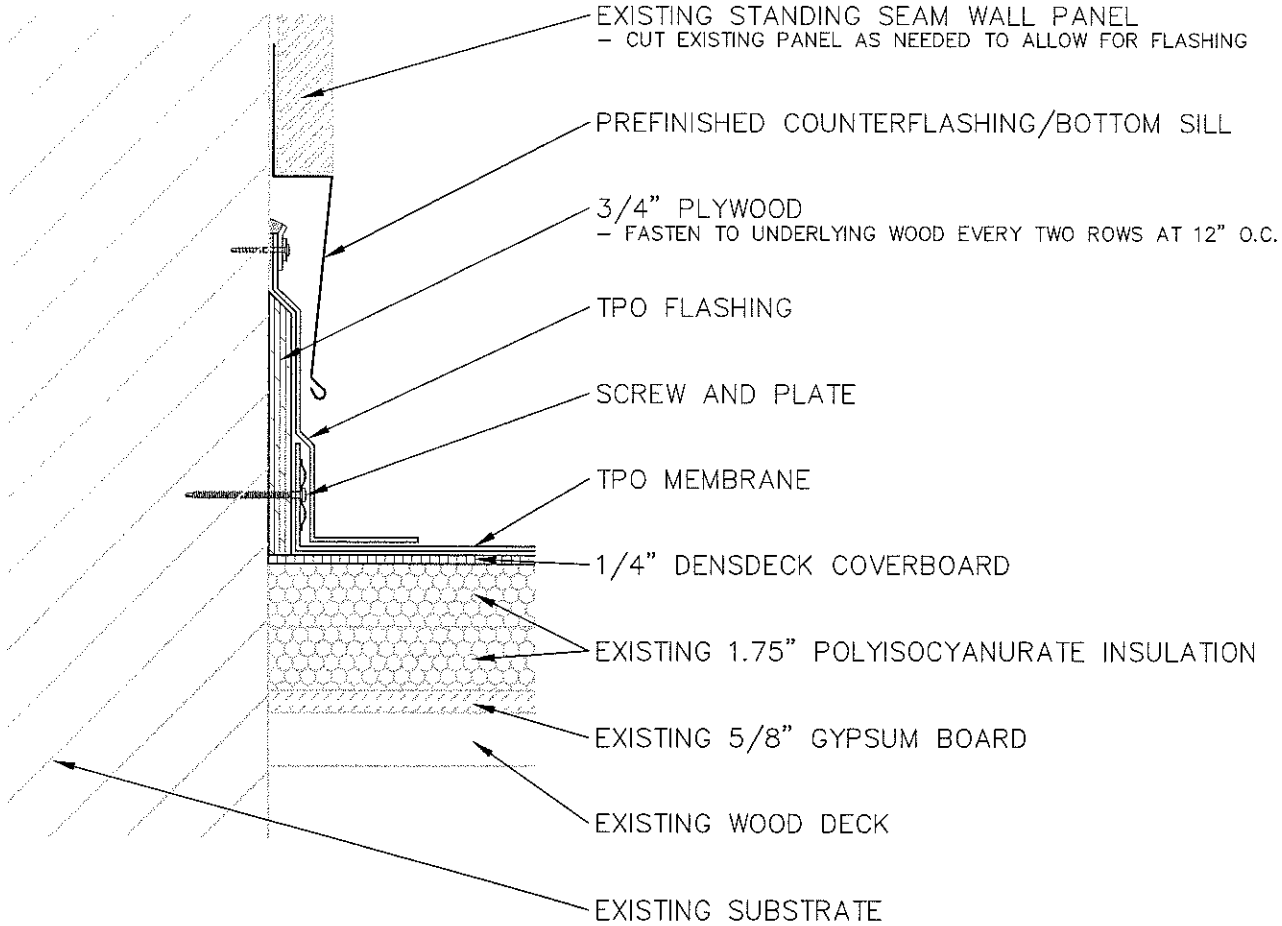
D-15



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WALL FLASHING

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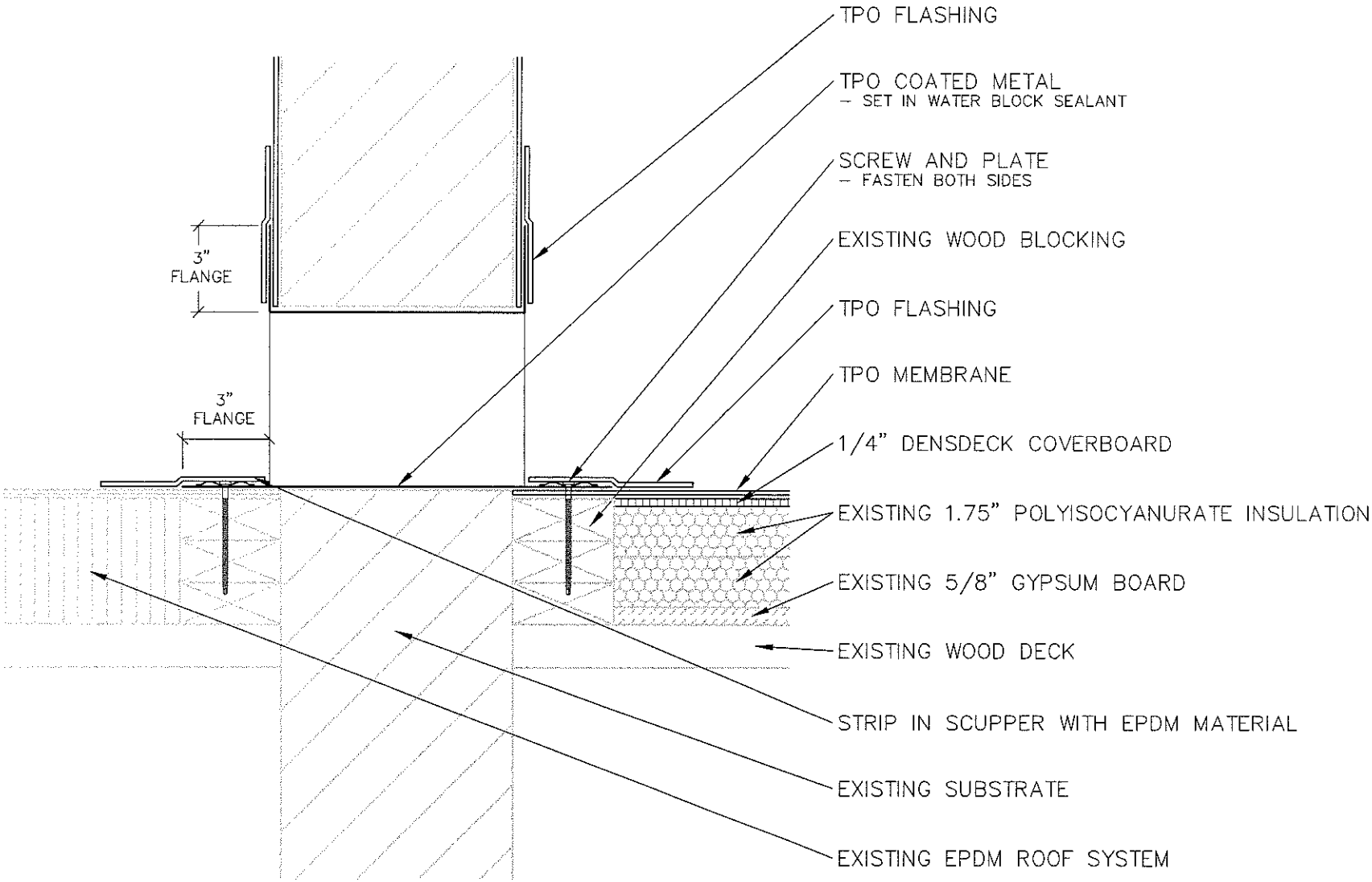
D-16



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APPENDIX D

City of Bloomington Solar and Roof Replacement Bid Checklist

Please include the following components in your response to this Invitation to Bidders.

- ✓ Detailed bid for roof replacement at City Hall according to the Project Manual.
  - Include an alternate price to increase the R-value of the roof from the current level of R-20 to R-40.
  - Enumerate separate bid breakdowns for Lot 1 and Lot 3 as shown on the property map.
- ✓ Detailed bid for roof replacement at Police Headquarters.
  - Include an alternate price to increase the R-value of the roof from the current level of R-20 to R-40, alternate design and quote to use Galvanized steel (G-90), 24-gauge, Standing Seam roofing material with a Kynar 500 paint finish as an alternative to TPO.
- ✓ Waste diversion plan indicating how 65% or more waste will be diverted from the landfill or other final disposal for both the City Hall and Police Headquarters roof replacement projects.
- ✓ Detailed bid for solar installations at City Hall and Police Headquarters, including both a per-watt price and a price for the maximum possible installation given structural and spatial constraints. Include an estimate of annual electricity generation per kilowatt.
- ✓ Detailed process for responding to prospective participants and proposed price per-watt for residential and commercial installations recruited through the "Solarize Bloomington" program.
  - If there is a minimum or maximum number of locations and/or capacity that your firm is willing/able to accommodate, please note that here.
  - Note any discounts that your firm will offer if 1) the total kW installed across all sites exceeds a certain capacity, 2) an individual installation exceeds a certain capacity, or 3) any other discounts that you will offer.
  - Note any proposals you have to encourage participation by low-income households in the Solarize effort.
  - Provide a sample customer contract for Solarize Bloomington participants.

- ✓ Affirmative Action Plan (This needs to be submitted **prior** to October 19, 2016)
- ✓ Bid Bond
- ✓ E-Verify Affidavit
- ✓ Non-Collusion Affidavit
- ✓ Drug Policy Affidavit
- ✓ Trench Safety Systems Affidavit

APPENDIX E: Residential Solar Scope of Work

A. List of Services: The selected installer is expected to provide the following services:

1) Site Assessment and individual proposal for each Solarize Bloomington pre-qualified property owner. Turnkey installation of a complete, fully functional photovoltaic system on each eligible participating residence.
    a. Work includes all design services, permits, materials, labor, equipment, commissioning, and incidentals necessary to install a complete turnkey photovoltaic system as specified hereinafter, including, but not limited to, the work included in this specification.
2) Design services shall include (1) a Structural and Roofing Integrity Review for roof installed systems and (2) an Electrical Review.
3) The photovoltaic system shall be utility grid connected following the local electric utility's required design and installation standards for grid-tie and net metering. Contractor will prepare applications for interconnection with the local utility and register the system with SRECTrade or another appropriate solar renewable energy certificate broker.
4) Photovoltaic system components shall minimize roof penetration for roof-mounted systems.
5) Contractor shall respond in a timely manner to customer inquiries and referrals from the City. It is expected that both email and phone will be utilized for customer contact and that customers will hear from contractors through one means or other within a one-week period after referral.
6) Contractor shall be responsible for providing the homeowner with adequate training, maintenance and warranty information covering photovoltaic modules, equipment and system components, mounting system and inverters.

B. Contractual Obligations and the City of Bloomington: The City has no financial obligation to any installer arising from Solar Project B. All contracts will be executed between the property owner and the selected installer. The contract between the owner and the installer will state that the City is not a party to the contract and that the installer will be solely liable for any claims, losses or damages arising out of the contract. By submitting a response to this Invitation to Bidders, the Firm agrees to these terms and conditions.

C. Expectations of the Partner Firm: The Firm will prepare a proposal for each site after receiving a request from the owner. It is understood that some sites will have higher or lower costs. Site-specific proposals will be sent to the owner and via email to sustain@bloomington.in.gov with "Residential solar bid" as the subject line.

Prior to the Firm's involvement, the City and its partners will:

- provide information sessions on solar PV and the project for prospective solar owners
- obtain from prospective solar owners a letter of intent to participate; and
- perform a basic site assessment for each site

Site visits

When interested households are identified, the City will provide contact information, owner size or budget preferences, and a basic assessment report for each site to the Firm. The preliminary report is not a substitute for the Firm making a site inspection before submitting a contract to each owner. The Firm is responsible for identifying features that may result in lower or higher costs.

System design

The Firm should design each system by considering the preferences of the owner while minimizing project costs and maximizing solar energy production. Sites with partial shade or limited space may require high performance panels with optimizers or micro-inverters.