

**METROPOLITAN EXPOSITION RECREATION COMMISSION**  
**Resolution No. 16-12**

For the purpose of selecting Mac Donald Wetle for the Keller Auditorium - "Roof Replacement" and authorizing the General Manager of Visitor Venues to execute a contract with MacDonald Wetle.

**WHEREAS**, the Keller Auditorium's roof has reached the end of its useful life and requires replacement; and

**WHEREAS**, Portland's and cPMO staff have worked with Carleton Hart Architecture to evaluate roofing material options as well as a feasibility analysis for solar, wind and eco-roof options; and

**WHEREAS**, the structural analysis required to determine the feasibility of solar, eco-roof and wind options is cost- and operationally-prohibitive, and those options will not be pursued; and

**WHEREAS**, Section 7(B) of the Metropolitan Exposition Recreation Commission's ("MERC") Contracting and Purchasing Rules, requires competitive sealed bids under ORS Chapter 279C for public improvements such as this project; and

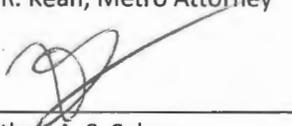
**WHEREAS**, MERC staff has evaluated the bids and MacDonald Wetle is the lowest responsive and responsible bidder with a bid amount \$1,174,663.00.

**BE IT THEREFORE RESOLVED** as follows:

1. MERC selects MacDonald Wetle as the lowest responsive and responsible bidder in response to the Request for Bids for the Keller Auditorium - Roof Replacement; and
2. MERC approves the contract with MacDonald Wetle in the form substantially similar to the attached Exhibit A and delegate authority to the General Manager of Visitor Venues to execute the contract on behalf of MERC.

Passed by the Commission on May 4<sup>th</sup>, 2016.

Approved As to Form:  
Alison R. Kean, Metro Attorney

By:   
Nathan A. S. Sykes  
Deputy Metro Attorney

  
Chair

  
Secretary/Treasurer

## MERC STAFF REPORT

**Agenda Item/Issue:** For the purpose of selecting Mac Donald Wetle for the Keller Auditorium -“Roof Replacement” and authorizing the General Manager of Visitor Venues to execute a contract with MacDonald Wetle.

**Resolution No.: 16-12**

**Date:** May 4, 2016

**Presented by:** Jason Blackwell and Nancy Strening

**Background:** The roof at the Keller Auditorium has reached the end of its useful life and is built on top of a roof which was installed with the last major renovation at the Civic Auditorium in 1968. The original roof insulation has been badly damaged. The roofing system has experienced a number of leaks which have caused interior damage in the front of house lobbies, stairwells, and backstage. The risk of more roofing failures is high and will result in significant costs if an emergency repair is required.

Staff and consultants addressed the City of Portland and Metro eco-roof guidelines and found that determination of adequate structural capacity would require a \$3 million asbestos abatement project requiring the building to be closed for a number of months. The city agreed this was cost prohibitive and issued an exemption.

MERC Staff prepared and issued Bid Documents and a Request for Bids that included a detailed scope of work. The scope of work includes, but is not limited to:

- removal of the existing roof system, related flashing and existing insulation at approximately 40,000 square feet of roof area
- installation of 80 mil PVC roof system, sheet metal flashings, and rigid insulation assemblies
- installation of fall protections stanchions and cable
- installation of new roof pit covers and new pit access ladders
- replacement and/or re-furbishing of existing drain assemblies
- washing of the pre-cast upper parapet walls
- bracing of the exterior unreinforced masonry parapet walls as required were bid as alternates and are also included in the scope of work

Information about the upcoming project was publicized at the MWESB Open House sponsored by Metro and Multnomah County at the Oregon Convention Center on Tuesday, Feb. 23.

The RFB was issued in accordance with MERC's Purchasing and Contracting Rules and in compliance with Metro Policy and any and all state (ORS) requirements. It was posted on ORPIN and published in the Daily Journal of Commerce, the Observer and on the Metro website. On April 14, 2016, three base bids were received and ranged from \$1,174,663 to \$1,596,000.

No bids were received from a certified MWESB or FOTA area businesses.

MacDonald Wetle was the lowest responsive and responsible bidder with a base bid in the amount of \$1,174,663. Scope of work will include Alternate #2, Wash Upper Pre-Cast parapet Walls (\$30,496) and Alternate #4, Seismic Bracing (\$51,824) included for a total contract price of \$1,256,983. MacDonald Wetle intends to subcontract with MWESB Plumbing and Scaffolding subcontractors for the work for a total dollar amount of \$60,000.

**FISCAL IMPACT:** The Keller Roof Project is a multi-year project with \$544,400 budgeted in FY 2015-16 and \$1,036,000 budgeted in FY 2016-17 for a total project budget of \$1,580,400. The proposed contract of \$1,174,663 spans both fiscal years and falls well within the total approved budget for the project.

**RECOMMENDATION:** Staff recommends that the Metropolitan Exposition and Recreation Commission, by Resolution No.16-12, approve the contract award and written contract (attached hereto) with MacDonald Wetle, for the amount of One Million, One Hundred Seventy-Four thousand, Six hundred Sixty-Three and 00/100 DOLLARS (\$1,256,983.00) for the Keller Auditorium – Roof Replacement as detailed in the RFB and delegate authority to the General Manager of visitor venues to execute the contract.

# Construction Agreement

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MERC CONTRACT NO. 306009

THIS CONSTRUCTION AGREEMENT is between Metropolitan Exposition Recreation Commission, an appointed commission of Metro, located at 600 N.E. Grand Avenue, Portland, OR 97232-2736, referred to herein as "MERC" or "Metro," and McDonald Wetle, Inc., referred to herein as "Contractor," located at 2020 NE 194<sup>th</sup> Avenue, Portland, OR 97230.

THE PARTIES AGREE AS FOLLOWS:

## ARTICLE I

### SCOPE OF WORK AND CONTRACT TERMS

CONTRACTOR shall perform the work and/or deliver to MERC the goods described in the Scope of Work attached hereto and incorporated herein as Attachment A. All services and goods shall be of good quality and otherwise in accordance with the Scope of Work. CONTRACTOR shall perform the work and/or deliver to MERC the goods described in the Scope of Work strictly in accord with the terms of this Construction Agreement and the General Conditions attached hereto and incorporated herein as Attachment B.

## ARTICLE II

### TERM OF CONTRACT

The term of this Contract shall be for the period commencing May 4, 2016 through and including June 30, 2017. Substantial completion per Section 9.4 of the General Conditions is October 31, 2016.

## ARTICLE III

### CONTRACT SUM AND TERMS OF PAYMENT

MERC shall pay the CONTRACTOR for work performed and/or goods supplied as described in the Scope of Work, in the maximum amount of ONE MILLION, TWO HUNDRED FIFTY-SIX THOUSAND, NINE HUNDRED EIGHTY-THREE AND NO/100THS DOLLARS (\$1,256,983.00) (the "Maximum Price"). MERC shall not be responsible for payment of any materials, expenses or costs other than those which are specifically included in the Scope of Work. The Maximum Price includes all fees, costs and expenses of whatever nature. Each of MERC's payments to Contractor shall equal the percentage of the work Contractor accomplished during the billing period. Contractor's billing invoices shall include the MERC contract number, Contractor name, remittance address, invoice date, invoice number, invoice amount, tax amount (if applicable), and an itemized statement of work performed and expenses incurred during the billing period, and will not be submitted more frequently than once a month.

Contractor's billing invoices shall be sent to [metroaccountspayable@oregonmetro.gov](mailto:metroaccountspayable@oregonmetro.gov). The MERC contract number shall be referenced in the email subject line. MERC requests that Contractors submit billing invoices for services within 10 business days of performance. Payment shall be made by MERC on a Net 30 day basis upon receipt of CONTRACTOR invoice.

## ARTICLE IV

### BONDS

In addition, for public works subject to ORS 279C.800 to 279C.870, CONTRACTOR and every subcontractor shall have a public works bond required by 2005 Oregon Laws Chapter 360 filed with the Construction Contractors Board before starting work on the project, unless exempt under Section 2 of 2005 Oregon Laws Chapter 360.

## ARTICLE V

### PUBLIC CONTRACTS

All applicable provisions of ORS chapters 187 and 279A, 279B, and 279C and all other terms and conditions necessary to be inserted into public contracts in the State of Oregon, are hereby incorporated as if such provision were a part of this Agreement. Specifically, it is a condition of this contract that CONTRACTOR and all employers working under this Agreement are subject employers that will comply with ORS 656.017 as required by 1989 Oregon Laws, Chapter 684.

For public work subject to ORS 279C.800 to 279C.870, the CONTRACTOR shall pay prevailing wages. If such public work is subject both to ORS 279C.800 to 279C.870 and to 40 U.S.C. 276a, the CONTRACTOR and every



600 NE Grand Ave.  
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subcontractor on such public work shall pay at least the higher prevailing wage. The CONTRACTOR and each subcontractor shall pay workers not less than the specified minimum hourly rate of wage in accordance with Section 7 of 2005 Oregon Laws Chapter 360. MERC shall pay an administrative fee as provided in ORS 279C.825(1) to the Bureau of Labor and Industries pursuant to the administrative rules established by the Commissioner of Labor and Industries. CONTRACTORS must promptly pay, as due, all persons supplying to such contractor labor or material used in this contract. If the CONTRACTOR or first-tier subcontractor fails, neglects, or refuses to make payment to a person furnishing labor or materials in connection with the public contract for a public improvement within 30 days after receipt of payment from the public contracting agency or a contractor, the CONTRACTOR or first-tier subcontractor shall owe the person the amount due plus shall pay interest in accordance with ORS 279C.515. If the CONTRACTOR or first-tier subcontractor fails, neglects, or refuses to make payment, to a person furnishing labor or materials in connection with the public contract, the person may file a complaint with the Construction Contractors Board, unless payment is subject to a good faith dispute as defined in ORS 279C.580. CONTRACTOR must pay any and all contributions and amounts due to the Industrial Accident Fund from contractor or subcontractor and incurred in the performance of the contract. No liens or claims are permitted to be filed against MERC on account of any labor or material furnished. CONTRACTORS are required to pay the Department of Revenue all sums withheld from employees pursuant to ORS 316.167.

For public improvement work all CONTRACTORS must demonstrate that an employee drug-testing program is in place.

## ARTICLE VI COUNTERPARTS

This Contract may be executed in counterparts or multiples, any one of which will have the full force of an original.

## ARTICLE VII DELIVERY OF NOTICES

Any notice, request, demand, instruction, or any other communications to be given to any party hereunder shall be in writing, sent by registered or certified mail or fax as follows:

To Contractor: Mark Hambelton  
 McDonald Wetle, Inc.  
 2020 NE 194<sup>th</sup> Ave  
 Portland, OR 97230  
 503-665-0141 fax

To Metro: Metro Procurement Services  
 600 NE Grand Ave  
 Portland, Oregon 97232  
 503-797-1791 fax

With Copy to: Nancy Strening  
 600 NE Grand Avenue  
 Portland, OR 97232  
 503-797-1795 fax

CONTRACTOR

METROPOLITAN EXPOSITION RECREATION  
 COMMISSION

By \_\_\_\_\_

By \_\_\_\_\_

Print Name \_\_\_\_\_

Print Name \_\_\_\_\_

Date \_\_\_\_\_

Date \_\_\_\_\_

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## ATTACHMENT A TO CONSTRUCTION AGREEMENT – SCOPE OF WORK

### 1. Purpose and Goal of Work

MERC is contracting for the removal and replacement of the existing roof and system components at the Keller Auditorium, located at 222 SW Clay Street, Portland Oregon 97201.

### 2. Scope of Work

#### Description of Work

Contractor is to provide all material, labor and equipment necessary for the removal and replacement of the existing roof and system components, as defined in below, and as per the attached Supplemental Conditions, Plan Set and Specifications, as referenced below

The scope of work includes, but is not limited to:

- Removal of the existing roof system, related flashing and existing insulation at approximately 40,000 square feet of roof area.
- Installation of 80 mil PVC roof system, sheet metal flashings, and rigid insulation assemblies.
- Installation of fall protections stanchions and cable as indicated.
- Installation of new roof pit covers and new pit access ladders.
- Replacement and/or re-furbishing of existing drain assemblies as indicated. Bracing the exterior parapet walls as required.
- Cleaning the upper portion of the exterior wall panels.

#### Clarifications

The only ground level area that will be reserved for the Contractor is as indicated in the contract documents. A portion of this area is over an electrical vault with overhead weight restrictions. It is the Contractor's responsibility to determine the weight limitations. Contractor vehicle parking is not available on site must be coordinated with P5 staff for adjacent areas.

Seismic bracing of the Keller URM parapet wall may be necessary. Before roof replacement work begins, Contract shall, accompanied by Architect and sub consultants, remove a portion of the existing materials at and around the walls to allow the architect to confirm the height and width of the parapet. If the Architect determines that seismic bracing is required, it shall be included in the Scope of Work per contract documents and bid pricing.

Although work is expected to be in areas without impact on events, work will need to be completed around the building schedule. Due to a very busy events schedule at Keller Auditorium, Contractor will be required to adhere strictly to work dates and times approved by the Project Manager. In most cases, typical work days and hours (Monday - Friday 7:00am to 3:00pm) will be available, but there are likely to be dates where no work will be possible or where the work day must be curtailed to avoid interfering with an event taking place or with clients using the facility. Contractor shall be notified one week in advance of these non-work days. This project may require Contractor to work outside their typical work hours in order to complete the project in a timely manner as agreed upon with the Portland'5. Schedule will need to be coordinated with Portland'5 project manager. Contractor shall work with the Portland'5 provided schedule.

**ATTACHMENT C:** Supplementary Conditions

**ATTACHMENT D:** Plan Set, titled "Metro Keller Auditorium Roof Replacement, dated April 22, 2016;

**ATTACHMENT E:** Specifications, titled "Metro Keller Auditorium Roof Replacement", dated April 22, 2016.

And any modifications of any of the foregoing in the form of Addenda or Change Orders entered into in accordance with the terms of the Contract. Where applicable, reference to this Contract herein shall be deemed to refer to all of the Contract Documents.

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## ATTACHMENT B - SECTION 007200 METRO GENERAL CONDITIONS

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## METRO GENERAL CONDITIONS

### ARTICLE 1 GENERAL PROVISIONS

**1.1 Definitions.** Unless otherwise defined or specified in the Contract Documents, the following terms shall have the meanings indicated:

1.1.1 Addendum: A document issued by Metro during the solicitation period clarifying, adding, deleting, or materially changing Metro's solicitation documents.

1.1.2 Alternate Bids: Portions of the Work for which a Bidder must submit a separate Bid amount. Alternate Bid items may or may not be awarded at Metro's discretion.

1.1.3 Architect: A person retained by Metro as its design professional for the Work and authorized to practice architecture in the State of Oregon. The term "Architect" refers to the Architect or the Architect's authorized representative.

1.1.4 "As-Builts" or Record Documents: Those drawings made, revised, or annotated by Contractor and approved by Metro during the performance of the Contract, fully illustrating how all elements of the Work were actually installed and completed.

1.1.5 Aspirational Target: Target of intended utilization of MBE, WBE, and ESB firms that a contractor has no contractual obligation to meet.

1.1.6 Authorized Representative: A person acting on behalf of another through expressly delegated authority as specified in these Contract Documents.

1.1.7 Bid: The written offer of a Bidder to perform the Work as defined in these Contract Documents submitted in compliance with Metro's Bid Documents and Public Contracting Rules.

1.1.8 Bidder: A person acting directly or through a duly and legally authorized representative who submits or intends to submit a Bid for the Work as described in these Contract Documents.

1.1.9 Bid Documents: Those documents upon which a Bidder bases its bid to Metro.

1.1.10 Business Day: Calendar day excluding Saturdays, Sundays, and legal holidays.

1.1.11 Bid Forms: Forms required by Metro to be submitted with a Bid.

1.1.12 City or County: The city or county in which the Work is located.

1.1.13 Change Order: A written document signed by Metro and Contractor stating their agreement upon all of the following:

1.1.13.1 The change in the Work;

1.1.13.2 The amount of any adjustment in the Contract Amount; and

1.1.13.3 The extent of any adjustment to the Contract Time.

1.1.14 Clarification: A written document consisting of supplementary details, instruction or information issued by Metro after the award of Contract that clarifies or supplements the Contract Documents and becomes a part of the Contract Documents. A Clarification may or may not affect the scope of Work.

1.1.15 Completion: See "Substantial Completion" and "Final Completion and Acceptance."

1.1.16 Construction Schedule or Schedule: The timeline described in Article 5.

1.1.17 Contract: The Contract Documents.

1.1.18 Contract Amount: The total amount shown in the Construction Agreement as modified by any Change Orders.

1.1.19 Contract Documents or Contract or Bidding Documents: All of the following documents: the Advertisement for Bids, the Invitation to Bid, the Instructions to Bidders, the Bid Forms, the Construction Agreement, the Performance Bond, the Labor and Materials Payment Bond, the General Conditions, the Supplementary Conditions, the Specifications, the drawings, the approved and updated Construction Schedule, and any modifications of any of the foregoing in the form of Addenda, Clarifications, Change Orders, or Force Account Work.

1.1.20 Contractor: The person having entered into this Contract with Metro and who is responsible for the complete performance of the Work contemplated by the Contract Documents and for the payment of all legal debts pertaining to the Work, including its officers, agents, employees, and representatives.

1.1.21 Contract Time: The amount of time stated in the Contract Documents for the performance of all or a specified portion of the Work, as modified by any Change Orders.

1.1.22 Critical Path Method or CPM: The critical path method of scheduling as understood and interpreted by standard industry practice.

1.1.23 Day: Calendar day including Saturdays, Sundays, and legal holidays.

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1.1.24 Defective Work: Work that (a) is performed in an unsatisfactory, faulty, or deficient manner; (b) does not conform to the Contract Documents; (c) does not meet the requirements of any reference standard, test, or approval referred to or incorporated by the Contract Documents; or (d) has been damaged by anyone other than Metro prior to Acceptance of the Work, whether or not such Work is in Metro's possession or use.

1.1.25 Direct Costs: The costs of labor (including benefits), materials, and equipment incurred by the person performing the Work or part of the Work.

1.1.26 Drawings: The graphic and pictorial portions of the Contract Documents, wherever located and whenever issued, showing the design, location, and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

1.1.27 Engineer: A person lawfully practicing engineering. The term "Engineer" refers to the Engineer or the Engineer's authorized representative.

1.1.28 Environmental Laws: Any applicable statute, law, ordinance, order, consent decree, judgment, permit, license, code provision, covenant deed, common law, treaty, convention, or other requirement pertaining to protection of the environment, health or safety, natural resources, conservation, wildlife, waste management, or disposal of hazardous substances or pollution, including but not limited to regulation of releases to air, land, water, and groundwater.

1.1.29 Equal, Approved, Approved Equal: The material or product to be supplied or installed is equal to or better than that specified in function, performance, reliability, quality, and general configuration and is approved by Architect or Engineer. Equality in reference to the Project design requirements shall be determined by Architect or Engineer prior to installation of any material or product in the Project. Where the term "or equal" is not used and a sole product is specified, the term "or equal" is implied.

1.1.30 Final Completion: Full performance of all of the Work and acceptance of the Project by Metro.

1.1.31 Final Payment: The balance of the Contract Amount to be paid to the Contractor upon Final Completion and Acceptance of the Work. "Final Payment" includes payment of any withheld Retainage less deductions permitted or required by the Contract.

1.1.32 Force Account Work: Work, ordered in writing by Metro, for which Contractor must report its actual costs in accordance with Section 8.4 of the General Conditions.

1.1.33 Force Majeur: An earthquake, flood, typhoon, cyclone, or other natural phenomenon of catastrophic proportions or intensity.

1.1.34 General Conditions: The Metro General Conditions of the Contract for Construction set forth in this document.

1.1.35 Hazardous Materials: Any substance defined or designated as being radioactive, infectious, hazardous, dangerous, or toxic by any federal, state, or local statute, regulation, or ordinance presently in effect or subsequently enacted. For purposes of Section 10.7, the term "introduce" means the physical placement or transportation of Hazardous Materials in or on the Project Site regardless of whether the Hazardous Material was specified, required, or otherwise addressed in the Contract Documents.

1.1.36 Landscape Architect: A person lawfully practicing landscape architecture. The term "Landscape Architect" refers to the Landscape Architect or the Landscape Architect's authorized representative.

1.1.37 LEED Certification: A Leadership in Energy and Design Certification issued by the United States Green Building Council (USGBC).

1.1.38 Lump Sum: A way of expressing the Contract Amount for the Work, or the price bid for a portion of the Work, stated as a single price for all labor, materials, supplies, incidental work, overhead, and profit.

1.1.39 Metro: A metropolitan service district organized under the laws of the State of Oregon and the Metro Charter.

1.1.40 Metro Chief Operating Officer or COO: The Chief Operating Officer of Metro.

1.1.41 Metro Council or Council: Metro's elected governing body.

1.1.42 Minority Business Enterprise, Women Business Enterprise and Emerging Small Business ("MWESB"): A firm eligible to participate as a Minority Business Enterprise, Women Business Enterprise or Emerging Small Business (collectively referred to as "MWESB") because it meets the criteria as established by the Office of Minority Women and Emerging Small Business in the State of Oregon. A firm will no longer qualify as an MWESB on this Contract when it receives notification of decertification, denial of recertification, or notice of graduation by the certifying agency.

1.1.43 MWESB Program: Metro's program to provide maximum opportunities to Minority, Women-Owned and Emerging Small Business Enterprises in contracts, which is contained in Metro Code Section 2.04.100 to 2.04.190.

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- 1.1.44 Notice to Proceed: The written notice given by Metro to the Contractor to proceed with all or part of the Work. The Notice to Proceed will also establish the date and time of a preconstruction conference.
- 1.1.45 Overhead: When applied to the cost of the Work, includes the following items, when reasonable and necessary for completion of the Work:
- 1.1.45.1 All on-site payroll costs, taxes, insurance, fringe benefits, and bonuses of same, for supervising, estimating, expediting, purchasing, drafting, and clerical/secretarial services where directly incurred in the performance of the Contract.
  - 1.1.45.2 Small tools (less than \$250 capital cost per item).
  - 1.1.45.3 Contractor-owned equipment.
  - 1.1.45.4 Equipment maintenance and repairs.
  - 1.1.45.5 Temporary construction, utilities, and safety requirements.
  - 1.1.45.6 Transportation of materials other than direct identifiable cost of specific deliveries, or as included in price of material.
  - 1.1.45.7 Parking fees for workers (if applicable).
  - 1.1.45.8 Permit fees paid by the Contractor pursuant to the Contract Documents.
  - 1.1.45.9 Cost of reproduction.
  - 1.1.45.10 Field office costs. Home or branch office overhead shall not be included, but shall be part of Contractor's profit and shall include but is not limited to the following:
    - 1.1.45.10.1 Accounting functions of Contractor's home and branch office.
    - 1.1.45.10.2 General expenses of Contractor's home and branch office.
    - 1.1.45.10.3 Interest on capital.
    - 1.1.45.10.4 Salaries of any home and branch office estimators and administration.
- 1.1.46 Owner: Metro.
- 1.1.47 Person: An individual, partnership, corporation, joint venture, limited liability corporation, joint stock company, or other legal entity.
- 1.1.48 Plans: Drawings.
- 1.1.49 Profit: That portion of Contractor's Bid price that is not Direct Costs or Overhead
- 1.1.50 Project: The Work described in the Contract Documents.
- 1.1.51 Project Manager: The Metro representative on the construction Site. The Project Manager will be an employee of Metro who will represent Metro to the extent of his authority as delegated by the Chief Operating Officer. For purposes of administering this Contract the term "Project Manager" will refer to the on-site Metro representative and to any duly appointed assistants who may be designated in writing. The Architect or Engineer will be called upon as required by and at the direction of Metro for technical assistance and for interpretation of the Contract Documents.
- 1.1.52 Proposal: The written offer of a Proposer to perform the Work as defined in these Contract Documents submitted in compliance with Metro's Request for Proposals and Public Contracting Rules.
- 1.1.53 Proposal Documents: Those documents upon which a Proposer responds to a Request for Proposals.
- 1.1.54 Proposer: A person who responds or intends to respond to a Request for Proposals issued by Metro.
- 1.1.55 Provide: To furnish and install complete and in place and ready for operation and use.
- 1.1.56 Punch List: The list prepared by the Architect or Engineer and/or Project Manager at the time of Substantial Completion that reflects Contractor's incomplete, nonconforming Work. Punch List items must be completed to the satisfaction of the Architect or Engineer and Metro in order for the Project to reach Final Completion and Acceptance.
- 1.1.57 Reference Specifications: Bulletins, standards, rules, methods of analysis or testing, codes, and Specifications of other agencies, engineering societies, or industrial associations referred to in the Contract Documents that when included in the Contract Documents establish the basis by which specific portions of the Work are to be performed. All such references specified refer to the latest edition thereof, including any Amendments in effect and published at the time of advertising for Bids or of issuing the permit for the Project.
- 1.1.58 Release: When used in regard to environmental laws or regulations, "release" as defined in Oregon or federal law.
- 1.1.59 Request for Bid (RFB): A solicitation to perform Work where a Contract is awarded based on price.

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1.1.60 Request for Information (RFI): A written request made by Contractor for additional information to clarify an ambiguity in the Contract Documents.

1.1.61 Request for Proposals ("RFP"): A solicitation to perform Work issued where a Contract is awarded based on factors other than or in addition to price.

1.1.62 Retainage or Retention: The difference between the amount earned by Contractor on the Contract and the amount paid on the Contract by Metro.

1.1.63 Schedule of Values: The detailed breakdown of a lump-sum contract amount as required in Section 9.2.

1.1.64 Separate Contract: A contract between Metro and a party other than Contractor for the construction or furnishing of a portion of the Project.

1.1.65 Shown, As Shown: Work shown on the drawings that is a part of the Contract Documents.

1.1.66 Site: The real property upon which the Project is located.

1.1.67 Solicitation Documents: An RFB.

1.1.68 Special Inspector: A representative of Metro, Architect, Engineer or Geotechnical Engineer with specialized knowledge applicable to the installation of certain elements of the Work.

1.1.69 Specifications: That portion of the Contract Documents consisting of the written requirements for materials, equipment, construction systems, standards, and workmanship for the Work, and performance of related services, including any Reference Specifications.

1.1.70 Subcontractor: A person that has a contract with Contractor to perform a portion of the Work at the Site.

1.1.71 Submittals: Includes shop drawings, samples, manufacturer's brochures, pamphlets, catalog cuts, color charts, or other descriptive data, clearly defining the article, material, equipment, or device proposed by Contractor for use in the Work. "Shop drawings" are the drawings and diagrams showing details of fabrication and erection that Contractor is required to submit to the Architect or Engineer.

1.1.72 Substantial Completion: The stage in the progress of the Work, as determined by Metro, when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that Metro can lawfully occupy or use the Work for its intended use.

1.1.73 Supplier: An individual, partnership, corporation or joint venture entering into an agreement with Metro or Contractor for furnishing a portion of the Work that requires no labor at the Site, other than common carriers.

1.1.74 Unit Price: The dollar amount to complete a particular portion of the Contract Work, as defined in the Bid and Supplementary Conditions, and includes all costs, including but not limited to equipment, labor, materials, incidentals, Overhead, and Profit for the portion of Work described.

1.1.75 Unusually Persistent Severe Weather: Exists in any period when daily rainfall exceeds 0.50 inch during a month when the monthly average rainfall exceeds the normal monthly average by over twenty-five percent (25%), or when average daytime temperatures at the Project are less than 32 degrees F and are accompanied by accumulations of ice or snow, continuing for a day or more in excess of the annual average number of consecutive days severe weather conditions persist for the part of the Metro region where the Project is located ("Annual Average"). The Annual Average shall be calculated for this purpose based on ten-year averages reported in the Local Climatological Data for Portland Oregon, available at the Portland Weather Service Office. Contractor shall incorporate said Annual Average number of consecutive days severe weather conditions exist into the Project schedule at Project inception.

1.1.76 Work: Unless the context requires otherwise, the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by Contractor to fulfill Contractor's obligations. The Work may constitute all or a portion of the Project as the context requires.

## 1.2 Interpretation and Use of Contract Documents.

1.2.1 Intent and Effect of the Contract. The Contract Documents form the Contract for construction and represent an integrated agreement between the Parties. The Contract supersedes all prior negotiations, representations, or agreements between the Parties, either written or oral. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all. The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work. Unless otherwise stated in the Contract Documents, words describing materials or Work that have a well-known technical or trade meaning shall be construed in accordance with such meanings.

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1.2.2 Modification of Contract Documents. The Contract Documents may only be modified by written Amendment or Change Order signed by both Parties.

1.2.3 Divisions and Headings. Titles and headings are for the convenience of organizing the Contract Documents and shall not control or limit the Contractor's obligations under the Contract.

1.2.4 Mandatory Nature of Specifications and Drawings. Mention in the Specifications or indication on the drawings of articles, materials, operations, sequence, or methods requires Contractor to furnish and install (i.e., provide) each article mentioned or indicated, of the quality or according to qualifications noted, to perform each operation called for, in the sequence called for, and to provide therefore all necessary labor, equipment, and incidentals. The determination of the type of operations and methods to be utilized in the performance of the Work shall be the responsibility of Contractor unless the Contract Documents prescribe a specific type of operation, sequence, or method, in which case Contractor shall comply with the prescribed operation, sequence, or method. Sentences in the imperative tense or command format in these Contract Documents shall be deemed to be directed to Contractor and to require Contractor to perform the services and/or provide the materials described.

1.2.5 Precedence of Contract Documents. All determination of the precedence of, or resolution of discrepancies in, the Contract Documents shall be made by Metro, but in general, precedence will be in accordance with the following list with the highest precedence item at the top:

1.2.5.1 Executed Construction Agreement.

1.2.5.2 Supplementary Conditions.

1.2.5.3 General Conditions, Advertisement for Bids, Instructions to Bidders, Invitation to Bid, Bid Forms, Performance Bond, and Labor and Materials Payment Bond.

1.2.5.4 Specifications.

1.2.5.5 Drawings.

1.2.5.6 Contractor's Proposal. Within each of the above documents, detailed information takes precedence over general information and words take precedence over numbers unless obviously incorrect.

Amendments, Addenda, Clarifications, and all Change Orders to the Contract Documents take the same order of precedence as the specific sections that they are amending.

1.2.6 Meaning of Miscellaneous Phrases. Unless the context requires otherwise, phrases in the Contract Documents shall be interpreted as follows:

1.2.6.1 Wherever the words "as directed," "as instructed," "as required," "as permitted," or words of like effect are used, it shall be understood that the direction, requirement, or permission of Metro is intended.

1.2.6.2 The words "sufficient," "necessary," "proper," and the like shall mean sufficient, necessary, or proper in the judgment of Metro.

1.2.6.3 The words "approved," "acceptable," "satisfactory," or words of like import, shall mean approved by, or acceptable to, or satisfactory to Metro.

1.2.7 Discrepancies, Errors and Omissions. The intent of the Contract Documents is to require Contractor to perform and provide every detail and item necessary for completion of the Project. The Contract Documents are not complete in every detail, however, and Contractor shall comply with their intent and meaning, taken as a whole, and shall not avail itself of any manifest errors or omissions to the detriment of the Work. Should any error, omission, discrepancy, or ambiguity appear in the Contract Documents, instructions, or Work done by others, Contractor shall immediately upon discovery submit a Request for Information to Metro pursuant to Section 3.3. If Contractor proceeds with any such Work without receiving a response to the Request for Information, Contractor shall be responsible for all resulting damage and defects, and shall perform any Work necessary to comply with the Request for Information at no cost to Metro. Any Work or material not indicated in the Contract Documents that is manifestly necessary for full and faithful performance of the Work in accordance with the intent of the Contract Documents shall be indicated by Contractor on the shop drawings and provided by Contractor to the same extent as if both indicated and specified. Any Work indicated on the drawings but not specified, or vice versa, shall be furnished in the manner specified above as though fully set forth in both. Work not particularly detailed, marked, or specified shall be the same as similar parts that are detailed, marked, or specified. In case of discrepancy or ambiguity in quantity or quality, the greater quantity or better quality as determined by Metro shall be provided at no extra cost to Metro.

1.2.8 Standards that Apply Where Detailed Specifications Are Not Furnished. Wherever in these Contract Documents or in any directions given by Metro pursuant to or supplementing these Contract Documents, it is provided that Contractor shall furnish materials or manufactured articles or shall do work for which no detailed Specifications are set forth, the materials or manufactured articles shall conform to the usual standards for first-class materials or articles of the kind required, with due consideration of the use to which they are to be put. Work for which no detailed drawings or Specifications are set forth herein shall conform to the usual standards for first-class work of

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the kind required. Dimensions not expressly provided in the Contract Documents are to be computed, rather than determined by scale or rule.

**1.3 Supply of Contract Documents.** Metro shall supply Contractor, without charge, a maximum of ten (10) sets of Contract Documents. Contractor shall contact Metro for additional sets of documents for which Contractor shall be charged the cost of printing.

**1.4 Use of Contract Documents.** The Contract Documents were prepared for use in the construction of this Project only. No part of the Contract Documents shall be used for any other construction or for any other purpose except with the written consent of Metro. Any unauthorized use of the Contract Documents is at the sole responsibility of the user and such unauthorized use shall be deemed an activity in the performance of the Contract for purposes of Contractor's duty to indemnify under Article 11.

**1.5 Copyright.** All submittals, record documents, and any other products or documents produced by Contractor pursuant to this Contract are the property of Metro and it is agreed by the Parties hereto that such documents are works made for hire. Contractor does hereby convey, transfer, and grant to Metro all rights of reproduction and the copyright to all such documents.

**1.6 Contractor's Status as Independent Contractor.** It is understood and agreed that the relationship of Contractor to Owner shall be that of an independent contractor under ORS 670.600. The Contractor further agrees that Contractor, its officers, agents, and employees, any Subcontractor or Supplier of Contractor of any tier, or its officers, agents, or employees, are not officers, employees, or agents of Metro under the Oregon Tort Claims Act (ORS 30.260 through 30.300). Contractor and its officers, agents, employees, and its Subcontractors and Suppliers of any tier and their officers, agents, and employees will make no claim whatsoever against Metro for indemnification pursuant to ORS 30.260 to 30.300. Contractor agrees to hold Metro harmless and indemnify Metro from any such claims.

**1.7 No Third-Party Beneficiary to the Contract.** The Parties agree that the execution of the Contract is not intended to, nor does it, create any third-party beneficiary rights in any person.

**1.8 Severability Clause.** Should any provision of this Contract at any time be in conflict with any law, regulation, or ruling, or be legally unenforceable for any reason, then such provision shall continue in effect only to the extent that it remains valid. In the event that any provision of this Contract shall become legally unenforceable, in whole or in part, the remaining provisions of this Contract shall nevertheless remain in full force and effect.

**1.9 Notice or Service.** Any written notice required or allowed under the Contract shall be deemed to have been communicated to the other Party and service thereof shall be deemed to have been made if such notice is delivered in person to the individual, a member of the partnership or joint venture, or an officer of the corporation for whom it was intended, or if delivered at or sent by regular, registered, or certified mail to the last business address of the relevant person or Party known to the person or Party giving the notice, or to Contractor's Site office if the notice is directed to Contractor. Notice may be delivered by e-mail as long as a hard copy is mailed the same day to the relevant person by the methods noted above. The date or time of service for purposes of all notices required or allowed under the Contract shall be the date and/or time upon which the relevant document was mailed or delivered as above described. The address given in the Bid or Proposal by the Contractor is hereby designated as the legal business address of Contractor, but such address may be changed at any time by ten (10) days' prior notice in writing, delivered to Metro.

## ARTICLE 2 CONTRACTOR

### 2.1 Responsibilities of the Contractor.

2.1.1 The Contractor will perform the Work as required by the Contract Documents, including but not limited to providing all labor, materials, equipment, tools, machines, and incidental work necessary for its performance. The Contractor will supervise and direct the Work using the Contractor's best skill and attention. Contractor is solely responsible for and will have control of all of the means and methods of construction. Contractor shall be responsible to Metro for the acts and omissions of the Contractor's employees, Subcontractors, and their agents and employees, and other persons or entities performing portions of the Work for or on behalf of the Contractor or any of its Subcontractors. Contractor shall perform or cause to be performed all labor, services, and Work of whatever nature and shall provide or cause to be provided all materials, equipment, tools, and other facilities of whatever nature necessary to complete the Work and shall otherwise cause the Work to be completed in accordance with the Contract Documents.

2.1.2 Until the Work is completed and accepted by Metro, the Contractor is responsible for any damage it causes to either permanent or temporary work, utilities, materials, plants, and equipment, all of which must be repaired to the satisfaction of the Project Manager at the Contractor's expense. Damage caused by vandals must

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be covered by the Contractor's insurance. Damage to any portion of the Work that has been completed and accepted by Metro and that is open for public use is not the responsibility of the Contractor if caused by third persons, such as vandals.

2.1.3 It shall be the duty of Contractor to comply with all procedures established and/or implemented by Metro. In the event any such procedures are at variance with other provisions of these Documents, such procedures shall prevail.

## 2.2 Documents.

2.2.1 The Contractor will maintain at the Site for Metro one record As-Built copy of the drawings, plans, Specifications, Addenda, Change Orders, and other modifications, in good order and marked currently to record changes and selections made during construction, as well as one record copy of shop drawings that have been reviewed and are being used. These as-built documents shall incorporate all changes and substitutions to the Work, including without limitation changes or substitutions arising from Change Orders, construction change directives, and details clarified by requests for information, supplemental instructions, or approved shop drawings. The Contractor's as-built documentation shall be available to the Architect or Engineer and Metro during the course of the Project.

2.2.2 The Contractor shall maintain all approved permit drawings in a manner that will make them accessible at the Project Site to governmental inspectors and other authorized agencies. All approved drawings shall be wrapped, marked, and delivered to Metro within 60 days of Substantial Completion.

2.2.3 The Contractor must continuously maintain at the Project Site all material safety data sheets, safety records, daily logs, and other Contract documentation necessary to immediately ascertain the safety of the Work and to establish compliance with life safety policies, hazardous materials requirements, and the Contract Documents.

2.2.4 The Contractor, with its Subcontractors, will prepare draft record Contract Documents showing all as-built conditions as required under this Section 2.2 and submit them to Metro for review. Based on Metro's review and comments, if any, and pursuant to Metro's close-out policies and procedures, Contractor will prepare and deliver to Metro within 60 days of Substantial Completion, final, accurate, and complete record Contract Documents, including without limitation record drawings and Specifications showing the exact "as-built" conditions of the Work.

**2.3 Contractor's Authorized Representative.** Prior to commencing any Work under this Contract, the Contractor shall appoint in writing an authorized representative or representatives. Such appointment shall include the name and title of each representative along with the extent to which each representative is authorized to represent, bind, and act for Contractor. The description of extent of representation shall include but not be limited to the maximum dollar value of Change Orders that the individual may authorize, whether the individual may respond to RFPs and for what maximum dollar amount, and whether the individual may submit a claim pursuant to Section 3.4.

**2.4 On-Site Representation Required.** Contractor shall at all times be represented at the Site by one or more of such authorized representatives who, cumulatively, shall have complete authority to represent, bind, and act for Contractor in all matters pertaining to or related to this Contract. In the event that Metro deems it reasonably necessary to take immediate actions at the Site pertaining or relating to this Contract and Contractor has failed to comply with this Section and is consequently not fully represented at the Site at such time, then Contractor shall be deemed to acquiesce in all actions so taken by Metro.

**2.5 Contractor's Office at the Site.** Prior to commencement of Work at the Site, Contractor shall establish a field office at the Site acceptable to the Project Manager. This office shall be located in a job trailer or temporary building. This office shall be the headquarters of Contractor's representatives authorized to receive notices, instructions, drawings, or other communications from the Project Manager on behalf of Metro or the Architect or Engineer, and to act on Change Orders or other actions. Such notices, instructions, drawings, or other communications given to such a representative or delivered to Contractor's Site office in his/her absence shall be deemed to have been given to Contractor.

**2.6 Use of the Site by Contractor.** Contractor shall have complete and exclusive use of the premises for execution of the Work within the boundaries shown on the drawings. The Contractor's use of the premises is limited only by Metro's right to perform Work or to retain other contractors on portions of the Project. All construction activities, storage, staging, and Work shall be confined to the limits of Work, as per the drawings. Under no circumstances shall portions of the Site beyond the limits of Work be disturbed. The Contractor shall appropriately fence and maintain barriers to confine limits of Work to those areas indicated on the drawings. All driveways and entrances to the Site shall remain clear and available to Metro and emergency vehicles at all times. The Contractor shall not use these areas for parking or storage of materials. The Contractor shall schedule delivery of materials to minimize space and time requirements for storage of materials and equipment on Site. The Contractor shall keep roadway pavement clean, free of mud, rocks, debris associated with materials, and vehicles. The Contractor shall coordinate use of the premises under the direction of the Architect or Engineer and Owner. The Contractor shall assume all responsibility for

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the protection and safe keeping of the Site, structures, and products stored on the Site included in this Contract. At no cost to Metro, the Contractor shall move any stored products that interfere with operations of Metro or construction activities. The Contractor shall obtain and pay for the use of additional storage or Work areas needed for operations.

**2.7 Review of Project Conditions.** Prior to execution of the Contract, the Contractor will evaluate the conditions and limitations under which the Work is to be performed, including without limitation (i) the geographical and topographical location, condition, layout, and nature of the Project Site and surrounding areas; (ii) generally prevailing climatic conditions; (iii) anticipated labor supply and costs; (iv) availability and cost of materials, tools, and equipment; (v) ease or difficulty of access to the Project Site by vehicles, equipment and workers; and (v) other similar issues. The Contractor shall be solely responsible for providing a safe place for the performance of the Work. Metro will not be required to make any adjustment to the Contract Time or the Contract Price in connection with any failure by the Contractor to have complied with the requirements of this Section.

**2.8 Construction Staking.** Contractor shall provide all necessary construction staking as to lines and grades shown on the drawings. Contractor shall protect and preserve all control points in their original position or be responsible for providing new control points established from Architect's original control points.

**2.9 Construction Staging Area.** Coordinate use of the Site with Owner prior to utilization of the area. Providing Site security, barriers, and other temporary protection is the responsibility of the Contractor. Limit all construction activities within the Work limits shown on the drawings. All areas disturbed in any way or during construction and not covered by roads, parking, or structures shall be rehabilitated to their pre-construction condition.

**2.10 Key Personnel.** Contractor shall submit, in writing, to Metro a list of the names, addresses, and telephone numbers of its key personnel who are to be contacted in case of emergencies on the job during non-working hours, including Saturdays, Sundays, and holidays, and all other key personnel as may be required.

**2.11 Contractor's Employees and Subcontractors.**

2.11.1 Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them. It is the Contractor's responsibility to hire all personnel for the proper and diligent performance of the Work, and the Contractor shall maintain labor peace for the duration of the Project. In the event of a labor dispute, the Contractor shall not be entitled to any increase in the Contract Sum.

2.11.2 Metro may notify the Contractor that it needs to exclude or remove from the Project Site any or all employees, agents, suppliers, or representatives of the Contractor or its Subcontractors who threaten the safety of others or who are disruptive to the Project or Metro's operations. The Contractor will supply replacement personnel promptly after receiving notice of exclusion or removal. Nothing in this Section requires the Contractor to take any particular employment or contract action with regard to an employee or Subcontractor.

2.11.3 Contractor shall give Metro, at its request at any time, full and correct information as to the number of workers employed in connection with each subdivision of the Work, the classification and rate of pay of each worker, the cost to Contractor of each class of materials, tools, and appliances used by it in the Work, and the amount of each class of materials used in each subdivision of the Work.

**2.12 Contractor to Supply Sufficient Material and Workers.** Contractor shall at all times keep on the premises sufficient material and employ sufficient supervision and workers to prosecute the Work at the rate necessary to substantially complete the Work within the time specified in the Contract and in accordance with the Construction Schedule. Contractor shall coordinate the Work of its Subcontractors so that information required by one will be provided by others involved in time for incorporation in the Work in proper sequence and without delay of any materials, devices, or provisions for future Work.

**2.13 Construction Plant, Equipment, and Methods.**

2.13.1 The construction plant and equipment provided by Contractor, and Contractor's methods and organization for handling the Work, shall be such as will secure a good quality of Work and rate of progress that will ensure the completion of the Work within the time specified, in accordance with the Construction Schedule, and without violating city, local, state, or federal environmental regulations during construction.

2.13.2 Contractor shall give Metro full information in advance as to Contractor's plans for carrying on any part of the Work. If at any time before the commencement or during the progress of the Work, any part of Contractor's plant or equipment, or any of Contractor's methods of executing the Work, appear to Metro to be inadequate to ensure the required quality, environmental protection, or rate of progress of the Work, Metro may order Contractor to increase or improve its facilities or methods, and Contractor shall promptly comply with such orders. Neither compliance with such orders nor failure of Metro to issue such orders shall relieve Contractor from the obligation or liability to secure the quality of Work and the rate of progress required by the Contract. Contractor shall

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be responsible for overload of any part or parts of structures beyond their safe calculated carrying capacities and for release of pollutants into surrounding waters resulting from Contractor's activities on the Site.

2.13.3 Contractor shall provide temporary utilities pursuant to the Specifications and shall be responsible for the safety and adequacy of its plant, equipment, and methods.

## 2.14 Permits.

2.14.1 The Contractor, without additional expense to Metro, is responsible for obtaining and paying for any necessary fees, licenses, and Permits and for complying with any federal, state, and municipal laws, codes, and regulations applicable to the performance of the Work, unless expressly provided otherwise in other portions of the Contract Documents. Notwithstanding this Section, Metro will submit Contract Documents to the City of Portland and pay all plan check fees and building permit fees.

2.14.2 The Contractor understands that preliminary approval of Metro's plans and Specifications by regulatory agencies does not prohibit such agencies from requesting changes in order that the Work complies with the provisions of applicable codes, laws, and regulations. The Contractor agrees that a reasonable number of changes directed by regulatory inspectors is inherent in the nature of construction work and that its Bid includes the costs of making them. The Contractor will bear the expense of complying with the requirements of regulatory inspectors for a reasonable number of changes even if such requirements require different or additional Work than that originally contemplated by the Contract Documents.

**2.15 Contractor's Temporary Structures.** Contractor shall obtain all necessary permits for and shall erect and maintain at its own expense, and remove upon completion of the Work or as ordered by Metro, temporary structures, sheds, barriers, walks, hoisting equipment, scaffolds, etc., as are necessary for the Work pursuant to these Contract Documents. Contractor's temporary structures, equipment, stored materials, stored equipment, etc., shall be located so as not to interfere with the prosecution of the Work. If not so located, they shall be moved by Contractor, as directed by Metro, at no cost to Metro. Contractor's temporary structures, equipment, or materials that obstruct progress of any portion of the Work shall be removed or relocated by Contractor at Contractor's expense.

**2.16 Compliance with Product Manufacturer's Recommendations.** Unless otherwise directed by the Architect or Engineer, the Contractor shall perform all Work in accordance with the product manufacturer's recommendations, Specifications, or directions for best results. No predatory step or installation procedure may be omitted unless specifically authorized by the Contract Documents or at the direction of the Architect or Engineer. Conflicts among manufacturer's directions or the Contract Documents shall be resolved by the Architect or Engineer.

## 2.17 Accounting Records.

2.17.1 The Contractor and Subcontractors shall maintain all fiscal records relating to this Contract in accordance with generally accepted accounting principles. In addition, Consultant and sub-consultants shall maintain any other records necessary to clearly document:

2.17.1.1 The performance of the Contractor, including but not limited to Contractor compliance with Contract plans and Specifications, compliance with fair contracting and employment programs, compliance with Oregon law on the payment of wages and accelerated payment provisions, and compliance with any and all requirements imposed on Contractor or Subcontractor under the terms of the Contract or subcontract;

2.17.1.2 Any claims arising from or relating to the performance of Contractor or Subcontractor under this Contract;

2.17.1.3 Any cost and pricing data relating to the Contract; and

2.17.1.4 Payments made to all suppliers and sub-consultants.

2.17.1.5 The records described in this Section 2.17.1 are the Contract Records.

2.17.2 The Contractor and Subcontractors shall maintain the Contract Records for the longer period of (a) six years from the date of final completion of the Contract to which the Contract Records relate or (b) until the conclusion of any audit, controversy, or litigation arising out of or related to the Contract.

2.17.3 The Contractor and Subcontractors shall make Contract Records available to Metro and its authorized representatives, including but not limited to the staff of any Metro department and the staff of Metro's Auditor, within the boundaries of the Metro region, at reasonable times and places regardless of whether litigation has been filed on any claims. If the Contract Records are not made available within the boundaries of Metro, the Contractor or Subcontractor agrees to bear all of the costs for Metro employees, and any necessary consultants hired by Metro, including but not limited to the costs of travel, per diem sums, salary, and any other expenses that Metro incurs in sending its employees or consultants to examine, audit, inspect, and copy those records. If Contractor elects to have such Contract Records outside these boundaries, the costs paid by Contractor to Metro for inspection, auditing, examining, and copying those records shall not be recoverable costs in any legal proceeding.

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2.17.4 The Contractor and Subcontractors authorize and permit Metro and its authorized representatives, including but not limited to the staff of any Metro department and the staff of Metro Auditor, to inspect, examine, copy, and audit the books and records of Contractor or Subcontractor relating to this Contract, including tax returns, financial statements, other financial documents, and any documents that may be placed in escrow according to any Contract requirements. Metro shall keep any such documents confidential to the extent permitted by Oregon law.

2.17.5 The Contractor and Subcontractors agree to disclose the Contract Records requested by Metro and agree to the admission of such records as evidence in any proceeding between Metro and Contractor and Subcontractors, including but not limited to a court proceeding, arbitration, mediation, or other alternative dispute resolution process.

2.17.6 The Contractor and Subcontractors agree that in the event such Contract Records or any audit disclose that Metro is owed any sum of money or establish that any portion of any claim made against Metro is not warranted, Contractor and Subcontractors shall pay all costs incurred by Metro in conducting the audit and inspection. Such costs may be withheld from any sum that is due or that becomes due from Metro.

2.17.7 Failure of the Contractor or Subcontractors to keep or disclose Contract Records as required by this Contract or any solicitation document may result in debarment as a bidder or proposer for future Metro contracts as provided in ORS 279B.130 and Metro Code Section 2.04.070(c), or may result in a finding that the Contractor or Subcontractor is not a responsible bidder or proposer as provided in ORS 279B.110 and Metro Code Section 2.04.052.

## ARTICLE 3 ADMINISTRATION OF THE CONTRACT

**3.1 Authority and Relationships of Metro and Architect or Engineer.** Except as specifically provided in this Section, no individual other than the Metro Chief Operating Officer or the Project Manager, duly appointed as set forth below, shall have any authority to make representations, statements, or decisions of whatever nature binding Metro or Architect or Engineer regarding any aspect of this Contract. Except as specifically provided in this Article, Contractor shall have no right to, and shall not rely on, any such representation, statement, or decision. Any reference to action by Metro in this Contract requires the written approval of the Metro Chief Operating Officer or the Project Manager designated in writing by the Metro Chief Operating Officer as having authority to act for Metro, but only to the extent that such authority is expressly delegated in writing.

**3.2 Authority of Metro.** The Work must be performed to the complete satisfaction of the Project Manager.

3.2.1 The decision of the Project Manager will be final, binding, and conclusive on the Contractor on all questions that arise regarding the quantity of materials and Work, the quality of materials and Work, the acceptability of materials furnished and Work performed, the acceptable rate of progress of the Work, the interpretation of the plans and Specifications, the measurement of all quantities, the acceptable fulfillment of the Contract on the part of the Contractor, and payments under the Contract.

3.2.2 Work will not be considered completed until it has passed final inspection by the Project Manager and is accepted by Metro. The authority of the Project Manager is such that the Contractor must at all times carry out and fulfill the instructions and directions of the Project Manager insofar as they concern the Work to be done under the Contract.

3.2.3 If the Contractor fails to comply with any reasonable order made under the provisions of this Section, the Project Manager may cause unacceptable Work to be remedied or removed and replaced, and unauthorized Work to be removed, and to deduct the costs thereof from any money due or to become due to the Contractor.

3.2.4 The Project Manager has the authority to suspend Work for cause as set forth in Section 3.5.

3.2.5 Metro may call for meetings of Contractor, Contractor's Subcontractors, and Suppliers as Metro deems necessary for the proper supervision and inspection of the Work. Such meetings shall be held at the Site on regular working days during regular working hours, unless otherwise directed by Metro. Attendance shall be mandatory for all Parties notified to attend.

3.2.6 Nothing in this Section or elsewhere in the Contract is to be construed as requiring the Project Manager to direct or advise the Contractor on the method or manner of performing any Work under the Contract. No approval or advice as to the method or manner of performing or producing any materials to be furnished constitutes a representation or warranty by Metro that the result of such method or manner will conform to the Contract, relieve the

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Contractor of any of the risks or obligations under the Contract, or create any liability to Metro because of such approval or advice.

3.2.7 An Architect, Engineer, designer, or other person hired by Metro under a separate contract is not the Project Manager, unless the Contract Documents expressly state otherwise. The Contractor will be notified in writing if the Project Manager is to be changed.

3.2.8 Contractor has no right to and shall not rely on representations of whatever nature made by any individual, whether or not employed by or purporting to represent Metro, unless such individual has been specifically and expressly delegated authority to make such representations pursuant to these Contract Documents. Likewise, Contractor has no right to and shall not rely on any representations of authorized changes in the Contract of whatever size or nature unless such change is in writing and signed by Metro.

3.2.9 Nothing contained in this Section shall obligate Metro or Architect or Engineer to supervise Contractor's Work under this Contract, and Contractor shall remain fully responsible for the complete and proper supervision of all of the Work.

**3.3 Request for Information.** If the Contractor believes that the Work to be done or any of the matters relative to the Contract Documents are not sufficiently detailed or explained in the Contract Documents, or if the Contractor has any questions as to the meaning or intent of the Contract Documents, Contractor shall immediately submit to Architect or Engineer and Metro a written Request for Information ("RFI") that shall fully describe the information sought.

3.3.1 The RFI shall be directed to the Project Manager and Architect or Engineer. Subcontractors shall direct correspondence through the Contractor to the Project Manager and Architect or Engineer. At a minimum the RFI shall contain: (1) project title, (2) identify the nature and location of each clarification/verification, (3) date, (4) response by and RFI number, (5) subject, (6) initiator of the question, (7) indication of the costs, (8) Contract drawings reference, (9) Contract Specification section, and (10) descriptive text and space for a reply. Each RFI shall be numbered sequentially beginning with #001, and a separate RFI shall be submitted for each item. Verbal discussions/clarifications for minor items can be addressed with the Architect or Engineer by phone and the Contractor shall follow up with a confirming RFI.

3.3.2 It is Contractor's responsibility to request information under this Section in sufficient time for review by the Architect or Engineer and Metro so that the orderly progress and prosecution of the Work is not delayed.

3.3.3 The Architect or Engineer, in consultation with Metro, shall interpret the meaning and intent of the Contract Documents and shall issue, within five (5) working days of receiving an RFI from Contractor, a written Clarification describing such meaning and intent. Additionally, the Architect or Engineer, after consulting with Metro, may at any time issue a written RFI as deemed necessary to carry out the Work included in the Contract Documents. Notwithstanding any dispute or disagreement that Contractor may have concerning any such RFI, Contractor shall perform the Work as prescribed and in accordance with all such RFI.

3.3.4 If notified by Metro or the Architect or Engineer that an RFI is forthcoming, any related Work done before the receipt of the RFI shall be coordinated with Metro so as to minimize the effect of the RFI on Work in progress. Any related Work not coordinated with Metro or the Architect or Engineer done before receipt of the RFI shall be at Contractor's risk and at no cost to Metro if that Work does not conform to the Clarification.

3.3.5 If Contractor proceeds with Work that is not sufficiently detailed or explained in the Contract Documents without requesting and obtaining an RFI pursuant to this Section, Contractor shall do so at its own risk and shall, at no cost to Metro, perform any additional Work that may be required by Metro to bring the Work into conformance with the intent of the Contract Documents.

### 3.4 Contractor's Claims.

3.4.1 **Generally.** No claim by Contractor shall be considered or allowed under this Contract except as specifically provided and prescribed under this Section. Failure to make a claim as specifically prescribed by this Section or failure to perform disputed Work, if any, as directed by Metro shall bar Contractor from any recovery or extension of time resulting from the facts surrounding the claim. Contractor's full and complete compliance with this Section shall be a condition precedent to any right of Contractor to further prosecute any claim against Metro arising out of or related to Work described in the Contract Documents. Every decision and action of Metro shall be considered final unless Contractor makes a claim concerning such decision or action pursuant to this Section.

3.4.2 **Types of Claims.** Contractor claims are limited to the following:

3.4.2.1 Claims based on Excusable Delays as described in Section 3.4.3.

3.4.2.2 Claims based on differing Site conditions as described in Section 3.4.4;

3.4.2.3 Claims based on Clarifications or Change Orders issued by Metro or any other

decision, action, or failure to act by Metro as described in Section 3.4.5.

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## 3.4.3 Claims For Excusable Delays.

3.4.3.1 Definition of Excusable Delay. A Delay is "Excusable" if such act, event, or condition has a materially adverse effect on the ability of Contractor to perform its obligations under this Contract as scheduled, and/or materially increases the cost to Contractor to perform such obligations as scheduled and if such act, event, or condition and its effect:

3.4.3.1.1 Are beyond the reasonable control of Contractor (or any third party for whom Contractor is directly responsible); and

3.4.3.1.2 Do not arise out of (a) strikes, labor disputes, or other labor difficulties involving Contractor or its Subcontractors or Suppliers or entities providing transportation to Contractor or its Subcontractors or Suppliers; (b) labor shortages; or (c) changing economic conditions; and

3.4.3.1.3 Could not have been reasonably anticipated by Contractor.

3.4.3.2 Types of Excusable Delay Claims. Excusable Delays are either Compensable or Non-compensable. Claims for Non-compensable Excusable Delays are limited to claims for extension of Contract Time. Contractor may claim both an increase in the Contract Amount and an extension of the Contract Time for Compensable Excusable Delays.

3.4.3.3 Non-Compensable Excusable Delay Claims. Delays resulting from the following acts, events, and conditions are Non-Compensable Excusable Delays:

3.4.3.3.1 An act of force majeure.

3.4.3.3.2 Unusually Persistent Severe Weather. No claim for extension of the Contract Time will be considered for Unusually Persistent Severe Weather unless Contractor submits documentation within 72 hours of the occurrence of the Unusually Persistent Severe Weather satisfactory to Metro establishing that the weather at the Project Site satisfied the definition of Unusually Persistent Severe Weather and that the delay could not have been avoided by either rescheduling the Work or implementing reasonable measures to protect against the weather so that the Work could proceed.

3.4.3.3.3 Acts of a public enemy, war (whether or not declared), or governmental intervention resulting therefrom, blockage, embargo, insurrection, riot, or civil disturbance.

3.4.3.3.4 The failure to issue or renew, or the suspension, termination, interruption, or denial of, any permit, license, consent, authorization, or approval essential to the Work, if such act or event is not the result of the willful or negligent action or inaction of Contractor or of any third party for whom Contractor is directly responsible, and if Contractor is taking, has taken, or will cause to be taken, all reasonable actions in good faith to contest such action (it being understood that the contesting in good faith of any such action shall not constitute or be construed as a willful or negligent act of Contractor).

3.4.3.3.5 The failure of any appropriate federal, state, municipal, county, or other public agency or authority or private utility having operational jurisdiction over the Work or Site to provide and maintain utilities, services, water and sewer lines, and power transmission lines to the Site, that are required for and essential to the Work.

3.4.3.3.6 Epidemics or quarantines.

3.4.3.3.7 Material, equipment, or fuel shortages or freight embargoes.

3.4.3.3.8 Priorities or privileges established for the manufacture, assembly, or allotment of material by order, decree, or otherwise of the U. S. or by any department, bureau, commission, committee, agent, or administrator of any legally constituted public authority.

3.4.3.4 Compensable Excusable Delay Claims. Delays resulting from the following acts, events, and conditions are Compensable Excusable Delays:

3.4.3.4.1 Changes in the Work ordered by Metro if they require additional time to complete the Work and adversely impact the Critical Path.

3.4.3.4.2 The prevention by Metro of Contractor from commencing or prosecuting the Work.

3.4.3.4.3 Failure by the Architect or Engineer to respond to a Request for Information within five (5) working days of submittal by the Contractor.

3.4.3.5 Inexcusable Delays. Delays resulting from the following acts, events, and conditions shall not result in Excusable Delays:

3.4.3.5.1 Any delay that could have been avoided by the exercise of care, prudence, foresight, and diligence on the part of Contractor.

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3.4.3.5.2 Any delay in the prosecution of parts of the Work that may in itself be unavoidable but that does not necessarily prevent or delay the prosecution of other parts of the Work nor the Substantial Completion of the Work of this Contract within the time specified.

3.4.3.5.3 Any reasonable delay resulting from the time required by Metro for review of submittals or shop drawings submitted by Contractor and for the making of surveys, measurements, and inspections.

3.4.3.5.4 Any delay arising from an interruption in the prosecution of the Work on account of the reasonable interference from Other Metro Contractors that does not necessarily prevent the Substantial Completion of the Work of this Contract within the time specified.

3.4.3.5.5 Any delay resulting in any manner from labor disputes, strikes, or difficulties or any delay resulting in any manner from any labor-related event, act, or condition whether or not Contractor has any control over such event, act, or condition.

3.4.3.5.6 Any delays in delivery of equipment or material purchased by Contractor or its Subcontractors or Suppliers (including Metro-selected equipment. Contractor shall be fully responsible for the timely ordering, scheduling, expediting, delivery, and installation of all equipment and materials.

#### 3.4.3.6 Excusable Delay Claims Procedure.

3.4.3.6.1 Contractor shall, within forty-eight (48) hours of the start of the occurrence or Contractor's first knowledge of the occurrence that is the basis of the claim for Excusable Delay, whichever is earlier, notify Metro in writing of such delay. The written notice by Contractor shall indicate the cause of the delay and shall estimate the possible time extension requested. Within ten (10) days after the cause of the delay has been remedied, Contractor shall give written notice to the Project Manager of any actual time extension and, if the Excusable Delay is a Compensable Excusable Delay, any increase in the Contract Amount requested as a result of the aforementioned occurrence in accordance with this Contract. If Contractor believes that a single circumstance or set of facts gives rise to both a claim for an extension to the Contract Time and an increase in the Contract Amount, Contractor must state both such allegations in one written claim or waive the unstated allegation.

3.4.3.6.2 Submission of timely written notice as specified above shall be mandatory and failure to comply shall be a conclusive waiver to any claim for Excusable Delay by Contractor. Oral notice or statement will not be sufficient.

3.4.3.6.3 Within twenty-one (21) days after Contractor submits to the Project Manager such a written notice for an extension of Contract Time and/or increase in the Contract Amount, the Project Manager will issue the decision on each request. If Contractor is dissatisfied with such decision, Contractor may preserve its claim as provided and prescribed by Section 3.4.6.

3.4.4 Claims for Differing Site Conditions-- Contractor shall promptly, and before the conditions are disturbed, give written notice to the Project Manager of (i) subsurface or latent physical conditions at the Site that differ materially from those indicated in this Contract, or (ii) physical conditions at the Site that were unknown and not reasonably discoverable by means of the Review of Project Conditions required by Section 2.7, are of an unusual nature that differ materially from those ordinarily encountered and generally recognized as inherent in Work of the character provided for in the Contract. The Project Manager shall investigate the Site conditions promptly after receiving the notice. If the conditions do materially so differ as to cause an increase or decrease in Contractor's cost of, or the time required for, performing any part of the Work under this Contract, whether or not changed as a result of the conditions, an equitable adjustment shall be made and a Change Order issued. If Contractor is dissatisfied with the decision of the Project Manager under this Section, Contractor may preserve its claim as provided and prescribed by Section 3.4.6.

3.4.5 Other Contractor Claims-- Contractor claims based on Clarifications or Change Orders issued by Metro or any other decision, action, or failure to act by Metro shall be made according to this Section.

3.4.5.1 Contractor shall, within forty-eight (48) hours following discovery of the facts that give rise to its claim, notify the Project Manager in writing of its intent to make the claim. Within ten (10) days following discovery of the facts that give rise to its claim and prior to commencing the Work or conforming to the Clarification on which the claim is based, if any, Contractor shall submit its formal written claim to the Project Manager. Contractor's formal claim shall include a description of:

3.4.5.1.1 The factual occurrences upon which Contractor bases the claim including the decision, action, or failure to act by Metro or its authorized representatives that allegedly give rise to the claim;

3.4.5.1.2 How Metro's decision, action, or failure to act has affected Contractor's performance or otherwise affected Contractor;

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3.4.5.1.3 Whether the claim is for an extension in the Contract Time or increase in the Contract Amount, or both, and the specific extension or increase requested;

3.4.5.1.4 The provisions of the Contract upon which the claim is based.

3.4.5.2 Submission of written notice of intent to make a formal claim as specified above shall be mandatory and failure to comply shall be a conclusive waiver to any claim by Contractor. Oral notice or statement will not be sufficient nor will notice or statement after commencing the Work in question.

3.4.5.3 After the written notification is submitted by Contractor (if the claim is not resolved or withdrawn in writing) and only upon written direction by the Project Manager, Contractor shall proceed without delay to perform the Work pursuant to the direction of the Project Manager. While the Work on an unresolved claim is being performed, Contractor shall keep track of costs and maintain records in the manner set forth in the section on Force Account Work, at no cost to Metro. Such notice by Contractor and the fact that Contractor is keeping track of costs and maintaining records shall not in any way be construed as proving the validity of the claim nor the costs thereof.

3.4.5.4 Provided the claim or claims have been submitted in accordance with the requirements of this Section, the Project Manager will consider and investigate the claim or claims of Contractor. Within twenty-one (21) days of receipt of the above-described written notification of claim, the Project Manager will advise Contractor of the Project Manager's decision to accept or reject the claim or claims, in full or in part. If Contractor is dissatisfied with the decision of the Project Manager under this Section, Contractor may preserve its claim as provided and prescribed by Section 3.4.6.

3.4.6 Preservation of Claims -- Within thirty (30) days after a rejection of a claim, in whole or in part, by Metro under Sections 3.4.3, 3.4.4 or 3.4.5, Contractor may preserve its claim by submitting a fully documented claim package to the Metro Procurement Officer. That package shall include substantiating documentation with an itemized breakdown of Contractor and Contractor's Subcontractors' costs on a daily basis that shall include but not be limited to labor, material, equipment, supplies, services, Overhead, and Profit. All documentation that Contractor believes is relevant to the claim shall be provided in the claim package, including without limitation payroll records, purchase orders, quotations, invoices, estimates, correspondence, profit and loss statements, daily logs, ledgers, and journals. Failure to submit the claim package in full compliance with this requirement and/or maintain cost records as herein required will constitute a waiver of the claim. If Contractor elects to pursue any claims by filing a lawsuit against Metro, it must commence such lawsuit within six (6) months after the date of Substantial Completion. Failure to commence a lawsuit within this time limitation shall constitute a waiver of all such claims by Contractor.

### 3.5 Metro's Right to Stop, Perform, or Delete Work.

3.5.1 If the Contractor fails to correct Work not in conformance with the Contract or fails to carry out Work in accordance with the Contract, Metro may issue a written order to the Contractor to stop all or part of the Work until the deficiency set forth in the order has been corrected. Metro has no duty to exercise this right for the benefit of anyone other than Metro.

3.5.2 If the Contractor refuses or fails to comply with the Contract, Metro may correct any deficiency or defect or perform Work that the Contractor has failed to perform, or take other appropriate action, without prejudice to any other remedy Metro may have under the Contract. Before taking that action, Metro will provide the Contractor and its sureties with seven days' written notice of its intentions, unless an emergency or dangerous condition exists, in which case the action may be taken without notice. If Metro performs part of the Contractor's Work, corrects deficiencies, or is required to take action as a result of an emergency or dangerous condition, Metro will deduct the cost of that action from any payment then or thereafter due the Contractor. If the cost of Metro's action exceeds any sums held by Metro and otherwise payable to the Contractor, the Contractor agrees to reimburse Metro for any excess costs.

3.5.3 Metro has the right to delete Work from this Contract, and the Parties agree that such action does not constitute a breach of contract. Therefore, Metro may delete Work from the Contract and perform it with its own forces or have such Work performed by another Contractor. If Work is deleted from the Contract, the cost of performing such Work will be deducted from the Contract Amount to be paid to the Contractor. Any objection to the change in Contract Amount must be processed as a claim as required by Section 3.4.5.

3.5.4 Metro's rights as stated in this Section 3.5 are in addition to and do not limit Metro's other rights or remedies.

### 3.6 Metro's Right to Adjust Payments.

3.6.1 Adjusted Payments for Delay. Time is of the essence in this Contract. Metro and Contractor understand and agree that Metro will be damaged if Contractor fails to substantially complete the Work within the Contract Time, and that Metro will be vulnerable to further damages if Metro is obligated to continue paying Contractor for Work performed after the Contract Time has expired. It is therefore agreed that upon the expiration of the Contract

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Time, Metro may adjust its payments to Contractor by any combination of the following: (1) making no further payments to Contractor until the Work is substantially complete; (2) paying the Subcontractor costs incurred by Contractor without any overhead, profit, or fee of any kind going to Contractor; and/or (3) collection of liquidated damages as designated in the Contract. Permitting Contractor to continue and finish the Work or any part thereof after the Contract Time has expired shall not waive any of Metro's rights under this Section or the balance of the Contract Documents.

**3.6.2 Adjusted Payments Not a Bar to Metro's Right to Other Damages.** Payment of adjusted payments shall not release Contractor from obligations in respect to the complete performance of the Work, nor shall the payment of such adjusted payments constitute a waiver of Metro's right to collect any additional adjusted payments that it may sustain by failure of Contractor to fully perform the Work, it being the intent of the Parties that the aforesaid adjusted payments be full and complete payment only for failure of Contractor to complete the Work on time. Metro expressly reserves the right to make claims for any and all other damages that Metro may incur due to Contractor's failure to perform in strict accordance with this Contract.

**3.7 Mediation.** Both Parties shall endeavor to negotiate resolutions to all disputes arising out of this Contract. Any controversy or claim arising out of or relating to this Contract that remains unresolved after such negotiations shall be submitted to mediation prior to the commencement of litigation.

**3.7.1** The mediator shall be an individual mutually acceptable to both Parties. Should the Parties disagree on the selection of a mediator, the Parties shall look to the local circuit court or the Oregon Dispute Resolution Commission. Each Party shall pay its own costs for the time and effort involved in mediation. The cost of the mediator shall be split equally between the two Parties.

**3.7.2** Both Parties agree to exercise their best effort in good faith to resolve all disputes in mediation. Participation in mediation is a mandatory requirement on both Metro and Contractor. The schedule and time allowed for mediation shall be mutually acceptable. The mediation process is nonbinding.

**3.7.3** Contractor agrees to consolidation of any mediation between Metro and Contractor with any other mediation involving, arising from, or relating to this Contract.

**3.8 Litigation.** All disputes not resolved by mediation shall be decided exclusively by a court of competent jurisdiction in Multnomah County under the laws of the state of Oregon.

**3.9 Work to Continue Notwithstanding Dispute.** In no event shall submission of a dispute arising out of this Contract by either Party relieve Contractor of its obligation to fully perform the requirements of the Contract as directed by Metro pending resolution of the dispute pursuant to the procedures set forth in this Article. In the event Contractor, in Metro's opinion, fails to fully perform the requirements of the Contract pending resolution of a dispute, Metro shall be entitled to exercise its rights to impose adjusted payments pursuant to Section 3.6, and/or terminate the Contract pursuant to Article 15 of these General Conditions.

## ARTICLE 4

### SUBCONTRACTING AND ASSIGNMENT OF THE CONTRACT

**4.1 Subcontracting.** Contractor shall arrange and delegate its Work in conformance with trade practices and union regulations, if applicable, but shall remain responsible to Metro for performance of all Work required or implied by the Contract Documents. Contractor shall also be responsible for coordinating the efforts of its Subcontractors and Suppliers.

**4.2 Objection to Subcontractors or Suppliers.** Metro reserves the right to make reasonable objection to any of Contractor's Subcontractors or Suppliers if Metro discovers any data or information at any time during the performance of the Contract that gives Metro a basis for such reasonable objection. Metro will notify Contractor in writing if Metro has any reasonable objection to any of Contractor's Subcontractors or Suppliers. Contractor shall not subcontract with any Subcontractor or Supplier to which Metro has made a reasonable objection. In the event of Metro's reasonable objection to any Subcontractor or Supplier, Contractor shall propose another entity to which Metro has no reasonable objection.

**4.3 Substitution, Change, or Addition of Subcontractors or Suppliers.** At any time that Contractor intends to substitute, change, or add a Subcontractor or Supplier during the performance of the Contract, Contractor shall give Metro prior written notice of such intention. Contractor shall not substitute, change, or add any such Subcontractor or Supplier if Metro gives Contractor reasonable objection in writing within ten (10) days after Metro receives such notice.

**4.4 Removal of Subcontractors at Request of Metro.** When any Subcontractor fails to prosecute a portion of the Work in a satisfactory manner, Metro may so notify Contractor. If the Subcontractor fails to cure the unsatisfactory Work promptly, Contractor shall remove such Subcontractor immediately upon written request of Metro

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and Contractor shall request approval from Metro of a new Subcontractor to perform this section of the Work at no increase in the Contract Amount, and with no change in the Contract Time.

**4.5 Metro Not Obligated to Detect Unsatisfactory Work.** Nothing contained in this Contract shall obligate Metro or place on Metro an affirmative duty to detect or discover unsatisfactory Work or materials of Contractor's Subcontractors or Suppliers. Failure of Metro to detect or discover such unsatisfactory Work or materials shall not relieve Contractor of any of its obligations under this Contract.

**4.6 No Contractual Relationships Between Metro and Contractor's Subcontractors and Suppliers.** Nothing contained in this Contract is intended nor shall be construed to create any contractual or third party beneficiary relationship between Metro and any of Contractor's Subcontractors, Suppliers, or agents, save and except in relation to the Labor and Materials Payment Bond.

**4.7 Contractor's Agreements with Subcontractors.**

4.7.1 Contractor shall provide in all subcontract and supply agreements that the Subcontractor or Supplier will be bound by the terms and conditions of this Contract to the extent that they relate to the Subcontractor's or Supplier's Work. Contractor shall require each Subcontractor to enter into similar agreements with sub-tier Subcontractors and Suppliers. Contractor shall make available to each proposed Subcontractor and Supplier, prior to the execution of the subcontract or supply agreement, copies of the Contract Documents that apply to the Work and materials to be provided by the Subcontractor or Supplier. Subcontractors and Suppliers shall similarly make copies of applicable portions of such documents available to their respective proposed sub-tier Subcontractors and Suppliers.

4.7.2 All Subcontractor and Supplier agreements shall also provide that they are assignable to Metro at Metro's option, in the event that Metro terminates the Contract. Contractor will provide to Metro a copy of all subcontracts and supply contracts for permanent materials.

4.7.3 The Contractor will provide Metro with copies of all of its subcontracts, purchase orders, and supply agreements relating to the Work upon Metro's request within three (3) business days of the request.

**4.8 Assignment.** Contractor shall constantly give its personal attention to the faithful prosecution of the Work. Contractor shall keep the Work under its personal control and shall not assign any or all of Contractor's rights, by power of attorney or otherwise, nor delegate any of its duties except with the prior written approval of the Metro Council.

## ARTICLE 5

### TIME OF COMPLETION AND SCHEDULE FOR THE WORK

**5.1 Prosecution of Work Generally.** Contractor shall commence the Work within five (5) days after issuance of written Notice to Proceed from Metro and will diligently prosecute the Work to its Final Completion and Acceptance. The start of Work shall include attendance at preconstruction conferences, preparation and submittal of shop drawings, equipment lists, Schedule of Values, CPM construction schedules, requests for substitutions, and other similar activities, as described by these Contract Documents.

**5.2 Time of Completion.**

5.2.1 Contractor shall bring the Work to Substantial Completion within the Contract Time as set forth in the Construction Agreement.

5.2.2 The time limits stated in these Contract Documents are of the essence of this Contract. By executing the Construction Agreement, Contractor confirms that the Contract Time is a reasonable period for performing all of the Work.

5.2.3 Failure of Contractor to substantially complete the Work within the Contract Time and according to the provisions of these Contract Documents shall subject Contractor to liquidated damages pursuant to the applicable sections of these Contract Documents.

**5.3 Extensions of Time.** Extensions of the Contract Time shall be made pursuant to the procedure and according to the provisions and requirements contained in Articles 3 and 8 of these Contract Documents.

**5.4 Project Scheduling.** Contractor shall submit to Metro a detailed Construction Schedule for completion of the Work pursuant the Specifications following the Critical Path method. The Construction Schedule shall, when approved and as updated and approved by Metro, become a part of the Contract Documents.

**5.5 Use of Completed Parts of the Work Before Acceptance.**

5.5.1 Metro may decide to use part of the Work that has been completed before completion of all the Work required by the Contract. If that occurs, Metro will notify the Contractor in writing of its intention.

5.5.2 When use of part of the Work by Metro begins, the Contractor is:

5.5.2.1 Relieved of the duty of maintaining and protecting that portion of the Work, provided that it has been completed in accordance with the Contract.

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5.5.2.2 Relieved of responsibility for injury or damage to the portion of Work used by Metro from use by public traffic or from the action of the elements of nature or from any other cause, except injury or damage resulting from the Contractor's own operations or from its negligence.

5.5.2.3 Relieved of the responsibility of cleaning up that portion of the Work before final acceptance, unless the Contractor's own operations require such cleanup.

5.5.3 Use by Metro of a part of the Work as described in this Section does not constitute final acceptance of the Work as a whole or in any part.

## ARTICLE 6 COORDINATION WITH OTHER METRO CONTRACTORS

**6.1 Other Metro Contractors Generally.** Metro reserves the right to award other contracts in connection with the Work. Contractor shall allow such Other Metro Contractors reasonable opportunity for storage of their materials and execution of their Work, shall ensure that the execution of Contractor's Work properly connects and coordinates with Work of all Other Metro Contractors, and shall cooperate with Other Metro Contractors to facilitate the Work in such a manner as Metro may direct. Connection between the Work of the Contractor and Other Metro Contractors will be the responsibility of the Party that is last in time to construct, unless otherwise directed in the Contract Documents.

**6.2 Duty to Inspect Other Metro Contractors' Work.** Where Contractor's Work is associated with that of Other Metro Contractors, or is to interface in any way with such Other Metro Contractors' Work, Contractor shall examine, inspect, and measure the adjacent or in-place Work of such Other Metro Contractors. If Contractor determines that any defect or condition of such adjacent or in-place Work will impede or increase the cost of Contractor's performance or otherwise prevent the proper execution of Contractor's Work, Contractor shall immediately, and before performing any Work affected by the Other Metro Contractors' work, submit an RFI to Metro pursuant to Section 3.3. If Contractor proceeds without examining or inspecting the Work and submitting a Request for Information, Contractor shall be held to have accepted the Other Metro Contractors' Work or material and the existing conditions, shall be responsible for any defects in Contractor's Work resulting therefrom, and shall not be relieved of any obligation or any warranty under this Contract because of any such condition or imperfection. This provision shall be included in any and all of Contractor's subcontracts for Work to be performed.

**6.3 Latent Defects in Other Contractor's Work.** Section 6.2 does not apply to latent defects. Contractor shall report latent defects in any Other Metro Contractors' Work at any time such defects become known or Contractor should have known, and Metro shall promptly thereafter take such steps as may be appropriate. If Contractor in the exercise of reasonable care should have known of such defects but did not report them, such defects shall not be considered latent.

**6.4 Duty to Maintain Schedule.** It shall be the responsibility of Contractor to maintain its schedule so as not to delay the progress of the Project or the Work of Other Metro Contractors. Contractor is required to cooperate in every way possible with Other Metro Contractors. Except as otherwise specifically provided in this Contract, no additional compensation will be paid for such cooperation. If Contractor delays the progress of the Project or the progress of Other Metro Contractors, it shall be the responsibility of Contractor to take all of the steps necessary to bring the affected Work into compliance with any affected schedules and to indemnify Metro from all liability for such delays pursuant to Article 11. Metro shall be under no duty to monitor or detect any delays of Contractor or any Other Metro Contractor on the Project or any lack of coordination on the Project. Consequently, the failure of Metro to so monitor or detect shall not be construed as relieving Contractor of its duties to fully perform all of its obligations under the Contract.

### **6.5 Failure to Maintain Schedule.**

6.5.1 If, in the opinion of Metro, Contractor falls behind the Construction Schedule or delays the progress of Other Metro Contractors and is not entitled to an extension of time pursuant to the Contract Documents, Contractor shall perform all steps that are necessary, in the opinion of Metro, to bring Contractor's Work into compliance with the Construction Schedule or to remedy any delay to the progress of Other Metro Contractors. Contractor shall submit operation plans to Metro that shall fully demonstrate the manner of intended compliance with this Section. The steps referred to above shall include but not be limited to:

6.5.1.1 Increased manpower in such quantities and crafts as will substantially eliminate the backlog of Work.

6.5.1.2 Increase, when permitted, the number of working hours per shift, shifts per working day, working days per week, or the amount of equipment or any combination of the foregoing, sufficient to eliminate the backlog of Work.

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6.5.1.3 Reschedule activities to achieve maximum practical concurrence of accomplishment of activities.

6.5.1.4 Expedite delivery of materials and equipment, such as use of airfreight.

6.5.2 If Metro directs Contractor to take measures described in this Section, or if Contractor takes such measures without direction from Metro, Contractor shall bear all costs of complying. Metro shall, however, reimburse Contractor for reasonable costs of complying if such directive to accelerate from Metro was issued to overcome delay caused by the acts or omissions of Metro or persons acting for Metro, provided Contractor has complied with all applicable provisions of Articles 3 and 8 of these General Conditions.

6.5.3 Failure to maintain the construction schedule or to take action to regain the schedule or to furnish a schedule as outlined in the Specifications may result in withholding all or part of the monthly progress payments.

**6.6 Failure to Coordinate Work.** If Contractor fails to coordinate its Work with the Work of Other Metro Contractors as directed by Metro, Metro may, upon written notice to Contractor:

6.6.1 Withhold any payment otherwise due hereunder until Contractor complies with Metro's directions.

6.6.2 Direct others to perform portions of the affected Work and charge the cost of such Work against the Contract Amount or deduct the cost from sums held in Retainage.

6.6.3 Terminate any or all portions of the Work for Contractor's failure to perform in accordance with the Contract.

**6.7 Other Metro Contractors' Failure to Coordinate.** If Contractor determines that any Other Metro Contractor on this Project is failing to coordinate its Work with the Work of Contractor, Contractor shall notify Metro immediately and before performing any affected Work.

**6.8 Conflicts Among Contractors.** Any difference or conflict that may arise between Contractor and Other Metro Contractors in regard to their Work shall be adjusted as determined by Metro. If directed by Metro, Contractor shall suspend any part of the Work specified or shall carry on the same in such a manner as may be prescribed by Metro when such suspension or prosecution is necessary to facilitate the Work of Other Metro Contractors.

**6.9 Coordination Drawings.** Contractor shall prepare coordination drawings as determined necessary by Metro to satisfactorily coordinate and interface its Work with the Work of all Other Metro Contractors, thereby avoiding conflicts that may arise.

**6.10 Furnished by Owner, Installed by Contractor ("FOIC") Items.**

6.10.1 Owner Responsibilities for FOIC Items. Owner-furnished products/items are indicated on the drawings as FOIC items. Owner's responsibilities include: (1) arrangement for and delivery of necessary shop drawings, product data, and samples to the contractor; (2) arrangement of and payment for Product delivery to the Site; (3) delivery of Suppliers' bill of materials to Contractor; (4) inspection of deliveries jointly with the Contractor and recording shortages of and damaged or defective items; (5) submission of claims for transportation damage; (6) arrangement for replacement of damaged, defective, or missing items; and (7) arrangement for manufacturers' warranties, bonds, service, and inspections as required. Owner is responsible for scheduling all FOIC items in accordance with Contractor's Construction Schedule.

6.10.2 Contractor Responsibilities for FOIC Items. The following outlines the responsibilities of the Contractor for FOIC items: (1) designating a delivery date for each item in the Construction Schedule; (2) reviewing shop drawings, product data, and samples; (3) immediately notifying the Project Manager of any discrepancies or problems anticipated in the use of the product; (4) reviewing and unloading products at the Site; (5) promptly inspecting products jointly with Owner and recording shortages and damaged or defective items; (6) handling products at the Site, including uncrating and storage; (7) protecting products from exposure to elements and damage; (8) assembling, installing, connecting, adjusting, and finishing product as stipulated in the Specifications; and (9) repairing or replacing items damaged by Contractor.

**6.11 Conferences.** At any time during the progress of the Work, Metro shall have authority to require Contractor to attend any conference of any or all of the Contractors engaged in the Project or related projects.

6.11.1 Project Meetings. The Contractor will schedule and chair meetings and conferences at the Project Site unless otherwise indicated. Contractor will inform participants and other individuals whose presence is required of the date and time of each meeting. The Contractor shall prepare an agenda, distribute to all attendees, and prepare minutes that reflect significant discussions and agreements achieved. Meeting minutes shall be distributed to everyone concerned, including Metro, within three (3) days of the meeting.

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6.11.2 Pre-construction Conference. The Contractor will schedule a pre-construction conference prior to start of construction. The meeting will be scheduled at a time convenient to Metro and Architect or Engineer, but no later than five (5) days after execution of the Contract. The conference will be held at the Project Site or another convenient location. The purpose of the meeting is to review responsibilities and personnel assignments. Attendees will include authorized representatives of Metro, Architect or Engineer and its consultants, Contractor and its superintendent, major subcontractors and suppliers, and other concerned parties. All participants shall be familiar with the Project and be authorized to conclude matters relating to the Work. The agenda shall include tentative construction schedule, phasing, critical Work sequencing and long-lead items, designation of key personnel and their duties, procedures for processing field decisions and Change Orders, procedures for RFIs, procedures for testing and inspecting, procedures for processing applications for payment, distribution of Contract Documents, submittal procedures, preparation of record documents, use of premises, Work restrictions, Owner's occupancy requirements, responsibilities for temporary facilities and Site protection, construction waste management and recycling, parking availability, office, Work, and storage areas, equipment deliveries and priorities, first aid, security, progress cleaning, and working hours.

6.11.3 Pre-installation Conferences – Contractor will conduct a pre-installation conference at the Project Site before each construction activity that requires coordination with other construction and includes installation of FOIC items. Contractor is responsible for conducting these meetings, which shall occur on the same date as progress meetings, if possible. Attendees shall include the installers and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination with other materials or installations. Agenda items will include Contract Documents, options, related RFIs, related Change Orders, purchases, deliveries, submittals, review of mock-ups, possible conflicts, compatibility problems, time schedules, weather limitations, manufacturers' written recommendations, warranty requirements, compatibility of materials, acceptability of materials, temporary facilities and controls, space and access limitations, regulations of authorities having jurisdiction, testing and inspecting, installation procedures, coordination with other Work, required performance results, protection of adjacent Work, and protection of the Site and its elements. The Architect or Engineer shall record significant conference discussions, agreements, and disagreements, including corrective action measures and action.

## ARTICLE 7 CONTROL AND QUALITY OF WORK AND MATERIAL

### 7.1 Quality Control.

7.1.1 Generally. Contractor has the primary responsibility for quality control. Contractor will provide continuous superintendence and inspection to insure that the Work is completed in accordance with the plans and Specifications. During the performance of the Work, Metro, the Architect or Engineer, Special Inspectors, and any representatives of federal, state, and local agencies having jurisdiction over the Work may enter the Project Site, the shops where any part of the Work is being prepared, or the factories or sites where any materials for use in the Work are being or will be manufactured or derived. Contractor shall provide proper and safe facilities for such inspections, and shall make arrangements with manufacturers or other suppliers to facilitate inspection of their processes and products to such extent as Metro's interest may require. No claims for extension of the Contract Time or increase in the Contract Amount shall be allowed for any access allowed to Metro under this Section.

7.1.2 Quality Control Plan. Contractor shall prepare and submit a Quality Control Plan to the Project Manager within thirty (30) days following the Notice to Proceed. The Plan will describe the Contractor's procedures for implementing the Quality Control Plan. The Plan shall include without limitation the Quality Control organization, inspection procedures, tests anticipated, materials control, contingency plans related to fire protection and remediation of contaminated releases or other environmental improvement, and reports. Metro reserves the right to accept, reject, or modify the Quality Control Plan. Contractor will submit an interim Quality Control Plan prior to the start of Work to cover the first thirty (30) days of construction.

7.1.3 Quality Control Manager. Prior to initiation of construction, Contractor shall designate in writing a Quality Control Manager who shall be responsible for coordinating Contractor's Quality Control Program. The individual so designated shall be the interface with the Project Manager on matters relating to submittals, inspection, scheduling, unacceptable Work product, and corrective actions. Metro reserves the right to accept or reject the Quality Control Manager designated by Contractor.

7.2 **Inspection**. Contractor has the primary responsibility for providing inspection and testing, except as otherwise set forth in the Specifications. Metro and its agents will also inspect at their discretion or as outlined in the Specifications.

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7.2.1 Generally. At all times during construction of the Work, Contractor shall permit Metro, the Architect or Engineer, and Special Inspectors, or any representatives of federal, state, and local agencies having jurisdiction over the Work, to visit and monitor the progress of the Work for conformance of the Work with the Contract Documents.

7.2.2 Special Inspections.

7.2.2.1 At all times during construction of the Work, Contractor shall permit Metro, the Architect or Engineer, and Special Inspectors, or any representatives of federal, state, and local agencies having jurisdiction over the Work, to visit and inspect the Work, the materials and the manufacture and preparation of such materials, and subject the Work and materials to inspection and testing to determine if the Work conforms to the requirements of the Contract Documents. Contractor shall maintain proper facilities and safe access for all such inspections.

7.2.2.2 The Contractor is responsible for scheduling and coordination of special inspections. Contractor shall be diligent in scheduling special inspections and make every effort to combine special inspections to avoid unnecessary budget impacts.

7.2.2.3 The Contract Documents or regulatory agencies may require that portions of the Work be observed, reviewed, tested, or inspected before they are obscured or covered. Similarly, upon request, the Project Manager is entitled to observe portions of the Work before they are covered or obscured. Contractor shall be solely responsible for notifying Project Manager at least two (2) working days prior to performing such Work so that necessary arrangements for inspection and testing can be made. If the Contractor covers or obscures a portion of the Work that is required or requested to be observed, it will uncover the Work for observation and bear any cost associated with that activity without a change in Contract Time.

7.2.2.4 The Project Manager may request to see a portion of the Work that has been covered regardless of the requirements of the Contract Documents, regulatory agencies, or a prior request. Thereafter the Contractor must comply with Metro's request. If, on inspection by the Project Manager, the portion of the Work that is uncovered is found to be in accordance with the Contract Documents, Metro will bear all costs associated with that activity and provide additional Contract Time if that activity would cause the Contractor to incur liquidated damages. But if, upon inspection by the Project Manager, the portion of the Work that is uncovered is found not to be in accordance with the Contract Documents, the Contractor will correct the Work and bear any cost associated with that activity without a change in Contract Time. Metro retains the right at any time during construction, or at any time during production, fabrication, or preparation of the Work, to test samples to determine whether they meet the requirements of the Contract Documents. Metro may test any sample, regardless of prior certification, and regardless of whether any prior certification was required. Metro may either conduct the test with its own forces or hire other persons to perform this Work.

7.2.2.5 Metro retains the right at any time during construction, or at any time during production, fabrication, or preparation of the Work, to test samples to determine whether they meet the requirements of the Contract Documents. Metro may test any sample, regardless of prior certification, and regardless of whether any prior certification was required. Metro may either conduct the test with its own forces or hire other persons to perform this Work.

7.2.2.6 If a sample is to be tested prior to its incorporation into the Work, the Contractor may not incorporate the material, product, part, or equipment into the Work until testing is completed and Metro gives permission for its use.

7.2.2.7 Metro will bear the costs of testing unless the tests show that the material, product, part, or equipment failed the test and did not conform to the requirements of the Contract, in which case the Contractor will bear the costs of testing.

7.2.2.8 If the sample was previously incorporated into the Work and testing shows that the sample does not meet the requirements of the Contract Documents, the Contractor will pay for the test and for replacing and repairing any equipment, materials, products, or portion of the Work in order to meet the requirements of the Contract Documents.

7.2.3 Notice to Metro for Certain Work Days. Whenever Contractor intends to perform Work on Saturday, Sunday, or any legal holiday, it shall give written notice to Metro of such intention at least two (2) working days prior to performing such Work, or such other period as may be specified by Metro, so that Metro may make the necessary arrangement for testing and inspection.

7.2.4 Correction of Defective Work Before Acceptance. Any defective Work or Work that otherwise fails to conform to the Contract Documents that is discovered before Final Completion and Acceptance of the Work, shall be corrected immediately by Contractor, and any unsatisfactory materials shall be rejected and replaced with

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satisfactory materials, notwithstanding that they may have been overlooked by the authorized inspector. The inspection of the Work by Metro, the Architect or Engineer, or any other agency shall not relieve Contractor of any of its obligations to perform fully all of the terms and provisions of the Contract Documents.

7.2.5 Acceptance Not Implied by Failure to Object. Failure or neglect on the part of Metro or any of its authorized representatives to condemn or reject defective, improper, or inferior Work or materials shall not be construed to imply a final acceptance of such Work or materials and shall not be construed as relieving Contractor of its duties to perform fully all requirements of the Contract Documents.

7.2.6 Replacement and correction of defective Work before the Work is completed and accepted is not limited by any warranty period otherwise established by the Contract.

### 7.3 Unsatisfactory Materials and Workmanship.

7.3.1 Generally. Material, Work, or workmanship that, in the opinion of the Project Manager, does not conform to the Contract Documents, or is not equal to the samples submitted to and approved by the Project Manager, or is in any way unsatisfactory or unsuited to the purpose for which it is intended, will be rejected. Contractor shall bear the cost of correcting or removing, as deemed necessary by Metro, all non-conforming materials, defective Work, or unsatisfactory workmanship. Contractor shall make a close inspection of all materials as delivered, and shall promptly replace all defective materials with conforming materials without waiting for their rejection by Metro.

7.3.2 Removal of Rejected or Non-Conforming Work or Material. All rejected material or Work, and all defective or non-conforming Work or material, shall be removed from the Site without delay. If Contractor fails to do so within forty-eight (48) hours after having been so directed by Metro, the rejected material may be removed by Metro and the cost of removal charged against Contractor and deducted from Retainage held by Metro or offset against payments due Contractor, at Metro's option. If in the judgment of Metro it is undesirable or impracticable to replace any defective or non-conforming Work or materials, the compensation to be paid to Contractor shall be reduced by Change Order or Force Account, as applicable, by such amount as, in the judgment of Metro, shall be equitable.

7.4 **General Warranty of Contractor.** Contractor warrants to Metro that materials and equipment provided under the Contract will be of good quality and new unless otherwise required or permitted by the Contract Documents, that the Work will be free from defects and contaminants not inherent in the quality required or permitted, and that the Work will conform with the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. Contractor's warranty excludes remedy for damage or defect caused by abuse, modifications not executed by Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear under normal usage. If required by Metro, Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. The warranty made by Contractor under this Section shall be in addition to any other specific warranties and certifications required elsewhere in these Contract Documents.

### 7.5 Third-Party Warranties.

7.5.1 The Contractor shall obtain from Subcontractors, manufacturers, and suppliers guarantees and warranties according to the Contract Documents with the optimum terms and longest periods reasonably obtainable. The documentation must also include all maintenance and operational documentation required to sustain said warranties.

7.5.2 All guarantees or warranties of materials furnished to the Contractor or Subcontractor by any manufacturer or supplier shall be deemed to run for the benefit of the Owner.

7.5.3 As a condition of Substantial Completion of the Project by the Owner, the Contractor shall deliver to the Owner three (3) bound volumes of all guarantees and warranties on material furnished by all manufacturers and suppliers to the Contractor and all its Subcontractors, with duly executed instruments properly assigning the guarantees and warranties to the Owner. The guarantees and warranties in each bound volume shall be grouped together by trade and properly indexed. The Contractor shall assign to the Owner, and shall deliver to the Owner, all manufacturers' warranties not later than the date of Substantial Completion.

7.6 **Subcontractor Warranties.** The Contractor shall and does hereby assign to the Owner the benefits of all warranties and guarantees of all Subcontractors, but such assignment shall not relieve the Contractor of its warranty obligations to the Owner under these General Conditions and other Contract Documents.

### 7.7 Correction of Work by Contractor.

7.7.1 Any portion of the Work that does not conform to the requirements of the Contract is unacceptable or defective and must be removed and corrected by the Contractor, even if it is contended that Project Manager or other assigned personnel knew or should have known of the existence of the unacceptable Work. This obligation includes defective Work discovered during construction and within one (1) year after the date of Substantial Completion.

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7.7.1.1 All portions of the Work that do not conform to the requirements of the Contract Documents must be corrected within a reasonable time at the Contractor's sole expense and without an extension of Contract Time.

7.7.1.2 Metro may replace or correct Work within a reasonable time if the Contractor fails to do so and may charge the Contractor with all reasonable costs incurred while performing that Work, as well as the costs of storing any salvageable materials or equipment. If that occurs, Metro is also entitled to deduct such costs from any sums otherwise due the Contractor.

7.7.1.2.1 If salvageable materials, equipment, or both are stored, Metro will notify the Contractor of the storage and give the Contractor ten days to remove the materials. If the Contractor fails to remove them by the end of that time, Metro may sell them in any commercially reasonable manner, whether privately or publicly.

7.7.1.2.2 If sale is made, Metro will keep all proceeds to the extent that the proceeds do not exceed the costs incurred in correcting and replacing the Work and in storing the materials and equipment. The Contractor will pay Metro any difference in costs that may remain after the sale. If the proceeds exceed Metro's cost, however, it will forward those sums to the Contractor.

7.7.2 In the case of equipment manufactured by others and supplied and/or installed by Contractor, the one (1)-year period shall commence upon the date of first beneficial operation of such equipment by Metro. In the case of Work that is corrected or replaced by Contractor, the one (1)-year period shall commence again on the date of acceptance by Metro of such corrected or replaced Work. Testing shall not be construed to mean acceptance.

7.7.3 If Metro does not require correction or replacement of defective Work or Work failing to conform to the Contract Documents, Contractor, if required by Metro, shall repay to Metro such portion of the Contract Amount as is equitable under the circumstances, as determined by Metro.

7.7.4 Contractor's responsibilities under this Section shall not extend to correction or replacement of defects that are attributable to mistreatment by Metro or to normal wear and tear.

## 7.8 Warranty and Correction Agreements by Subcontractors.

7.8.1 Generally. In addition to any requirements for written warranties required by the Specifications, Contractor shall require all of its Subcontractors and Suppliers of any tier to make the same warranty to Metro as Contractor makes under Section 7.4. Contractor shall also require all of its Subcontractors and Suppliers of any tier to agree to correct or replace defective Work or Work not conforming to the Contract Documents, and to take full responsibility for defective materials in the same manner as Contractor agrees to correct or replace such Work under Section 7.5.

7.8.2 Form of Submissions. Contractor shall require all of its Subcontractors and Suppliers of any tier to sign documents evidencing the promises made pursuant to Section 7.8.1 above and shall submit such documents to Metro with its request for Final Payment. Such documents shall be signed by both Contractor and the applicable Subcontractor or Supplier and shall be in the form attached as Exhibit 1 to these General Conditions.

7.9 **Remedies Not Exclusive.** The remedies provided for in this Article shall not be exclusive, but are in addition to all other remedies of Metro with respect to latent defects, frauds, or failure to perform all Work as required by the Contract Documents.

7.10 **Proof of Compliance with Contract Provisions.** For Metro to determine whether Contractor has complied or is complying with the requirements of the Contract that are not readily enforceable by inspection and test of the Work, Contractor shall, upon request, promptly submit to Metro such properly authenticated documents as may be necessary to demonstrate compliance with the Contract or other satisfactory proof of its compliance with such requirements.

7.11 **Patents, Copyrights, Trademarks.** All fees or costs of claims for any patented invention, article, or arrangement or any copyrights or trademarks that may be used upon or in any manner connected with the performance of the Work or any part thereof, shall be included in the Bid or Proposal for doing the Work. Contractor shall save, keep, hold harmless, and fully indemnify Metro and Architect or Engineer from all damages, claims for damage, lawsuits, costs, expenses, or liabilities of whatever nature in law or equity, including attorney fees and court costs, that may at any time arise or be set up for any infringement of the patent rights, copyrights, or trademarks of any person or persons in consequence of the use by Metro of articles to be supplied under the Contract and of which Contractor is not the patentee or assignee or has not the lawful right to sell the same. This is in addition to all other hold-harmless and indemnification clauses in these Contract Documents.

## 7.12 Anti-Trust Claims.

7.12.1 By entering into this Contract, Contractor, for consideration paid to Contractor under the Contract, does irrevocably assign to Metro any claim for relief or cause of action that Contractor now has or that may

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accrue to Contractor in the future, including at Metro's option, the right to control any such litigation on such claim for relief or cause of action, by reason of any violation of 15 USC Section 1-15, ORS 646.725, or ORS 646.730 in connection with any goods or services that are used, in whole or in part, for the purpose of carrying out Contractor's obligations under this Contract.

7.12.2 Contractor shall require all Subcontractors and Suppliers to irrevocably assign to Metro, as a third-Party beneficiary, any right, title, or interest that has accrued or may accrue to the Subcontractors or Suppliers by reason of any violation of 15 USC Section 1-15, ORS 646.725, or ORS 646.730, including, at Metro's option, the rights to control any litigation arising hereunder, in connection with any goods or services provided to the Subcontractors or Suppliers by any person, in whole or in part, for the purpose of carrying out the Subcontractors' or Suppliers' obligations as agreed to by Contractor in pursuance of the completion of the Contract. Contractor shall require all Subcontractors and Suppliers to Execute the Assignment of Antitrust Claims attached as Exhibit 2 to these General Conditions as part of Contractor's subcontract with Subcontractor or Supplier.

7.12.3 In connection with Contractor's, Subcontractors' or Suppliers' assignment, it is an express obligation of Contractor, Subcontractor, or Supplier that it will take no action that will in any way diminish the value of the rights conveyed or assigned hereunder to Metro. It is an express obligation of Contractor, Subcontractor, or Supplier to advise the Office of Metro Attorney:

7.12.3.1 In advance, of its intention to commence any action on its own behalf regarding such claims for relief or causes of action;

7.12.3.2 Immediately, upon becoming aware of the fact that an action has been commenced on its own behalf by some other person or persons, of the impendency of such action; and

7.12.3.3 The date on which it notified the obligor(s) of any such claims for relief or causes of action of the fact of its assignment to Metro.

7.12.4 In the event that any payment under any such claim is made to Contractor, Subcontractor, or Supplier, it shall promptly pay over to Metro its proportionate share thereof, if any, assigned to Metro under this Section 7.12.

## ARTICLE 8 CHANGES IN THE WORK

### 8.1 Change Orders Generally.

8.1.1 Metro and the Contractor mutually agree that changes in plans, quantities, or details of the Work are inherent in the nature of construction and may be necessary or desirable. Therefore, without impairing the Contract, Metro reserves the right to require changes determined necessary or desirable to complete the proposed construction within the general scope of the Work provided for in the Contract or to order extra Work if that is required. Performance of changed or extra Work will not invalidate the Contract or release the Contractor's surety from its obligations. Changes to the Contract Amount, if any, as a result of the performance of changed or extra Work must be made pursuant to this Article 8.

8.1.2 The only authorized method for increasing or changing the amount of compensation, increasing the amount of Contract Time, or changing the scope of Work to be performed is through the execution of a written Change Order.

8.1.3 Change Orders must be executed in advance when any changed or extra Work for which additional compensation is due will be performed, unless the Work is Force Account Work.

8.1.4 Metro may, at its discretion, also require the signature of Contractor's surety on the Change Order. Prior to the approval of such Change Order, the Architect or Engineer shall have approved any design modifications entailed thereby.

8.1.5 Agreement on any Change Order shall constitute a final settlement of all matters relating to the changes in the Work that are the subject of the Change Order, including without limitation all direct and indirect costs associated with such change, and any and all adjustments to the Contract Sum or Contract Time.

### 8.2 Procedure for Determining Impact of Change Orders on Contract Amount.

8.2.1 Price before Proceeding. If Metro intends to order changes in the Work, it may request a proposal by Contractor for the proposed added or deleted Work before directing Contractor to commence Work. Within fourteen (14) days after issuance of such request by Metro, Contractor shall furnish three (3) copies of a complete breakdown of costs of both credits and additions directly attributable to the change in the Work proposed, itemizing materials, labor, taxes, effect on Contract Time, if any, and Overhead and Profit on a form approved by Metro and in accordance with the limitations described in the following Section. Subcontract Work shall be so indicated and written proposals from Subcontractors or Suppliers shall be included with similar breakdowns provided. Following

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submission of its cost breakdown, Contractor shall meet with Metro to discuss all aspects of scope, costs, scheduling, and construction methods.

8.2.2 Proceed While Pricing. If Metro finds it necessary to make changes in the Work in an expeditious manner, it may direct Contractor to proceed with the change while preparing a proposal for the added or deleted Work. In such an instance, Metro may assign an estimated value to the change that Contractor shall not exceed without further authorization by Metro. Within fourteen (14) days after issuance of such by Metro, Contractor shall furnish three (3) copies of a complete breakdown of costs of both credits and additions directly attributable to the change in the Work proposed, itemizing materials, labor, taxes, effect on Contract Time, if any, and Overhead and Profit on a form approved by Metro and in accordance with the limitations described in the following Section. Subcontract Work shall be so included with similar breakdowns provided. Following submission of its cost breakdown, Contractor shall meet with Metro to discuss all aspects of scope, costs, scheduling, and construction methods.

8.2.3 Unit Prices. If the proposed additional or deleted Work is the subject of Unit Prices stated in the Contract Documents or subsequently agreed upon, such Unit Prices shall be binding upon Contractor in calculating the increase or decrease in the Contract Amount attributable to the proposed additional or deleted Work.

**8.3 Limitations when Change Orders Impact Contract Amount.** The following limitations shall apply in the calculation of the costs of changes in the Work:

8.3.1 Overhead and Profit.

8.3.1.1 Contractor will be permitted a reasonable allowance for Profit and Overhead on its increased Direct Cost resulting from any changes in the Work ordered by Metro. Likewise, Profit and Overhead will be deducted for any portion of the Work that is deleted. In the case of a change involving both credits and extras, Overhead and Profit shall be applied to the net extra after subtraction of credits.

8.3.1.2 Overhead and Profit for the entity performing the Work with its own crews shall not exceed ten percent (10%) of the Direct Cost of the changed Work.

8.3.1.3 Overhead and Profit for Contractor or Subcontractor who has had the Work performed by a lower tier Subcontractor shall not exceed five percent (5%) of the Direct Cost of the changed Work.

8.3.1.4 If the Work is performed by a second-tier Subcontractor, the total Overhead and Profit for all tiers shall in no event exceed twenty percent (20%) of the Direct Cost of the changed Work. Distribution of this Overhead and Profit among the tiers is the responsibility of Contractor.

8.3.2 Taxes and Insurance. Federal, state, regional, county, and local taxes, including but not limited to income taxes, excise taxes, sales and use taxes, and payroll taxes and insurance shall be shown separately, will be allowed on extras, and shall be credited on credits. No Overhead and Profit will be allowed on taxes and insurance.

8.3.3 Bond Premiums. The actual rate of bond premium as paid on the additional Direct Cost plus the cost of taxes defined in 8.3.2 will be allowed. No Overhead and Profit will be allowed on such premiums.

8.3.4 Equipment Costs. The allowance for equipment costs (both rental and Contractor-owned equipment) shall be limited to those rates in the Rental Rate Bluebook published by Dataquest Incorporated, 1290 Ridder Park Drive, San Jose, California 95131-2398, (800) 227-8444.

**8.4 Force Account Work.**

8.4.1 If Contractor does not respond to Metro's Request for Proposal with a cost breakdown within the fourteen (14)-day period as required above, or if Metro determines that Contractor's breakdown of costs is unreasonable in consideration of the Work proposed to be added or deleted, or if Metro determines that the proposed Work must be commenced promptly to avoid delay to the Project, Metro may issue an order for Force Account Work and Contractor shall promptly perform or delete the Work described in such order. Change, if any, in the Contract Amount due to such Force Account Work shall be the sum total of the following items:

8.4.1.1 Actual labor cost, including premium on worker's compensation insurance and charge for social security taxes, and other taxes pertaining to labor.

8.4.1.2 The proportionate cost of premiums of public liability property damage and other insurance applicable to the extra Work involved and required by these Contract Documents.

8.4.1.3 Actual cost of material, including applicable taxes pertaining to materials.

8.4.1.4 Actual cost of plant and equipment rental, at rates to be agreed upon in writing before the Work is begun or at rates per Section 8.3.4 above. No charge for the cost of repairs to plant or equipment will be allowed. Equipment items having a capital cost of under \$250.00 are considered small tools and classified as Overhead.

8.4.1.5 Overhead and Profit as provided and limited in Section 8.3.

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8.4.1.6 The proportionate actual costs of premiums for bonds required by these Contract Documents.

8.4.2 Whenever any Force Account Work is in progress, each working day Contractor shall furnish to Metro a detailed written report signed by Contractor and Project Manager of the amount and cost of all of the items listed in (1) through (6) above, and no claim for compensation for such extra Work will be allowed unless such report shall have been made. Metro reserves the right to provide such materials as it may deem expedient, and no compensation, overhead, or profit will be allowed to Contractor for such materials.

## 8.5 Contractor Proposals for Changes in Work.

8.5.1 Generally. At any time during the performance of the Work, Contractor may propose to Metro changes in Work that Contractor believes will result in higher quality Work, improve safety, shorten the Contract Time, decrease the Contract Amount, or otherwise result in better or more efficient Work.

8.5.2 Purpose. Metro encourages Contractor to submit Value Engineering Change Proposals ("VECPs") in order to avail Metro of potential cost savings that may result. Contractor and Metro will share any savings, computed in accordance with this Section 8.5. Contractor is encouraged to submit VECPs whenever it identifies an area that can be improved, using the format described herein.

8.5.3 Application. This clause applies to a Contractor-developed and documented VECP that: (1) requires a change to this Contract to implement the VECP, and (2) reduces the Contract Price without impairing essential functions or characteristics of the Work, provided it is not based solely on a change in specified quantities.

8.5.4 Documentation. At a minimum, the following information shall be submitted by Contractor with each VECP: (1) description of the existing requirements of the Contract Documents that are involved in the proposed change; (2) description of the proposed change; (3) discussion of differences between existing requirements and the proposed change, together with advantages and disadvantages of each changed item; (4) itemization of the requirements that must be changed if the VECP is accepted (e.g., drawing numbers and Specifications); (5) justification for changes in function or characteristics of each such affected item and effect of the change on the performance of the end item; (6) effect of proposed change on life-cycle costs, including operation and maintenance, replacement costs, and life expectancy; (7) date or time by which a Change Order adopting the VECP must be issued in order to obtain the maximum cost reduction, noting any effect on Contract Time or delivery schedule; and (8) cost estimate for existing Contract requirements correlated to its lump sum breakdown and proposed changed requirements. Costs of development and implementation by Contractor shall be identified. Estimated Metro costs (e.g., cost of testing and redesign) shall also be identified.

8.5.5 Submission. Proposals will be processed expeditiously; however, Metro will not be liable for any delay in acting upon any proposal submitted pursuant to this clause. Contractor shall have the right to withdraw, in whole or in part, any VECP at any time prior to acceptance by Metro.

8.5.6 Acceptance. Metro may accept, in whole or in part, by Change Order, any VECP submitted pursuant to this clause. Until a Change Order is issued, Contractor shall remain obligated to perform in accordance with this Contract. The decision as to acceptance or rejection of any VECP will be at the sole discretion of Metro and will be final and not subject to review by mediation or otherwise.

8.5.7 Sharing. If a VECP submitted by Contractor pursuant to this clause is accepted, Contractor shall proceed with the change and the Contract Price will be adjusted in accordance with the following provisions:

### 8.5.7.1 Definitions:

8.5.7.1.1 Estimated Gross Savings to Contractor ("GS"): The difference between cost of performing the Work according to the existing requirement and the cost if performed according to the proposed change. In each instance, Contractor's profit shall not be considered part of the cost.

8.5.7.1.2 Contractor Costs ("CC"): Reasonable costs incurred by Contractor in preparing the VECP and making the change such as cancellation or restocking charges where required.

8.5.7.1.3 Estimated Net Savings to Contractor ("NS"): GS less CC.

8.5.7.1.4 Metro's Costs ("OC"): Reasonable costs incurred by Metro for evaluating and implementing the VECP, such as testing and redesign, where required.

### 8.5.7.2 Calculations:

8.5.7.2.1 The Contract Price shall be reduced by an amount equal to 70 percent of NS plus 50 percent of OC.

8.5.7.2.2 Contractor's profit will not be reduced by application of the VECP.

8.5.8 Subcontracts. Contractor shall include appropriate value engineering incentive provisions in all subcontracts of \$25,000 or greater. Contractor may include such provisions in any agreement. Subcontracts shall contain a provision that any benefits accruing to Contractor as a result of an accepted VECP initiated by a

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Subcontractor shall be shared by Contractor and Subcontractor. To compute any adjustment in the Contract Price under Section 8.5.7.2 above, Contractor's costs of preparation and charge for a VECP shall include any preparation and change costs. Examples are cancellation or restocking charges, when required.

**8.6 Impact of Authorized Changes in the Contract.** Changes in the Work made pursuant to this Article and extensions of the Contract Time allowed by Metro due to such changes shall not in any way release any warranty or promises given by Contractor pursuant to the provisions of the Contract Documents, nor shall such changes in the Work relieve or release the sureties of bonds executed pursuant to said provisions. The sureties, in executing such bonds, shall be deemed to have expressly agreed to any such change in the Work and to any extension of Contract Time made by reason thereof.

## ARTICLE 9 PAYMENTS AND COMPLETION

**9.1 Scope of Payment.** Payment to Contractor of the Contract Amount for performing all Work required under the Contract, as adjusted for any Change Orders approved as hereinbefore specified, shall be full compensation for furnishing all labor, materials, equipment, and tools necessary to the Work, and for performing and completing, in accordance with these Contract Documents, all Work required under the Contract, and for all expenses incurred by Contractor for any purpose in connection with the performance and completion of said Work. Whenever it is specified in the Contract that Contractor is to do Work or provide materials of any class for which no price is fixed in the Contract, Contractor will do such Work or provide such materials without extra charge or allowance or direct payment of any sort, and that the cost of doing such Work or providing such materials is included in its Bid or Proposal.

### **9.2 Schedule of Values.**

**9.2.1 Generally.** Within fifteen (15) days after the Notice to Proceed, Contractor shall submit a detailed breakdown costs itemized per Construction Specification Institute division format. The format and detail of the breakdown shall be as directed by Metro. This breakdown shall be referred to as the Schedule of Values.

**9.2.2 Review of Schedule of Values.** Metro will review the Schedule of Values to ascertain that the dollar amounts of the Schedule of Values are in fact fair cost allocations for the Work item listed. Upon concurrence by Metro, a formal approval of this Schedule of Values will be issued. Metro shall be the sole judge of fair cost allocations. Contractor's monthly progress payment requests shall reflect the cost figures included in the approved Schedule of Values and shall be based on completed Work items or percentages of Work items completed prior to the end of the payment period as more fully described below.

### **9.3 Progress Payment Procedure.**

**9.3.1 Generally.** Subject to the approval of Metro, disbursements shall be made by Metro of progress payments upon written request of Contractor and pursuant to the Contract Documents as specified in Section 9.3.2.

**9.3.2** Before the end of each calendar month, Contractor shall file with the Project Manager in duplicate on a form approved by Metro, a proposed payment estimate for the period commencing on the 26th day of the previous month through midnight on the 25th day of the calendar month in question. Metro and the Architect or Engineer shall review Contractor's estimate and shall determine the value of Contractor's Work based on the Schedule of Values and incorporated labor and materials for the payment period. Contractor shall not be paid for any Work that is, in Metro's opinion, defective or improper, or for Work needed to correct Contractor's defective or improper Work. Contractor shall be paid 95 percent (95%) of the determined value of Work accomplished, less any offset or withholding of sums by Metro allowed under the Contract Documents, within thirty (30) days after receipt by Metro of Contractor's payment estimate. Metro will routinely withhold five percent (5%) as Retainage. No inaccuracy or error in any monthly progress payment estimates shall operate to release Contractor or its surety from damages arising from such Work or from the enforcement of each and every provision of the Contract Documents, and Metro shall have the right subsequently to correct any error made in any estimate for progress payments.

#### **9.3.3 Retainage.**

**9.3.3.1** Metro will withhold Retainage from each payment at a rate of five percent (5%) in accordance with ORS 279C.570.

**9.3.3.2** All funds retained by Metro under this Section shall be retained in a fund by Metro and paid in accordance with ORS 279C.550 to 279C.580.

**9.3.3.3** Contractor may elect to deposit bonds or securities of the type described below with Metro or in any bank or trust company to be held in lieu of the cash Retainage described above and for the benefit of Metro. In such event, Metro shall reduce the Retainage in an amount equal to the value of the bonds and securities

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and shall pay the amount of the reduction to Contractor in accordance with ORS.279C.570. Interest on such bonds or securities shall accrue to Contractor. Bonds and securities deposited or acquired as described above shall be of a character approved by the Metro Director of Finance & Regulatory Services including but not limited to:

- 9.3.3.3.1 Bills, certificates, notes, or bonds of the United States.
- 9.3.3.3.2 Other obligations of the United States or its agencies.
- 9.3.3.3.3 Obligations of any corporation wholly owned by the federal

government.

- 9.3.3.3.4 Indebtedness of the Federal National Mortgage Association.

9.3.3.4 Contractor may elect to require Metro to deposit the accumulated Retainage in an interest bearing account in a bank, savings bank, trust company, or savings association for the benefit of Metro. Interest on such an account shall accrue to Contractor.

9.3.3.5 If Metro incurs additional costs as a result of Contractor's exercise of any of the above-described options, Metro may recover such costs from Contractor by reduction of the Final Payment. Metro shall inform Contractor of all such accrued costs.

9.3.4 Payment for Material Stored Off Site. Payment for material stored off of the Site will not be allowed unless the payment for such material benefits Metro in terms of lead time, scarcity, schedule, etc. Metro has sole discretion as to what materials will be paid for in advance of delivery to or installation on Site. Proof of off-site material purchases (invoice or checks and photo documentation) and appropriate insurance coverage will be required for payment. Title to all equipment and materials shall pass to Metro upon payment therefore or incorporation into the Work, whichever shall first occur, and Contractor shall prepare and execute all documents necessary to effect and perfect such transfer of title. Contractor must provide to Metro written consent from Contractor's surety approving the advanced payment for materials stored off-site. The maximum prepayment allowed by Metro shall be 75 percent of the actual fair market value of the item being considered. Metro shall be the sole judge of fair market value. Contractor shall protect stored materials from damage, and damaged or otherwise unacceptable materials, even though paid for, shall not be incorporated into the Work.

9.3.5 Other Conditions Precedent to Payment.

9.3.5.1 It is a condition precedent to Contractor's rights to any payments under the Contract that all bills for labor and materials, including labor and materials supplied by or to Contractor, shall have been paid in full and, if requested by Metro, Contractor shall submit receipted invoices and/or lien waivers, as evidence of payment in full of all such accounts. As a further condition precedent to Contractor's right to any payments under this Contract, Contractor shall submit a claims release before any payment in the form set forth in Exhibit 3 to these General Conditions, and a final claims release stating Contractor has been paid in full prior to the Final Payment in the form set forth in Exhibit 4 to these General Conditions.

9.3.5.2 Payments to Contractor shall be conditioned upon Contractor complying with all provisions of this Contract regarding scheduling and progress reports submissions and upon Contractor furnishing all other information and data necessary to ascertain actual progress. Metro's determination that Contractor has failed or refused to furnish the required information, data, schedules, or other reports shall constitute a basis for withholding all payments until the required information, data, revised schedules, and diagrams, if necessary, and other reports are furnished.

9.3.6 Payment Does Not Imply Acceptance of Work. The granting of any progress payment, or the receipt thereof by Contractor, shall not constitute acceptance of the Work or any portion thereof, and shall in no way lessen the liability of Contractor to replace unsatisfactory Work or material, though the unsatisfactory character of such Work or material may or may not have been apparent or detected at the time such payment was made.

9.3.7 Offset of Sums Due Metro from Contractor. In addition to any retention rights allowed Metro under this Contract, it is mutually understood and agreed that Metro may, upon prior written notice to Contractor, offset from any payment otherwise due Contractor as much as may be necessary to protect and compensate Metro from any costs or expenses it may incur due to any breach of the Contract by Contractor, including applicable liquidated damages. Any sums so offset shall become the property of Metro.

## 9.4 Substantial Completion.

9.4.1 Metro is also entitled to occupy or use all or a portion of the Work on Substantial Completion. Occupancy or use on Substantial Completion does not constitute Metro's acceptance of the Work not complying with the requirements of the Contract Documents, nor does it waive rights Metro has to completion of the Contract in accordance with the requirements of the Contract Documents.

9.4.1.1 When Contractor considers the Work to be substantially complete, Contractor shall submit to Metro a written notice that the Work is substantially complete

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9.4.2 Within a reasonable time after receipt of such notice, Metro and Architect or Engineer will review the Work, including a physical inspection, to determine the status of completion. Should the Architect or Engineer and Metro determine that the Work is not substantially complete:

9.4.2.1 The Project Manager will promptly notify Contractor in writing, giving the reasons therefore.

9.4.2.2 The Contractor shall remedy the deficiencies in the Work, and thereafter send a second written notice of Substantial Completion to Metro.

9.4.3 The above-described procedure shall be followed until the Work is, in the opinion of Metro and Architect or Engineer, substantially complete. At that point:

9.4.3.1 Metro or the Architect will prepare a Certificate of Substantial Completion on AIA Document G704, accompanied by the approved Punch List of items to be completed or corrected as verified and amended by the Architect or Engineer.

9.4.3.2 Metro shall submit the Certificate of Substantial Completion to Contractor for signature.

9.4.4 Punch List. When the Work is substantially complete, the Contractor shall prepare a Punch List of items to be completed or corrected for review and approval by Metro and the Architect or Engineer. Metro or the Architect shall be responsible for preparing the final Punch List. The Contractor remains responsible to complete the Work in accordance with the Contract Documents regardless of whether an item is omitted from the Punch List.

9.4.4.1 The Contractor is required to proceed promptly to complete the items on the Punch List and any other items that may be discovered to be incomplete or incorrect regardless of whether they are on the Punch List or not. If the Contractor fails to complete the Punch List within 30 days or such other time as Project Manager may allow, Metro may terminate any further services of the Contractor under the Contract and complete the Punch List items remaining to be completed or corrected with Metro's own forces or by hiring another Contractor to perform the Punch List Work. Costs of performing the Punch List Work by Metro will be deducted from any payments otherwise due the Contractor.

9.4.4.2 The Contractor will notify Metro when the Punch List Work is complete, and Final Payment will then be made in accordance with. After receipt of that Notice, Metro will inspect the Work to determine whether the Punch List is complete as provided in Section 9.5 of these General Conditions.

9.4.4.3 If the Work is not complete despite the Contractor's notice that the Punch List items are complete, and Metro has hired an Architect or Engineer to assist it on the Project, the Contractor will pay costs for the Architect's or Engineer's services if more than two inspections of the Work are required because the Punch List remains incomplete.

9.4.4.4 On Substantial Completion, Metro will be responsible for utilities, insurance, security, maintenance, and damage to Work caused by Metro's agents and employees unless otherwise provided in the Certificate of Substantial Completion. The Contractor remains responsible for damage to Work caused by its Subcontractors, agents, and employees during the performance of Punch List Work.

## 9.5 Final Completion and Acceptance.

9.5.1 When Contractor considers the Work to be finally complete, Contractor shall submit written certification to Metro that:

9.5.1.1 Contract Documents have been reviewed.

9.5.1.2 Work has been inspected for compliance with Contract Documents.

9.5.1.3 Work has been completed in accordance with Contract Documents to include submission of record documents.

9.5.1.4 Equipment systems have been tested in the presence of Metro and are operational.

9.5.1.5 Work is ready for final inspection.

9.5.2 Architect or Engineer and Metro will promptly review the Work and include a physical inspection to verify the status of completion and shall inform Metro of the conclusions. Metro shall, within fifteen (15) days after receipt of Contractor's certification, either accept the Work or notify Contractor of the Work yet to be performed on the Contract as outlined below.

9.5.3 Should the Architect or Engineer and Metro consider that the Work is incomplete or defective:

9.5.3.1 Project Manager or the Architect or Engineer will promptly notify Contractor in writing, listing the incomplete or defective Work.

9.5.3.2 Contractor shall take immediate steps to remedy the stated deficiencies, and send a second written certification to Metro that the Work is complete. Metro will then advise the Architect or Engineer.

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9.5.3.3 Architect or Engineer and Metro will review and re-inspect the Work.

9.5.4 The procedure set forth in Section 9.5.3 shall be followed until the Work is, in the opinion of Metro and Architect or Engineer, finally complete. Contractor shall immediately thereafter prepare and submit Closeout Submittals as described below.

**9.6 Closeout Submittals.** Contractor shall submit the following items, as applicable, with its request for Final Payment:

9.6.1 Evidence of Compliance with Requirements of Governing Authorities.

9.6.2 Project record documents in accordance with the Specifications.

9.6.3 Operation and maintenance data in accordance with the Specifications.

9.6.4 Warranties in accordance with requirements of various Specification sections and these

General Conditions.

9.6.5 Extra stock and maintenance materials. Contractor shall submit receipts, signed by Metro, for the various specific items.

9.6.6 Evidence of payment and release of claims in accordance with the following section.

9.6.7 Consent of surety to Final Payment.

9.6.8 Certificates of insurance for products and completed operations in accordance with Article 12 of these General Conditions.

9.6.9 If Contractor is a non-resident bidder or proposer, complete documentation of Contractor's compliance with ORS 279A.120.

**9.7 Releases.** Contractor and each assignee under any assignment in effect at the time of Final Payment shall execute and deliver, at the time of application for Final Payment, as a condition precedent to Final Payment, discharging and releasing Metro and the Architect or Engineer of and from all liabilities, obligations, and claims arising under this Contract. The Final Release shall be in the form attached as Exhibit 4 to these General Conditions. In addition to the above-described release, Contractor shall:

9.7.1 Submit to Metro an affidavit certifying that Contractor has paid all federal, state and local taxes including excise, use, sales, and employee withholding taxes.

9.7.2 Deliver to Metro written releases of all rights to file claims against Metro or to file claims on any bonds in connection with the Contract, signed by each Subcontractor and Supplier who performed labor or furnished materials in connection with the Work. The release shall be in the form attached as Exhibit 5 to these General Conditions.

9.7.3 Deliver to Metro Contractor's written undertaking, with sureties acceptable to Metro:

9.7.3.1 To promptly pay and obtain a release of claims on any bonds that may in the future affect the premises; and

9.7.3.2 To defend, indemnify, and save Metro harmless from any liability or expense because of any claim on any bond or any other claim related to the Contract or the Work.

**9.8 Final Payment.** Upon application of Contractor and Contractor's completion of and compliance with all of the provisions of the above Sections and settlement of all claims arising from the Contract, including claims that Metro may have against Contractor, Metro shall pay Contractor the balance of the Contract Amount subject to the availability of monies and less any previous payments, offsets, and withholdings allowed Metro under this Contract, and Retainage that has been returned to Contractor. Acceptance of Final Payment by Contractor shall constitute a waiver of all claims of whatever nature that Contractor may have or allege to have against Metro arising out of or related to Work described in the Contract Documents.

**9.9 No Waiver of Rights.** Neither the final review by Metro, nor any order or certificate for the payment of money, nor any payment for, nor acceptance of the whole or any part of the Work by Metro, nor any extension of time, nor any position taken by Metro shall operate as a waiver of any provision of this Contract or of any power herein reserved by Metro or any right to damage herein provided, nor shall any waiver of any breach of this Contract be held to be a waiver of any other or subsequent breach. All of Metro's remedies provided in this Contract shall be taken and construed as cumulative; that is, in addition to each and every other remedy herein provided; and Metro shall have any and all equitable and legal remedies that it would in any case have.

## ARTICLE 10

### SAFETY, USE OF SITE, AND PROTECTION OF THE WORK

#### 10.1 Laws and Regulations.

10.1.1 The Contractor must comply with all federal, state, and municipal laws in regard to all matters concerning this Contract. This includes but is not limited to compliance with the ADA. The Contractor must also

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comply with the orders, rulings, decrees, and decisions of any administrative or judicial officials that in any manner whatsoever affect the Project, the Work, the safety of persons around the Work Site, or the manner in which the Work is performed.

10.1.2 If the Contractor observes that any portion of the Work is to be performed in a way that violates any law, code, or regulation, it must immediately notify Metro in writing.

10.1.3 Contractor will divert a minimum of 85% of all construction and demolition waste to recycling and reuse markets, and, if the Work is performed in the City of Portland, comply with City of Portland Code 17.102.270 and related administrative rules.

## 10.2 Safety Requirements.

### 10.2.1 Safety Generally.

10.2.1.1 Contractor shall be solely and completely responsible for the safety of the Work and the Site, including but not limited to the safety of all persons and property involved in the Work at the Site at any time until Final Completion and Acceptance of the Work.

10.2.1.2 All Work shall be performed in full accordance with all applicable safety codes, laws, ordinances, and requirements including but not limited to the Safety and Health Regulations for Construction promulgated by the Secretary of Labor under Section 107 of the Contract Work Hours and Safety Standards Act as set forth in Title 29 of the Code of Federal Regulations, federal and state OSHA, Metro's insurance standards, and all other applicable safety codes. Where any of these are in conflict, the more stringent requirement shall be followed. Contractor's failure to thoroughly familiarize itself with the aforementioned safety provisions shall not relieve it from any requirements in the Contract Documents to comply with such safety provisions or from any penalties for failure to so comply.

10.2.1.3 Contractor shall inspect the Work and the Site daily and immediately correct any unsafe conditions. All job personnel shall be knowledgeable of and comply with the above safety requirements.

10.2.1.4 Contractor shall take all precautions to prevent the possibility of fire resulting from Contract operations. Contractor shall provide properly maintained emergency fire extinguishing equipment of a readily available type and quantity as necessary to meet potential fire hazards.

10.2.1.5 In an emergency affecting safety of persons or property, the Contractor shall act to prevent the threatened damage, injury, or loss and immediately notify Metro.

10.2.2 Health and Safety Program. Contractor shall develop, publish, and implement the overall Health and Safety Program for the Project. This Program shall conform to all applicable codes. Contractor shall submit the written Health and Safety Program to Metro for review and comment within fourteen (14) days after the receipt of the written Notice To Proceed. The Program, as approved by Metro, shall subsequently be distributed to and implemented by Contractor's personnel, as well as its Subcontractors and Suppliers. Contractor shall fully implement and comply with the approved Safety Program.

10.2.3 Health and Safety Officer. Prior to initiation of construction, Contractor shall designate in writing a Site Health and Safety Officer who shall be responsible for coordinating Contractor's Health and Safety Program. The individual so designated shall be the interface with the Project Manager on matters relating to safety and Contractor's compliance with the approved Safety Program. Metro reserves the right to accept or reject the Health and Safety Officer designated by Contractor.

## 10.3 First Aid.

10.3.1 Contractor shall maintain on the Site during Work operations, a member of its work force who is qualified in administering first aid to its personnel and shall have available in its job office the first aid equipment as required to meet all applicable safety codes. The names and credentials of qualified personnel will be submitted to the Project Manager.

10.3.2 Contractor shall require or provide adequate clothing and protective gear for all personnel working on the job Site. This includes but is not limited to hard hats, substantial boots or shoes, shirts with sleeves at all times, eye and ear protection, gloves, face masks, welding hoods, and safety belts as required for the type of Work being done.

## 10.4 Use of Site.

10.4.1 The Contractor shall confine operations at the Site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities and the Contract Documents, and shall not unreasonably encumber the Site with materials or equipment.

10.4.2 Prior to commencement of the Work, the Contractor shall review the Project Site with Metro in detail and identify the area of the Work, staging areas, connections or interfaces with existing structures and operations, and restrictions on the Project Site area. The Contractor will ensure that all forces on the Project Site are

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instructed about the acceptable working and staging areas and restrictions on use of the Site. The Contractor, with advance consent of Metro, will erect such barriers, signage, and devices as are necessary to restrict access to the Project Site to approved personnel and to prevent unauthorized access by construction personnel to non-Work areas.

10.4.3 The Contractor and its Subcontractors shall receive prior approval from Metro before delivering or storing any materials or tools on Metro's premises. Upon approval, materials and tools will be stored so that they do not hamper the operation of equipment or persons and do not present a fire or safety hazard.

10.4.4 Contractor and its Subcontractors shall not erect on the Project Site any signage intended to advertise or promote their business without the prior written consent of Metro.

10.4.5 If the Contractor removes Metro's property, fixtures, materials, or other equipment to perform the Work, the Contractor shall be responsible for the safekeeping of all such property, fixtures, materials, or other equipment including without limitation assuring that such items are not lost, damaged, or destroyed, and are upon Metro's directive are either returned to their original location, reinstalled, replaced, or repaired as necessary.

10.4.6 When all or a portion of the Work is suspended for any reason, the Contractor shall securely fasten down all coverings and protect the Work, as necessary, from damage by any cause

10.4.7 At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus material from and about the Project, and shall return any damage or altered portion of Metro's property to at least its pre-construction condition.

## **10.5 Protection of Work, Persons, and Property Against Damage.**

10.5.1 Contractor shall protect the Work from damage due to construction operations; the action of the elements, including erosion due to normal and extraordinary weather conditions; the carelessness of other contractors; vandalism; or any other cause whatever until Final Completion and acceptance of the Work.

10.5.2 The Contractor will keep the Project Site safe in compliance with applicable law. Safety includes but is not limited to: (1) providing approved types of secured and adequate barricades or fences that are easily visible from a reasonable distance around open excavations; (2) closing up or covering with steel plates all open excavations at the end of each Working Day in all street areas and in all other areas when it is reasonably required for public safety; (3) marking all open Work and obstructions by lights at night; (4) installing and maintaining all necessary signs, lights, flares, barricades, railings, runways, stairs, bridges, and facilities; (5) observing any and all safety instructions received from Project Manager; and (6) following all laws and regulations concerning worker and public safety. If the law requires greater safety obligations than those imposed by Metro, the Contractor must comply with the law.

10.5.3 The Contractor will protect, and take every reasonable precaution to avoid damage to, all public and private property that might be damaged by its operations.

10.5.4 If public or private property, or both, is damaged by the Contractor's operations, the Contractor must either repair the damage or have the damage repaired by others at its own expense, without additional compensation from Metro. The repair must bring the damaged property back to the same condition it was in before the damage occurred. If repair and restoration is not feasible, the Contractor will pay Metro for the full cost of the damage. If the damage has been caused to property of Metro, Metro has the right to determine whether or not the property will be repaired and restored by the Contractor. If Metro elects to have the property repaired with its own forces or by another entity, the Contractor will pay Metro all costs associated with that repair and restoration.

10.5.5 The Contractor must give reasonable Notice to Metro and occupants of property adjacent to the Work to permit them to remove vehicles, trailers, and other possessions, as well as salvage or relocate plants, trees, fences, sprinkler systems, or other improvements in the Easement or Right-of-Way that are designated for removal or that might be destroyed or damaged by the Contractor's operations.

10.5.6 All federal, state, and local safety and environmental protection laws, rules, and orders, including fire codes, applicable to the Work to be done under the Contract, shall be obeyed, complied with, and enforced by Contractor.

10.5.7 Contractor shall provide and maintain such guards, fences, barriers, signs, regulatory and warning lights, and other traffic control and safety devices adjacent to and on the Site as may be necessary to prevent accidents to the public and damage to property. Contractor shall also provide, place, and maintain such lights as may be necessary for illuminating the said signs, guards, fences, barriers, and other traffic and safety control devices.

10.5.8 Upon Final Completion and Acceptance of the Work, Contractor shall remove all temporary signs, lights, barriers, etc., from the Site.

10.5.9 The Contractor must protect worksites and storage and disposal areas from washouts and erosion, and take all necessary precaution to control or abate dust, nuisances, and air pollution arising from the performance of Work by taking necessary actions to prevent this. Such actions include but are not limited to cleaning

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up, sweeping, sprinkling, covering, enclosing, or sheltering Work areas and stockpiled materials, and removing promptly from paved areas earth or other materials that may become airborne or that may be washed into waterways or drainage systems.

## 10.6 Utilities.

10.6.1 The Contractor is responsible for locating light and power poles, underground electrical, underground communication, sewer, gas, and water piping, gas/water "shut off" boxes and covers, and all other utility lines. The Contractor will follow rules adopted by the Oregon Utility Notification Center. Those rules are set forth in the Oregon Administrative Rules. Copies of these rules may be obtained by contacting the Center. If the Contractor has questions about the rules, it is to contact the Center. The Parties agree that any Project plans or permits issued by Metro are deemed to have this language incorporated by reference.

10.6.2 The Contractor will give Notice to Metro of any intended excavation it may have at least 48 hours in advance of the proposed excavation. If the intended excavation or other work would cause any interruption in utility service, the Contractor will give notice to Metro at least five (5) days in advance. The specific schedule for all interruptions in utility services must be coordinated with the Project Manager.

10.6.3 The Contractor will maintain any markings showing the presence of underground facilities. If the Contractor does not maintain such markings, and Metro is required to reestablish them, the Contractor will pay Metro any and all costs associated with that activity.

10.6.4 The Contractor will exercise special care in executing subsurface work in proximity of known subsurface utilities, improvements, and easements. The Contractor will arrange for and pay the cost of disconnecting, removing, relocating, capping, replacing, or abandoning all public and private utilities impeding construction operations, all in accordance with servicing utilities' regulations and governing codes. The Contractor will cap abandoned utilities. The Contractor will provide maintenance of all on-site active above-grade and below-grade services. Any utilities damaged by Contractor shall be repaired immediately to Owner's satisfaction.

## 10.7 Hazardous Substances Encountered During Construction and Other Environmental Laws.

10.7.1 With respect to Hazardous Materials to be used during the course of the Work, the Contractor will implement and enforce a program to inventory and properly store and secure all Hazardous Materials that may be used or may be present on the Project Site, maintain available for inspection at the Project Site all material safety data sheets, and comply with all regulations required by law for the storage, use, and disposal of Hazardous Materials. The program must provide for notification of all personnel of potential chemical hazards. Review of these hazards must be included in the Contractor's safety training program. The Contractor will submit to Metro a list of all Hazardous Materials to be brought by the Contractor or its Subcontractors onto Metro's property, including the purpose for their use on the Project.

10.7.2 In the event of a release or discovery of a preexisting release of Hazardous Materials, or if it is foreseeable that injury or death to persons may occur because of any material or substance (including without limitation Hazardous Materials) encountered on the Project Site, the Contractor must **immediately** (1) stop the Work or the portion of the Work affected, (2) notify Metro and the Architect or Engineer orally and in writing, and (3) protect against exposure of persons to the Hazardous Materials. The Contractor is to provide all written warnings, notices, reports, or postings required at law or by contract for the existence, use, release, or discovery of Hazardous Materials.

10.7.3 With respect to any Hazardous Materials or other material or substance reported to Metro under Section 10.7.2 above that were not introduced to the Project Site by the Contractor or its Subcontractors of any tier, Metro will obtain the services of a qualified environmental consultant to verify the presence or absence of the material or substance reported by the Contractor and, if the material or substance is found to be present, to verify that it is rendered harmless. Unless otherwise required by the Contract Documents, Metro will furnish in writing to the Contractor the names and qualifications of persons or entities that are to perform tests verifying the presence or absence of such material or substance, or that are to perform the task of removal or safe containment of such material or substance. The Contractor will promptly reply to Metro in writing, stating whether or not either has reasonable objection to the persons or entities proposed by Metro. If the Contractor has an objection to a person or entity proposed by Metro, Metro will propose another to which the Contractor has no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area is to resume upon written agreement of Metro and the Contractor. By Change Order, the Contract Time may, subject to agreement by Metro and the Contractor, be extended appropriately and the Contract Amount will be increased in the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up, which adjustments are to be accomplished as provided in Article 8.

10.7.4 With respect to any Hazardous Materials or other material or substance reported to Metro under section 10.7.2 above that was introduced to the Project Site by the Contractor or its Subcontractors of any tier,

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the Contractor will be responsible to carry out the duties of (1) proposing to Metro and the Architect or Engineer a qualified environmental consultant, (2) obtaining and paying for the services of the environmental consultant, and (3) verifying that the material is rendered harmless, as otherwise set forth in Section 10.7.3 above. The Contractor will not be entitled to an increase in the Contract Amount as stated in the last sentence of Section 10.7.3 if the Contractor or its Subcontractors of any tier are responsible for the condition requiring the testing of the material and the stoppage of the Work. Remediation Work must be conducted by properly qualified contractors approved in advance by Metro. Generally, Metro may at its option contract directly with environmental consultants and remediation contractors, regardless of whether the Work will be performed at the Contractor's expense.

10.7.5 To the fullest extent permitted by law, Metro will indemnify the Contractor, Subcontractors, Architect or Engineer, and their consultants and agents, and employees of any of them and hold them harmless from and against claims, damages, losses, and expenses, including without limitation attorney fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance was not introduced to the Project Site by the Contractor or its Subcontractors of any tier, presents the risk of bodily injury or death, and has not been rendered harmless. No indemnification provided by Metro under this Section will be required to indemnify the Contractor, Subcontractors, or their employees or agents to the extent of liability for death or bodily injury to persons or damage to property caused in whole or in part by the Contractor's own negligence, but will require indemnity to the extent of the fault of Metro or its agents or representatives.

10.7.6 To the fullest extent permitted by law, the Contractor will indemnify Metro, the Project Manager, and employees of any of them and hold them harmless from and against claims, damages, losses, and expenses, including without limitation attorney fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance was introduced to the Project Site by the Contractor or its Subcontractors of any tier, presents the risk of bodily injury or death, and has not been rendered harmless. No indemnification provided by the Contractor under this Section will be required to indemnify Metro or its agents or representatives to the extent of liability for death or bodily injury to persons or damage to property caused in whole or in part by Metro's own negligence, but will require indemnity to the extent of the fault of the Contractor or its agents or representatives.

**10.8 Additional Requirements for Work at Metro Project Sites.** The Contractor will comply with the following requirements in addition to the requirements set forth in this Article 10.

**10.8.1 Safety and Health Precautions.**

10.8.1.1 Contractor shall take all precautions to prevent the possibility of fire resulting from construction operations. Contractor will provide emergency fire extinguishing equipment of adequate type and quantity, readily available, and properly maintained. Contractor shall provide a fire watch and screening whenever welding is in progress in areas accessible or visible to Metro staff or the general public.

10.8.1.2 All contracted employees are expected to follow established safety procedures in the General Contractor's Safety Plan and report any safety violation or unsafe work practice to a lead worker or project manager. Violation of any safety procedure is a serious offense due to the severe consequences that may result and must be reported immediately. It is most important to report safety violations and unsafe work practices to individuals who can take immediate action to resolve the problem.

10.8.1.3 Vests and hardhats (as well as other personal protection attire as required by the General Contractor) are required to be worn at construction worksites. Contractors shall wear such vests at all times on the Project Site.

10.8.1.4 Any physical, mental, or emotional condition that may affect a Contractor or Subcontractor employee's ability to work safely, make sound judgments, or compromise their ability to react quickly in the event of an emergency, must be reported to their lead or project manager prior to the start of their shift.

10.8.1.5 For safety reasons, iPods, MP3 players, and other sound devices requiring earphones are prohibited during working hours.

10.8.1.6 The Contractor will provide warning signs, flagger(s), and other safety and health precautions that may become necessary or required for protection of Work or for protection of the public, Owner's personnel, and construction personnel, including Owner's and Architect's or Engineer's Representatives engaged on the Project. State of Oregon Workmen's Compensation Board Safety Codes for Construction Work and Federal Safety Codes, form a part of these Specifications.

**10.8.2 Access to Metro Project Site.** Contractor and Subcontractors will comply with the following requirements:

10.8.2.1 Locations for access to the Project Site by Contractor and Subcontractors shall be approved by the Project Manager.

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10.8.2.2 The Contractor's representatives must always be on the premises when Subcontractors are working. Identification will be issued and worn for General Contractor's representatives.

10.8.2.3 The Contractor will keep a log of all Subcontractors that are working on-site each day. Subcontractors must always sign in with the Contractor and wear identification issued by the Contractor.

10.8.2.4 Construction on the Project Site is limited to 7 am to 5 pm, Monday through Friday, unless Work at other times is approved in advance by the Project Manager.

10.8.2.5 When Contractor needs access throughout the day to an area that is normally secured and inaccessible to visitors, the Project Manager will provide "contractor locks" and keys, and Contractor must keep said areas secure.

10.8.2.6 Contractor will ensure that all of its and Subcontractors' officers, employees, and agents are aware of and comply with the access requirements in this Section 10.8.2.

## 10.8.3 Site Protection/Safety.

10.8.3.1 The Project Site may be in operation and open to the public during construction of the Work. Construction Work in and around Owner's buildings occupied by Metro personnel or frequented by the public shall be conducted in such a manner as to permit such operation without jeopardy and with the absolute minimum of inconvenience to occupants and the public.

10.8.3.2 Metro may restrict hours of work to accommodate Metro activities or special events.

10.8.3.3 Construction Work that requires coordination with Metro staff activities will be planned in advance with the Project Manager. A meeting will be held with Metro staff to identify a plan for the activity.

10.8.3.4 The Contractor will take every precaution to minimize noise, spreading of dust and debris, causing undue vibrations or impacts, and other nuisances. The Contractor shall do no structural or other damage to any in-place improvements.

10.8.3.5 Metro-owned tools, vehicles, and other equipment may not be used at any time.

10.8.3.5.1 Tree/Vegetation Protection. The Contractor shall comply with the local government regulations applicable to the Project, and shall consult with the Project Manager prior to doing work that could impact the health of a tree or vegetation not scheduled for removal by contract documents.

## 10.8.4 Personnel and Subcontractors.

10.8.4.1 Smoking is prohibited in all areas of the Project Site except in designated smoking areas. Contractor and Project Manager to determine a designated smoking area.

10.8.5 Prejudicial remarks, actions, slurs, and jokes in the workplace that are offensive to people relative to their race, color, religion, national origin, sex, age, marital status, veteran status, disability, or sexual orientation are strictly prohibited. Sexual harassment is strictly prohibited. Contractors are expected to use a reasonable person's standard of good judgment in their working relationships. No person shall be subjected to deliberate or repeated unsolicited verbal comments, gestures, or physical contact of a sexual nature, or that which is offensive, hostile, or intimidating.

## 10.8.6 Restrictions:

10.8.6.1 Contractors are not allowed to bring the following items onto the Project Site:

10.8.6.1.1 Weapons

10.8.6.1.2 Alcohol, narcotics

10.8.6.1.3 Skates/Skateboards/Rollerblades/Wheelies

10.8.6.1.4 Bicycles (if a Contractor employee is commuting to the Project Site

via bicycle, arrangements can be made for appropriate parking and use).

10.8.6.1.5 Pets

## 10.8.7 Prohibited Conduct:

10.8.7.1 The following conduct is strictly prohibited and will result in the immediate ejection of the offending Contractor employee or Subcontractor from Project Site premises:

10.8.7.1.1 Possessing, using, transferring, offering, or being under the influence of any intoxicants or narcotics during working hours.

10.8.7.1.2 Willful deceit, gross negligence, or theft, including of personal or public property.

10.8.7.1.3 Neglect of duty, violation of Metro ordinances, regulations, and directives.

10.8.7.1.4 Willful or repeated negligent violation of established safety policies and procedures.

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- 10.8.7.1.5 Possessing a firearm, illegal weapons, fireworks, or explosive device on Metro property
- 10.8.7.1.6 Harassment, discourteous treatment of any kind, or discrimination to staff, volunteers, or members of the public. Obscenities, profanity, yelling, shouting, abusive, or maligning tone of voice and/or language is considered discourteous and is prohibited.
- 10.8.7.1.7 Misuse of Metro property.

## ARTICLE 11 INDEMNIFICATION

### 11.1 Indemnification.

11.1.1 Contractor shall assume all responsibility for the Work and shall bear all losses and damages directly or indirectly resulting to Contractor, Metro, Architect, Engineer, their officers, agents, and employees, or to others on account of the character or performance of the Work or accidents.

11.1.2 Contractor shall defend, indemnify, and hold harmless Metro, its officers, agents, and employees from all claims, liability, loss, damage, consequential or otherwise, and injury of every kind, nature, and description, directly or indirectly resulting from activities in the performance of the Contract, the ownership, maintenance, or use of motor vehicles in connection therewith, or the acts, omissions, operations, or conduct of Contractor or any Subcontractor or Supplier under the Contract in any way arising out of the Contract, irrespective of whether fault is the basis of the liability or claim.

11.1.3 Any specific duty or liability imposed or assumed by Contractor, as may be otherwise set forth in the Contract Documents, shall not be construed as a limitation or restriction of the general liability or duty imposed upon Contractor by this Section.

11.1.4 Such liabilities and losses from which Contractor shall indemnify and hold harmless the above-described indemnities shall include but not be limited to:

11.1.4.1 Special activities by Metro to verify and/or expedite delivery of materials and those losses incurred by Metro as a result of any delays to Other Metro Contractors resulting from acts of Contractor or its failure to act.

11.1.4.2 Acceleration payments to Other Metro Contractors on the Project or related projects resulting from Contractor falling behind the Construction Schedule for causes not entitling it to an extension of Contract Time under any provisions of the Contract Documents that cause other Metro Contractors to fall behind the Construction Schedule so that they must then accelerate the performance of the Work, as directed by Metro, in order to maintain progress.

11.1.4.3 Violations of the ordinances or regulations of Metro, any federal, state, county, or city laws or order of any properly constituted authority in any manner affecting this Contract, in addition to any laws or regulations that might affect this Contract.

11.1.5 Any and all suits, actions, damages, or claims of every name and description to which the above-indemnified may be subjected or put by reason of injury to persons or property arising out of, in connection with, or incident to the execution of the Work, or resulting from acts or omissions on the part of Contractor, its Subcontractors, officers, employees, or agents, and all attorney fees and court costs incident thereto.

11.1.6 No indemnification provided by the Contractor under this Article 11 or insurance provided under Article 12 will be required to indemnify Metro or its employees or agents to the extent of liability for death or bodily injury to persons or damage to property caused in whole or in part by their own negligence, but will require indemnity to the extent of the fault of the Contractor or those entities or persons for whom the Contractor is responsible.

## ARTICLE 12 INSURANCE

**12.1 General Insurance Requirement.** The Contractor will purchase from and maintain in a company or companies lawfully authorized to do business in the State of Oregon such insurance as will protect the Contractor from claims set forth below that may arise out of or result from the Contractor's operations and completed operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor, or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

12.1.1 Claims under workers' compensation, disability benefit, and other similar employee benefit acts that are applicable to the Work to be performed;

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12.1.2 Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;

12.1.3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;

12.1.4 Claims for damages insured by usual personal injury liability coverage and commercial general liability coverage (or its equivalent as approved in advance by the Owner);

12.1.5 Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;

12.1.6 Claims for damages because of bodily injury, death of a person, or property damage arising out of ownership, maintenance, or use of a motor vehicle;

12.1.7 Claims for bodily injury or property damage arising out of completed operations;

12.1.8 Claims involving contractual liability insurance applicable to the Contractor's obligations under Article 12 of the General Conditions;

12.1.9 Claims for third-party injury and property damage (including without limitation clean-up costs) as a result of pollution conditions arising from the Contractor's operations or completed operations; and

12.1.10 Claims involving the Contractor's professional liability, solely to the extent that the Contractor accepts design or design/build responsibilities under the Contract.

**12.2 Required Coverage.** Without waiver of any other requirement of the Contract Documents, the Contractor will provide, pay for, and maintain in full force and effect at all times during the performance of the Work until final acceptance of the Work or for such further duration as required, the following policies of insurance issued by a responsible carrier. All of the Contractor's insurance carriers will be rated A VII or better by A.M. Best's rating service, unless otherwise approved by the Owner.

12.2.1 Workers' Compensation: Workers' compensation coverage sufficient to meet statutory liability limits.

12.2.2 Employer's Liability: The Contractor will purchase and maintain employer's liability insurance in addition to its workers' compensation coverage with at least the minimum limits in Section I.C below.

12.2.3 Commercial General Liability: The Contractor will purchase and maintain commercial general liability ("CGL") insurance on an occurrence basis, written on ISO Form CG 0001 (12/04 or later) or an equivalent form approved in advance by the Owner. CGL coverage will include all major coverage categories including bodily injury, property damage, and products/completed operations coverage maintained for at least six years following final payment. The CGL insurance will also include the following: (a) separation of insured; (b) incidental medical malpractice; and (c) per-project aggregate for premises operations.

12.2.4 Professional Liability/Errors and Omissions: To the extent that the Contractor accepts design or design/build responsibilities, the Contractor will purchase and maintain professional liability/errors and omissions insurance and cause those Subcontractors providing design services do so.

12.2.5 Automobile Liability: The Contractor will purchase and maintain automobile liability insurance with coverage for owned, hired, and non-owned vehicles on ISO form CA 00 01 or an equivalent form approved in advance by the Owner. The automobile liability insurance will include pollution liability coverage resulting from vehicle overturn and collision.

12.2.6 Pollution Liability: The Contractor will purchase a contractors' pollution liability policy. Coverage will include third-party claims for bodily injury, property damage, and environmental damage resulting from pollution conditions caused during the performance of covered operations for both on-site and migrating from the job site. Such coverage will include pollution conditions arising from covered operations including work performed by its Subcontractors and third-party claims against the Contractor alleging improper supervision of its Subcontractors.

12.2.7 Commercial Umbrella/Excess Coverage: The Contractor will purchase or maintain a commercial umbrella or excess liability policy to meet the minimum limits as described below in Section I.C. Commercial umbrella/excess liability coverage will include: (a) "Pay on behalf of" wording; (b) concurrency of effective dates with primary coverage; (c) punitive damages coverage (where not prohibited by law); (d) application of aggregate (where applicable) in primary coverage; (e) "care, custody, and control" coverage that follows the form for primary coverage; and (f) drop-down feature. Excess/umbrella coverage will be scheduled to the CGL, employer's liability, and automobile liability policies.

**12.3 Limits.** The insurance required by this Article 12 will be written for at least the limits of liability specified in this Section or required by law, whichever is greatest.

12.3.1 Workers' Compensation..... Statutory Limits

12.3.2 Employer's Liability

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12.3.2.1	Each Accident .....	\$1,000,000
12.3.2.2	Each Bodily Injury/Disease .....	\$1,000,000
12.3.2.3	Aggregate Bodily Injury/Disease.....	\$1,000,000
12.3.3	<u>Commercial General Liability</u>	
12.3.3.1	Each Occurrence .....	\$2,000,000
12.3.3.2	General Aggregate.....	\$2,000,000
12.3.3.3	Product/Completed Operations .....	\$2,000,000
12.3.3.4	Personal & Advertising Injury.....	\$2,000,000
12.3.3.5	Fire Damage Limit.....	\$2,000,000
12.3.3.6	Medical Expense Limit .....	\$2,000,000
12.3.4	<u>Automobile Liability</u>	
12.3.4.1	Combined Single Limit.....	\$2,000,000
12.3.5	<u>Pollution Liability</u>	
12.3.5.1	Single Limit .....	\$2,000,000
12.3.5.2	Aggregate .....	\$2,000,000
12.3.6	<u>Commercial Umbrella/Excess Coverage</u>	
12.3.6.1	Each Occurrence <b>Alternates: Min. \$2,000,000/\$5,000,000/\$10,000,000</b>	

**12.4 Additional Insureds.** The Contractor's third-party liability insurance policies will include the Owner and its officers, employees, agents, volunteers, partners, successors, and assigns as additional insureds. The policy endorsement must extend premise operations and products/completed operations to the additional insureds. The additional insured endorsement for the CGL insurance must be written on ISO Form CG 2010 (11/85), a CG 2037 (07/04) together with CG 2033 (07/04), or the equivalent, but will not use the following forms: CG 20 10 (10 93) or CG 20 10 (03 94).

**12.5 Joint Venture.** If the Contractor is a joint venture, the joint venture will be a named insured for the liability insurance policies.

**12.6 Primary Coverage.** The Contractor's insurance will be primary insurance coverage and may not seek contribution from any insurance or self-insurance carried by the Owner or the Architect or Engineer, including any property damage coverage carried by the Owner. Contractor's insurance will apply separately to each insured against whom a claim is made or suit is brought. The Contractor's insurance will not include any cross-suit exclusion or preclude an additional insured party from asserting a claim as a third party.

**12.7 Contractor's Failure to Maintain Insurance.** If for any reason the Contractor fails to maintain required insurance coverage, such failure will be deemed a material breach of the Contract and the Owner, at its sole discretion, may suspend or terminate the Contract for cause pursuant to Article 15 of this Contract. The Owner may, but has no obligation to, purchase such required insurance, and without further notice to the Contractor, the Owner may deduct from the Contract Sum any premium costs advanced by the Owner for such insurance. Failure to maintain the insurance coverage required by this Article 12 will not waive the Contractor's obligations to the Owner.

**12.8 Certificates of Insurance.** The Contractor will supply to the Owner Certificates of Insurance for the insurance policies described in this Article 12 prior to the commencement of the Work and before bringing any equipment or construction personnel onto the Project site. Contractor shall email Certificate of Insurance to [submitdocuments@oregonmetro.gov](mailto:submitdocuments@oregonmetro.gov).

**12.8.1 Additional Certificates.** To the extent that the Contractor's insurance coverages are required to remain in force after final payment and are reasonably available, an additional certificate evidencing continuation of such coverage will be submitted with the final application for payment. Information concerning reduction of coverage because of revised limits or claims paid under the general aggregate, or both, will be furnished by the Contractor with reasonable promptness in accordance with the Contractor's information and belief.

**12.8.2 Prohibition Until Certificates Received.** The Owner will have the right, but not the obligation, to prohibit the Contractor and its Subcontractors from entering the Project site until the required certificates (or other competent evidence that insurance has been obtained in complete compliance with this Article 12) are received and approved by the Owner.

**12.8.3 Deductibles/Self-Insured Retentions:** Payment of deductibles or self-insured retention is a Cost of the Work and does not justify a Change Order. Satisfaction of all self-insured retentions or deductibles will be the sole responsibility of the Contractor.

**12.9 Subcontractor Insurance.** The Contractor will cause each Subcontractor to purchase and maintain in full force and effect policies of insurance as specified in this Article 12, except that the coverage limits shall be at least \$1,000,000 combined single limit for each occurrence and in the aggregate. The Contractor will be responsible

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for the Subcontractors' coverage if the Subcontractors fail to purchase and maintain the required insurance. When requested by the Owner, the Contractor will furnish copies of Certificates of Insurance establishing coverage for each Subcontractor.

## **12.10 Limitations on Coverage.**

12.10.1 No insurance provided by the Contractor under this Article 12 will be required to indemnify the Owner, the Architect or Engineer, or their employees or agents to the extent of liability for death or bodily injury to persons or damage to property caused in whole or in part by their own negligence, but will require indemnity to the extent of the fault of the Contractor or its agents, representatives, or Subcontractors.

12.10.2 The obligations of the Contractor under this Article 12 will not extend to the liability of the Architect or Engineer or its consultants for (a) the preparation or approval of maps, drawings, opinions, reports, surveys, Change Orders, designs, or specifications; or (b) the giving or failure to give directions or instructions to the extent that the directions, or failure to provide directions, are the cause of the injury or damage.

12.10.3 By requiring insurance, the Owner does not represent that coverage and limits will necessarily be adequate to protect the Contractor. Insurance in effect or procured by the Contractor will not reduce or limit the Contractor's contractual obligations to indemnify and defend the Owner for claims or suits that result from or are connected with the performance of the Contract.

## **12.11 Property Insurance**

12.11.1 Builders Risk. Contractor, for the life of this Contract, shall effect and maintain Builders All Risk Insurance and fire insurance with extended coverage and malicious mischief coverage upon the structures on which the Work of this Contract is to be done to 100 percent (100%) of the insurable value thereof, protecting (1) Owner's interest; (2) Contractor's interest; and (3) the Subcontractor's interest in the Work. Contractor's interest and Subcontractor's interest, as used herein, means their property interests and the property interests of others for which they are responsible in the Project, in all materials and supplies entering into or used or destined for use therein, and in all expendable items of equipment that are used in or are incidental to but that do not become a part of the finished Project, located at the job Site at the time of loss or damage. Such insurance shall not exclude coverage for landslides, collapse, explosion, or loss due to the result of faulty workmanship. Such insurance will include coverage for soft costs or delay in opening.

12.11.1.1 Contractor and all Subcontractors shall be responsible for any loss or damage to their machinery and apparatus and nonexpendable items of their equipment.

12.11.1.2 Contractor shall provide adequate fire protection equipment and safeguards to protect Metro and Contractor's interests in accordance with Metro's insurance carrier's requirements.

12.11.1.3 Contractor will furnish copies of Certificates of Insurance establishing coverage prior to project start.

12.11.2 Contractor's Responsibility. Contractor must provide insurance for its own machinery, tools, equipment, or supplies that are not to become a part of the Project.

## **ARTICLE 13**

### **MINORITY/WOMEN/EMERGING SMALL BUSINESS PROGRAM**

**13.1** Contractor shall comply with all pertinent provisions of Metro's MWESB Business Program that are contained in Metro Code 2.04.100 to 2.04.190 and that are by this reference expressly incorporated herein and made a part of this Contract.

**13.2** Contractor shall not replace a minority, women-owned or emerging small business enterprise Subcontractor with another Subcontractor, either before Contract Award or during Contract performance, without prior written approval of Metro. In replacing a minority, women-owned or emerging small business Subcontractor, Contractor shall replace such minority, women-owned or emerging small business Subcontractor with another certified minority, women-owned or emerging small business Subcontractor or make good faith efforts to do so. Failure to do so shall constitute Contractor's default of this Contract, and Metro, at its option, may terminate this Contract under the procedures set out in Article 15.

**13.3** Metro reserves the right, at all times during the period of this Contract, to monitor Contractor's compliance with the terms of the MWESB Business Program and enforce the program if Contractor should fail to so comply. Contractor shall be bound by any and all representations made concerning its compliance with the program prior to Contract Award and any and all representations made by Contractor concerning the replacement of a minority or women-owned business Subcontractor during the performance of this Contract.

### **13.4 MWESB Participation in the Contract.**

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13.4.1 It is Metro's policy that Contractor shall take reasonable steps to ensure that Minority Business Enterprises (MBE), Women Business Enterprises (WBE), and Emerging Small Businesses (ESB) have the opportunity to participate in the Work.

13.4.2 Termination and Substitution of MWESB. The Contractor shall notify Metro in writing and confer with Metro before terminating or replacing a MWESB that has a signed contract with the Contractor.

13.4.3 Changes in Work Committed to MWESB. Metro will consider the impact on MWESB participation in instances where Metro changes, reduces, or deletes Work contracted to MWESB firms at the time of Contract Award. In such instances, the Contractor shall not be required to replace the Work but is encouraged to do so. If the Contractor proposes any changes that involve a contracted MWESB, the Contractor shall notify the MWESB of the proposed change, reduction, or deletion of any Work committed at the time of Contract Award prior to executing the Change Order. The Contractor can choose to enable the affected MWESB to participate in the Change Order request and is requested to make every effort to maintain the contracted MWESB percentage.

13.4.4 Contractor Payments to Subcontractors. The Contractor shall maintain records of all subcontracts entered into with MWESB firms and records of materials purchased from MWESB suppliers. Such records shall show the name and business address of each MWESB subcontractor or vendor and the total dollar amount actually paid to each MWESB subcontractor or vendor. The Contractor shall pay each subcontractor for satisfactory performance of its contract no later than ten (10) Calendar Days from receipt of each payment the Contractor receives from Metro. The Contractor shall also return Retainage payments to each subcontractor within ten (10) Calendar Days after the subcontractor's work is satisfactorily completed. Any delay or postponement of payment from the above-referenced time frame may occur only for good cause following written approval of the Metro Project Manager. The Contractor shall submit a completed, signed original "Metro Monthly Subcontractor Payment and Utilization Report," available from Metro. The Contractor shall submit the form when a progress or final payment has been made to each subcontractor or supplier or when any held retainage is returned to a subcontractor or supplier. Contractor shall submit the form no later than the fifth day of each month. At the completion of the Project, Contractors shall submit a final form indicating the total amounts paid to all subcontractors and suppliers.

## ARTICLE 14

### MISCELLANEOUS STATUTORY RESPONSIBILITIES OF CONTRACTOR

Contractor shall keep itself fully informed of and shall fully comply with all federal, state, regional, and local laws, rules, regulations, ordinances, and orders pertaining in any manner to this Contract and those rules, regulations, and orders of any agency or authority having jurisdiction over the Work or those persons employed or engaged therein. Contractor shall pay all taxes, including federal, state, regional, county, and city, or taxes of any other governmental entity applicable to the Work performed or materials provided under this Contract.

## ARTICLE 15

### TERMINATION OR SUSPENSION OF THE WORK

#### 15.1 Default of Contractor.

15.1.1 If Contractor should be adjudged bankrupt, or if Contractor should make a general assignment for the benefit of its creditors, or if a receiver should be appointed on account of insolvency, or if Contractor should refuse to or fail to supply enough properly skilled workers or proper materials for the efficient prosecution of the Work, disregard laws, ordinances, or the instructions of Metro, or otherwise be in violation of any provision of the Contract, Metro may, without prejudice to any other right or remedy and after giving Contractor and Contractor's surety on the Performance Bond prior written notice, terminate the Contract or any portion of the Contract, which termination shall be effective ten (10) days after service of such notice. Such notice shall contain the reasons for the termination and shall state that unless, within ten (10) calendar days of service of the termination notice on Contractor, Contractor or its surety on the Performance Bond shall have cured or shall have made, in Metro's opinion, appropriate arrangements for prompt cure of all of the cause(s) for termination cited in the notice of termination, the Contract shall terminate.

15.1.2 Upon termination, Metro may take possession of the premises and of all materials, tools, and appliances thereon, as well as all other materials whether on the premises or not, for which Contractor has received partial payment, and may finish the Work or the portion terminated by whatever method it may deem expedient.

15.1.3 In the event action as above indicated is taken by Metro, Contractor or Contractor's surety shall provide Metro with immediate and peaceful possession of all of the materials, tools, and appliances located on the premises, as well as all other materials whether on the premises or not, for which Contractor has received any progress payment. Upon termination, in the event that the surety does not complete the Contract, at the election of Metro, Contractor shall assign any and all subcontracts and material contracts to Metro or Metro's designee. Further,

# Construction Agreement

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Contractor shall not be entitled to receive any further payment until the Work is completed. On completion of the Work, determination shall be made by Metro of the total amount Contractor would have been entitled to receive for the Work under the terms of the Contract had Contractor completed the Work. If the difference between said total amount and the sum of all amounts previously paid to Contractor, which difference will hereinafter be called the "unpaid balance," exceeds the expense incurred by Metro in completing the Work, including expense for additional managerial and administrative service, and all other costs, damages, and expenses incurred by Metro due to Contractor's failure to complete the Contract, such excess will be paid to Contractor, with the consent of the surety. If, instead, the described expenses incurred by Metro exceed the unpaid balance, the amount of the excess shall be paid to Metro by Contractor or its surety. If only a portion of the Contract is terminated, this Section shall be deemed to apply to that portion of the Work only.

15.1.4 In addition to the above-mentioned right, Metro shall have the right, at its option, to suspend all or part of Contractor's performance under the Contract should any of the events occur that give Metro the right to terminate the Contract as above described. In such event, Metro shall give Contractor and Contractor's surety prior written notice of such suspension and Contractor shall stop or cause to stop all such Work under the Contract immediately on receipt of such notice and shall not commence such Work under the Contract again unless and until Contractor shall receive written notice from Metro to proceed. Metro shall not be responsible or liable to Contractor or others for any costs or expenses of whatever nature related to Contractor's failure to stop Work as directed by Metro.

15.1.5 After receipt of a notice of termination or suspension, and except as otherwise directed by Metro, Contractor shall as it relates to those portions of the Contract terminated or suspended:

15.1.5.1 Stop Work under the Contract on the date and to the extent specified in the notice of termination or suspension.

15.1.5.2 Place no further orders or subcontracts, or suspend the same, as applicable, for materials, services, or facilities except as necessary to complete the portion of the Work under the Contract that is not terminated or suspended.

15.1.5.3 Terminate or suspend, as applicable, all orders and subcontracts to the extent that they relate to the performance of such Work terminated or suspended.

15.1.6 Metro may, at its discretion, avail itself of any or all of the above rights or remedies and its invoking of any one of the above rights or remedies will not prejudice or preclude Metro from subsequently invoking any other right or remedy set forth above or elsewhere in the Contract.

15.1.7 None of the foregoing provisions shall be construed to require Metro to complete the Work nor to waive or in any way limit or modify the provisions of the Contract relating to the fixed and liquidated damages suffered by Metro on account of failure to complete the Project within the time prescribed.

## 15.2 Termination in the Public Interest.

15.2.1 Metro may unilaterally terminate the Contract in whole or in part for convenience, when Metro determines it to be in the public interest.

15.2.2 When Metro decides to terminate a Contract for convenience, Metro will notify the Contractor and its sureties in writing of its intention to terminate the Contractor's right to proceed with the Work no less than seven (7) days in advance of the date of the actual termination. The date of termination, which is the date after which no Work is to be performed, must be stated in the notice. Notice will be deemed to have been given if sent to the Contractor's or any surety's last known address provided to Metro by the Contractor and its sureties. For purposes of computing time in this Section, the first day counted is the day that the notice is mailed by Metro.

15.2.3 After receipt of a notice of termination, and except as directed by Metro, the Contractor will immediately proceed with the following obligations:

15.2.3.1 Stop Work by the date as specified in the notice;

15.2.3.2 Award no further subcontracts and place no further orders for materials, services, or facilities, except as necessary to complete the continued portion of the Contract, if any;

15.2.3.3 Terminate all Subcontractors and orders to the extent that they relate to the Work terminated;

15.2.3.4 Assign to Metro, if directed by Project Manager, all right, title, and interest of the Contractor under the subcontracts terminated, in which case Metro will have the right to settle or to pay any termination settlement proposals arising out of those terminations;

15.2.3.5 With approval or ratification to the extent required by Metro, settle all outstanding liabilities and termination settlement proposals arising from the termination of subcontracts; the approval or ratification will be final for purposes of this clause;

# Construction Agreement

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15.2.3.6 As directed by Metro, transfer title and deliver to Metro (a) the fabricated or unfabricated parts, Work in process, completed Work, supplies, and other materials produced or acquired for the Work terminated, and (b) the completed or partially completed plans, drawings, information, and other property that, if the Contract had been completed, would be required to be furnished to Metro;

15.2.3.7 Take any actions that may be necessary, or that Project Manager may direct, for the protection and preservation of the property related to this Contract that is in the possession of the Contractor and in which Metro has or may acquire an interest; and

15.2.3.8 Use its best efforts to sell, as directed or authorized by Project Manager, any property of the type referred to in Section 14.2.3.6 above, except that the Contractor (a) is not required to extend credit to any purchaser and (b) may acquire the property under the conditions prescribed by, and at prices approved by, the Project Manager. The process of any transfer or disposition will be applied to reduce any payments to be made by Metro under this Contract, credited to the price or cost of the Work, or paid in any other manner directed by Project Manager.

15.2.4 Upon termination, Metro will pay the Contractor the following costs, and no other, as a result of the termination:

15.2.4.1 With regard to the Contract Work performed before the effective date of termination, the total (without duplication of any items) of the following costs:

15.2.4.1.1 The cost of this Work, as determined by the method of payment established by the Contract Documents;

15.2.4.1.2 The cost of settling and paying termination settlement proposals under terminated subcontracts that are properly chargeable to the terminated portion of the Contract if such costs are not included in Section 14.2.3.4; and

15.2.4.1.3 A sum as profit on Section 14.2.4.1.1 above, not to exceed ten percent of that amount, unless it appears that the Contractor would have sustained a loss on the entire Contract had it been completed. No profit, however, is permitted on costs compensated under Section 14.2.4.1.2.

15.2.4.2 The reasonable costs of settlement of the Work terminated, including:

15.2.4.2.1 Accounting, clerical, and other expenses reasonably necessary for the preparation of termination settlement proposals and supporting data, except that no allowance will be made for costs incurred as attorney fees;

15.2.4.2.2 The termination and settlement of Subcontractors (excluding the amounts of such settlements); and

15.2.4.2.3 Storage, transportation, and other costs incurred reasonably necessary for the preservation, protection, or disposition of the termination inventory.

15.2.5 No costs other than those allowed in Section 14.2.4 are to be paid. By way of example only, and not by way of limitation, costs that would not be allowed include anticipated profits on unperformed Work, consequential damages, post-termination overhead, Bid or Proposal preparation costs, costs for retraining employees, depreciation on idle equipment, cost of common items reasonably usable on the Contractor's other work, and costs unrelated to the Work performed prior to the date of termination.

15.2.6 Metro may deduct from any sums otherwise due the Contractor under Section 14.2.4 above the cost of advance payments made to the Contractor under the terminated portion of this Contract, any claim that Metro has against the Contractor whether or not arising from this Contract, and the agreed price of, or proceeds of sale of, materials, supplies, or other things acquired by the Contractor or sold under the provision of Section 14.2.3.8 and not recovered by or credited to Metro.

15.2.7 Payment from Metro is not due until the Contractor has submitted an itemization of its recoverable costs to Metro in writing, together with supporting documentation. The Contractor will supply additional supporting documentation on request by Metro in order to recover its costs.

15.2.8 The Contractor will maintain all records and documents relating to the termination until Metro and the Contractor resolve the amount of costs to be paid by Metro to the Contractor as a result of this termination. Such records must be made available to Metro within thirty (30) days of the request.

END OF SECTION



600 NE Grand Ave.  
 Portland, OR 97232-2736  
 503-797-1700

# Construction Agreement

METRO CONTRACT NO. 306009

## METRO GENERAL CONDITIONS - EXHIBIT 1

### WARRANTY FORM

We the undersigned hereby warrant that the [DESCRIBE WORK PERFORMED OR MATERIALS SUPPLIED].that we have provided for [INSERT PROJECT NAME] has been done in accordance with the Contract Documents and that the Work as provided will fulfill the requirements of the warranty included in Article 7 of the Metro General Conditions.

We agree to correct or remove and replace any or all of our Work, together with any other adjacent Work that may be displaced or affected by so doing, that may be defective in its workmanship or materials, or that may fail to conform to the requirements of the Contract Documents, within a period of one (1) year following the later of the date of substantial completion or the date described in Section 7.7 of the Metro General Conditions, without any expense whatsoever to Metro, normal wear and tear and mistreatment excepted.

In the event of our failure to comply with the above-mentioned conditions within twenty (20) calendar days after Metro notifies Contractor in writing, we collectively and separately do hereby authorize Metro to proceed to have said defects repaired and corrected at our expense, and we will honor and pay the costs to dispose of nonconforming materials and charges therefore upon demand. If Metro is required to enforce payment, it shall be entitled to recover its costs and reasonable attorney fees.

#### CONTRACTOR

By\_\_\_\_\_

Print Name\_\_\_\_\_

Date\_\_\_\_\_

#### SUBCONTRACTOR

By\_\_\_\_\_

Print Name\_\_\_\_\_

Date\_\_\_\_\_



600 NE Grand Ave.  
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503-797-1700

# Construction Agreement

METRO CONTRACT NO. 306009

## METRO GENERAL CONDITIONS - EXHIBIT 2

### SUBCONTRACTOR ASSIGNMENT OF ANTITRUST CLAIMS

Project: \_\_\_\_\_

Owner: Metro \_\_\_\_\_

General Contractor: \_\_\_\_\_

Subcontractor: \_\_\_\_\_

Release Date: \_\_\_\_\_

1. By entering into a contract with the General Contractor, subcontractor, for consideration paid to subcontractor under the subcontract, does irrevocably assign to Metro any claim for relief or cause of action that subcontractor now has or that may accrue to Subcontractor in the future, including at Metro's option, the right to control any such litigation on such claim for relief or cause of action, by reason of any violation of 15 USC Section 1 15, ORS 646.725, or ORS 646.730 in connection with any goods or services that are used, in whole or in part, for the purpose of carrying out subcontractor's obligations under its subcontract with the General Contractor.

2. Subcontractors irrevocably assigns to Metro, as a third-Party beneficiary of the subcontract, any right, title, or interest that has accrued or may accrue to the Subcontractor by reason of any violation of 15 USC Section 1 15, ORS 646.725, or ORS 646.730, including, at Metro's option, the rights to control any litigation arising hereunder, in connection with any goods or services provided to the Subcontractors or Suppliers by any person, in whole or in part, for the purpose of carrying out the Subcontractor's obligations as agreed to by Subcontractor in pursuance of the completion of the Contract .

3. It is an express obligation of Subcontractor that it will take no action that will in any way diminish the value of the rights conveyed or assigned hereunder to Metro. It is an express obligation of Subcontractor to advise the Office of Metro Attorney:

a. In advance, of its intention to commence any action on its own behalf regarding such claims for relief or causes of action;

b. Immediately, upon becoming aware of the fact that an action has been commenced on its own behalf by some other person or persons, of the imminency of such action; and

c. the date on which it notified the obligor(s) of any such claims for relief or causes of action of the fact of its assignment to Metro.

4. In the event that any payment under any such claim is made to Subcontractor, it shall promptly pay over to Metro its proportionate share thereof, if any, assigned to Metro herein.

#### SUBCONTRACTOR

By \_\_\_\_\_

Print Name \_\_\_\_\_

Date \_\_\_\_\_

# Construction Agreement

MERC CONTRACT NO. 306009

## METRO GENERAL CONDITIONS - EXHIBIT 3

### AFFIDAVIT, AGREEMENT FOR INDEMNITY, LIEN WAIVER AND RELEASE

(General Contractor – Progress Payment)

This AFFIDAVIT, AGREEMENT FOR INDEMNITY, LIEN WAIVER AND RELEASE is entered into \_\_\_\_\_, by and between Metro, a Metropolitan Service District established pursuant to Oregon law and the Metro Charter (“Metro”) and \_\_\_\_\_, (the “Undersigned”) in accord with Metro Contract No. \_\_\_\_\_, dated \_\_\_\_\_, between Metro and the Undersigned for construction of \_\_\_\_\_ (the “Contract”). As a condition precedent to Metro’s Progress Payment No. \_\_\_\_\_ under the Contract in the amount of \$ \_\_\_\_\_, and in consideration thereof, the Undersigned agrees to make the following representations, warranties, covenants, agreements, and indemnities, and to fully and completely waive, release, and discharge Metro from all liabilities, obligations, and claims arising under the Contract, as follows:

1. The Undersigned hereby certifies, represents, and warrants as follows:

1.1 It has supplied labor, services, equipment, materials, and materials provided or transported to the construction of the \_\_\_\_\_ as General Contractor under the Contract (the “Project”), and has subcontracted with other persons and entities to so provide.

1.2 It has complied with all federal, state, and local laws, including social security laws, unemployment compensation laws, workers’ compensation laws, and tax laws, insofar as applicable to the performance of the Contract work, and has paid all federal, state, and local taxes including excise, use, sales, and withholding taxes.

1.3 All subcontractors, laborers, service providers, equipment suppliers and material suppliers, and transporters for work, services, equipment, or materials supplied to the Project or to the Undersigned and used in the Project have been paid in full by the Undersigned through the period covered by previous progress payments made by Metro.

1.4 It either has paid in full, or within ten (10) business days of receipt of the above set forth Progress Payment, will pay in full all subcontractors, laborers, service providers, equipment suppliers and material suppliers, and transporters for work, services, equipment, or materials supplied to the Project or to the Undersigned connected with or used in the Project, through the period covered by said progress payment made by Metro.

1.5 It has delivered to Metro written releases of all rights to file claims on any bonds in connection with the Contract, signed by each subcontractor, service provider, and supplier who performed work or services, or furnished or transported materials or equipment in connection with the Contract, in accord with Article 9 of the Metro General Conditions to the Contract.

2. The Undersigned acknowledges and agrees that Progress Payments made by Metro up to the date hereof, in the sum of \_\_\_\_\_, plus Progress Payment No. \_\_\_\_\_, when paid, constitute payment in full of all amounts due to Undersigned for all labor, services, equipment, and materials provided or transported in connection with the Project up to and through \_\_\_\_\_, \_\_\_\_\_, as set forth in the Undersigned’s payment application No. \_\_\_\_\_. The Undersigned agrees that, **upon receipt of the above set forth progress payment**, which is the full payment due and owing to Undersigned up to and through the date set forth in section 2, Undersigned will be paid in full for all labor (including contributions and benefits), services, equipment, supplies, and materials provided or transported in connection with the Project without exceptions, and that there are no other unsettled claims or demands therefore. The Undersigned agrees that, **conditioned upon receipt of Payment of the above set forth progress payment**, and in consideration thereof, the Undersigned hereby fully and unconditionally waives and releases Metro from all liability for payment, liens or claims of lien, rights to lien, bond claim rights, and any other claim for payment it now has or asserts or may have or assert for labor, services, equipment, materials, and materials provided or transported in connection with the Project through and up to said date, and further releases Metro, the Project land and improvements from any claim, cause of action, or demand whatsoever, arising out of or relating to the Project that arose on or before said date.

3. The Undersigned hereby agrees to promptly pay and obtain a release of claims on any bonds that may in the future affect the Project, and defend, indemnify, and save Metro harmless from any liability or expense because of any claim on any bond or any other claim related to the work under the Contract through and up to the date set forth in section 2.

4. The affiant signing below does hereby swear and attest that he/she has the full authority to sign this document on behalf of the Undersigned and that Metro may rely on this Affidavit, Agreement for Lien Waiver and Release in connection with remitting Progress Payment No. \_\_\_\_\_ to Undersigned.

Dated: \_\_\_\_\_ Affiant: \_\_\_\_\_ Its: \_\_\_\_\_

STATE OF OREGON )  
County of \_\_\_\_\_ )

This instrument was acknowledged before me on \_\_\_\_\_ by \_\_\_\_\_ as \_\_\_\_\_  
\_\_\_\_\_ of \_\_\_\_\_

\_\_\_\_\_  
Notary Public - State of Oregon



600 NE Grand Ave.  
Portland, OR 97232-2736  
503-797-1700

# Construction Agreement

MERC CONTRACT NO. 306009

## METRO GENERAL CONDITIONS - EXHIBIT 4

### AFFIDAVIT, AGREEMENT FOR INDEMNITY, LIEN WAIVER AND RELEASE

(General Contractor – Final Closeout)

This AFFIDAVIT, AGREEMENT FOR INDEMNITY, LIEN WAIVER AND RELEASE is entered into \_\_\_\_\_, by and between Metro, a Metropolitan Service District established pursuant to Oregon law and the Metro Charter (“METRO”) \_\_\_\_\_, (the “Undersigned”) in accord with Metro Contract No. \_\_\_\_\_, dated \_\_\_\_\_, between Metro and the Undersigned for construction of the \_\_\_\_\_ (the “Contract”). As a condition precedent to Metro’s final payment under the Contract, in the amount of \_\_\_\_\_ (the “Final Payment”), and in consideration thereof, the Undersigned agrees to make the following representations, warranties, covenants, agreements and indemnities, and to fully and completely waive, release and discharge Metro from all liabilities, obligations, and claims arising under the Contract, as follows:

1. The Undersigned hereby certifies, represents and warrants as follows:

1.1 It has supplied labor, services, equipment, materials or materials transported to the construction of the \_\_\_\_\_ as General Contractor under Metro Contract No. \_\_\_\_\_ (the “Project”), and has subcontracted with other persons and entities to so provide.

1.2 It has complied with all federal, state and local laws, including social security laws, unemployment compensation laws, workers’ compensation laws, and tax laws, insofar as applicable to the performance of the Contract work, and has paid all federal, state and local taxes including excise, use, sales and withholding taxes.

1.3 All subcontractors, laborers, service providers, equipment suppliers and material suppliers and transporters for work, services, equipment or materials supplied to the Project or to the Undersigned and used in the Project have been paid in full by the Undersigned through the period covered by previous progress payments made by Metro.

1.4 It either has paid in full, or within ten (10) business days of receipt of the Final Payment, will pay in full all subcontractors, laborers, service providers, equipment suppliers and material suppliers and transporters for work, services, equipment or materials supplied to the Project or to the Undersigned connected with or used in the Project.

1.5 It has delivered to Metro written releases of all rights to file claims on any bonds in connection with the Contract, signed by each subcontractor, service provider and supplier who performed work, services or furnished or transported materials or equipment in connection with the Contract, in accord with Article 9 of the General Conditions to the Contract.

2. The Undersigned covenants and agrees that progress payments made by Metro up to the date hereof, in the sum of \$ \_\_\_\_\_, plus the Final Payment in the amount of \_\_\_\_\_, constitute full and final payment of all amounts due to Undersigned for all labor, services, equipment, and materials provided or transported in connection with the Project. The Undersigned agrees that, **conditioned upon receipt of the Final Payment**, and in consideration thereof, the Undersigned hereby fully and unconditionally waives, discharges and releases Metro from all liabilities, obligations and claims, including all liens, claims of lien, rights to lien, bond claim rights and any other claim for payment it now has or asserts or may have or assert for labor, services, equipment, materials provided or transported in connection with the Contract, and further releases Metro, the Project land and improvements from any claim, cause of action, or demand whatsoever arising out of or relating to the Project.

3. The Undersigned hereby agrees to defend, indemnify and hold Metro harmless from any liability or expense resulting from any claim on any bond or any other claim related to the Contract or work there under, in accord with Articles 9 and 1 of the General Conditions to the Contract.

4. The affiant signing below does hereby swear and attest that he/she has the full authority to sign this document on behalf of the Undersigned and that, **except for the Final Payment**, which is the full and final payment due and owing to Undersigned, that Undersigned has been paid in full for all labor (including contributions and benefits), services, equipment, supplies and materials provided or transported in connection with the Project without exceptions, and that there are no other unsettled claims or demands therefore. The Undersigned affiant further acknowledges that Metro may rely on this Affidavit, Agreement for Indemnity, Lien Waiver and Release in connection with remitting the Final Payment to Undersigned.

Dated: \_\_\_\_\_ Undersigned: \_\_\_\_\_

By: \_\_\_\_\_ Its: \_\_\_\_\_

STATE OF OREGON )  
) ss.  
County of \_\_\_\_\_ )

This instrument was acknowledged before me on \_\_\_\_\_ by \_\_\_\_\_ as \_\_\_\_\_  
of \_\_\_\_\_

\_\_\_\_\_  
Notary Public - State of Oregon



600 NE Grand Ave.  
Portland, OR 97232-2736  
503-797-1700

# Construction Agreement

MERC CONTRACT NO. 306009

## METRO GENERAL CONDITIONS - EXHIBIT 5

### AFFIDAVIT, LIEN WAIVER AND RELEASE – CONDITIONAL FINAL

(Subcontractor - Closeout)

1. The undersigned, \_\_\_\_\_ (“Undersigned”), has provided labor, services, equipment, materials or materials transport to the construction of the improvements at \_\_\_\_\_ known as \_\_\_\_\_, as a Subcontractor to \_\_\_\_\_ (“Contractor”), Metro Contract No. \_\_\_\_\_ (the “Project”).

2. The Undersigned acknowledges and agrees that the sum of \$ \_\_\_\_\_ constitutes full and final payment of all amounts due to Undersigned for all labor, services, equipment, and materials provided or transported in connection with the Project (the “Final Payment”). The Undersigned agrees that, **conditioned upon receipt of the Final Payment**, and in consideration thereof, the Undersigned hereby fully and unconditionally waives and releases all liens, claims of lien, rights to lien, bond claim rights and any other claim for payment it now has or asserts or may have or assert for labor, services, equipment, materials provided or transported in connection with the Project, and further releases Metro, the Project land and improvements, and the Contractor from any claim, cause of action, or demand whatsoever arising out of or relating to the Project.

3. The Undersigned hereby certifies as follows:

3.1 It has complied with all federal, state and local laws, including tax laws, social security laws, unemployment compensation laws and workers’ compensation laws, insofar is applicable to the performance of the subcontract work.

3.2 Its laborers, equipment suppliers and material suppliers have been fully paid through the period covered by previous progress payments made by Contractor except as explicitly noted in writing and attached hereto.

3.3 It either has paid in full, or within five (5) business days of receipt of the Final Payment, will pay in full for all labor, materials and equipment used in or furnished in connection with Project.

4. The affiant signing below does hereby swear and attest that he/she has the full authority to sign this document on behalf of the Undersigned and that, **conditioned upon receipt of the Final Payment**, which is the full and Final Payment due and owing to Undersigned, that Undersigned has been paid in full for all labor (including contributions and benefits), services, equipment, supplies and materials provided or transported in connection with the Project without exceptions, and that there are no other unsettled claims or demands therefore. The Undersigned affiant and further acknowledges that Metro and Contractor are relying on this Affidavit, Lien Waiver and Release in connection with processing the Final Payment.

Dated: \_\_\_\_\_ Undersigned | Subcontractor: \_\_\_\_\_  
By: \_\_\_\_\_  
Print Name: \_\_\_\_\_  
Its: \_\_\_\_\_

STATE OF OREGON     )  
  ) ss.  
County of Multnomah    )

This instrument was acknowledged before me on \_\_\_\_\_ by \_\_\_\_\_ as \_\_\_\_\_  
\_\_\_\_\_ of \_\_\_\_\_.

\_\_\_\_\_  
Notary Public - State of Oregon

n

**ATTACHMENT C**

**KELLER AUDITORIUM ROOF REPLACEMENT  
SUPPLEMENTAL GENERAL CONDITIONS**

**SECTION S.1 - ALTERNATES****PART 1 - GENERAL**

## 1.1 RELATED DOCUMENTS

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

## 1.2 SUMMARY

1. This Section includes administrative and procedural requirements for alternates.

## 1.3 DEFINITIONS

1. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to or deducted from the Base Bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
  - A. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

## 1.4 PROCEDURES

1. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
  - A. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
2. Execute accepted alternates under the same conditions as other work of the Contract.
3. Schedule: A Schedule of Alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

**PART 2 - PRODUCTS (Not Used)****PART 3 - EXECUTION**

## 3.1 SCHEDULE OF ALTERNATES

- A. Add Alternate No. 01: Provide price to repaint fly loft walls before proceeding with roof replacement.
- B. Add Alternate No.02: Provide price to wash uppermost surface of exterior precast panels
- C. Add Alternate No. 03: Provide custom sheet metal finish color at top of wall copings at pre-cast panels as noted. Refer to Specification Section 07 62 00 Sheet Metal Flashing and Trim.

END OF SECTION S.1

**SECTION S.2 - SUBSTITUTION PROCEDURES****PART 1 - GENERAL**

## 1.1 RELATED DOCUMENTS

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

## 1.2 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions.

## 1.3 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
  1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
  2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

## 1.4 SUBMITTALS

- A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
  1. Substitution Request Form: Use CSI Form 13.1A.
  2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
    - a) Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
    - b) Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
    - c) Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
    - d) Product Data, including drawings and descriptions of products and fabrication and installation procedures.
    - e) Samples, where applicable or requested.
    - f) Certificates and qualification data, where applicable or requested.
    - g) List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
    - h) Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
    - i) Research reports evidencing compliance with building code in effect for Project, from ICC-ES.
    - j) Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
    - k) Cost information, including a proposal of change, if any, in the Contract Sum.

- l) Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
  - m) Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 7 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
- a) Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
  - b) Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

#### 1.5 QUALITY ASSURANCE

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

#### 1.6 PROCEDURES

- A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

### PART 2 - PRODUCTS

#### 2.1 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 14 days prior to time required for preparation and review of related submittals.

Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

1. Requested substitution is consistent with the Contract Documents and will produce indicated results.
2. Substitution request is fully documented and properly submitted.
3. Requested substitution will not adversely affect Contractor's construction schedule.
4. Requested substitution has received necessary approvals of authorities having jurisdiction.
5. Requested substitution is compatible with other portions of the Work.
6. Requested substitution has been coordinated with other portions of the Work.
7. Requested substitution provides specified warranty.
8. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

- B. Substitutions for Convenience: Architect will consider requests for substitution if received within 14 days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Architect.

Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

**Keller Roof Replacement****Schedule A - Supplemental General Conditions**

1. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
2. Requested substitution does not require extensive revisions to the Contract Documents.
3. Requested substitution is consistent with the Contract Documents and will produce indicated results.
4. Substitution request is fully documented and properly submitted.
5. Requested substitution will not adversely affect Contractor's construction schedule.
6. Requested substitution has received necessary approvals of authorities having jurisdiction.
7. Requested substitution is compatible with other portions of the Work.
8. Requested substitution has been coordinated with other portions of the Work.
9. Requested substitution provides specified warranty.
10. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

**PART 3 - EXECUTION (Not Used)**

END OF SECTION S.2

**SECTION S.3 CONSTRUCTION PROGRESS DOCUMENTATION****PART 1 - GENERAL**

## 1.1 RELATED DOCUMENTS

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

## 1.2 SUMMARY

- A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
  1. Contractor's construction schedule.
  2. Site condition reports.
  3. Special reports.
- B. Related Sections include the following:
  1. Section S.2 "Submittal Procedures" for submitting schedules and reports.

## 1.3 SUBMITTALS

- A. Format for Submittals: Submit required submittals in the following format:
  1. Electronic file.
  2. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.
  3. Field Condition Reports: Submit at time of discovery of differing conditions.

4. Special Reports: Submit at time of unusual event.

#### 1.4 COORDINATION

- A. Coordinate dates and locations of noise generating work with Owner. Schedule noise generating work locations on roof to minimize disruption of Owner's scheduled activities and events in areas below. Prepare work schedule that coordinates with Owners schedule, indicating work zones and work activities and dates work areas will be occupied by construction personnel.

### PART 2 -PRODUCTS

#### 2.1 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Time Frame: Extend schedule from date established for Notice to Proceed to date of final completion.

#### 2.2 REPORTS

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

#### 2.3 SPECIAL REPORTS

- A. General: Submit special reports directly to Owner within one (1) day(s) of an occurrence. Distribute copies of report to parties affected by the occurrence.
- B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

### PART 3 - EXECUTION

#### 3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

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

END OF SECTION S.3

### SECTION S.4 - SUBMITTAL PROCEDURES

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

Related Sections include the following:

- A. Title sheet "for deferred submittals"

- B. Section S.8 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.

### 1.3 DEFINITIONS

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

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

**File Transfer Protocol (FTP):** Communications protocol that enables transfer of files to and from another computer over a network and that serves as the basis for standard Internet protocols. An FTP site is a portion of a network located outside of network firewalls within which internal and external users are able to access files.

**Portable Document Format (PDF):** An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

### 1.4 SUBMITTALS

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

- A. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
- B. **Initial Submittal:** Submit concurrently with startup construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
- C. **Final Submittal:** Submit concurrently with the first complete submittal of Contractor's construction schedule.
1. Submit revised submittal schedule to reflect changes in current status and timing for submittals.
- D. **Format:** Arrange the following information in a tabular format:
1. Scheduled date for first submittal.
  2. Specification Section number and title.
  3. Submittal category: Action; informational.
  4. Name of subcontractor.
  5. Description of the Work covered.
  6. Scheduled date for Architect's final release or approval.
  7. Scheduled date of fabrication.
  8. Scheduled dates for purchasing.
  9. Scheduled dates for installation.

### 1.5 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. **Architect's Digital Data Files:** Electronic digital data files of the Contract Drawings will be provided by Architect for Contractor's use in preparing submittals.
1. Architect will furnish Contractor one set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawing and Project record drawings.
    1. Architect makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.
    2. **Digital Drawing Software Program:** The Contract Drawings are available in AutoCAD 2009 format for Microsoft Windows
    3. Contractor shall execute a data licensing agreement in the form of AIA Document C106, digital Data Licensing Agreement.

- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities
1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
  2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
  3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
  4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
    - a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including re-submittals.
1. Initial Review: Allow ten (10) working days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
  2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
  3. Resubmittal Review: Allow ten (10) working days for review of each re-submittal.
  4. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow fifteen (15) working days for initial review of each submittal

**PART 2 -** Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

Form of Submittal: If approved by the Owner and the Architect, materials may be submitted electronically using procedures outlined. Architect may request paper submittals for items unable to be reviewed electronically.

Paper Submittals: Place a permanent label or title block on each submittal item for identification.

- A. Indicate name of firm or entity that prepared each submittal on label or title block.
- B. Provide a space approximately **6 by 8 inches** on label or beside title block to record Contractor's review and approval markings and action taken by Architect.
- C. Include the following information for processing and recording action taken:
  1. Project name.
  2. Date.
  3. Name of Architect.
  4. Name of Contractor.
  5. Name of subcontractor.
  6. Name of supplier.
  7. Name of manufacturer.
  8. Submittal number or other unique identifier, including revision identifier.
    - a) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).

9. Number and title of appropriate Specification Section.
  10. Drawing number and detail references, as appropriate.
  11. Location(s) where product is to be installed, as appropriate.
  12. Other necessary identification.
- D. Transmittal for Paper Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect will return without review submittals received from sources other than Contractor.
1. Transmittal Form for Paper Submittals: Provide locations on form for the following information:
    - a) Project name.
    - b) Date.
    - c) Destination (To:).
    - d) Source (From:).
    - e) Name and address of Architect.
    - f) Name of Contractor.
    - g) Name of firm or entity that prepared submittal.
    - h) Names of subcontractor, manufacturer, and supplier.
    - i) Category and type of submittal.
    - j) Submittal purpose and description.
    - k) Specification Section number and title.
    - l) Drawing number and detail references, as appropriate.
    - m) Indication of full or partial submittal.
    - n) Transmittal number, numbered consecutively.
    - o) Submittal and transmittal distribution record.
    - p) Remarks.
    - q) Signature of transmitter.

Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:

- E. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
- F. Name file with submittal number or other unique identifier, including revision identifier.
  1. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., LNHS-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., LNHS-061000.01.A).
- G. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Architect.
- H. Transmittal Form for Electronic Submittals: Use electronic form acceptable to Owner, containing the following information:
  1. Project name.
  2. Date.
  3. Name and address of Architect.
  4. Name of Construction Manager.
  5. Name of Contractor.
  6. Name of firm or entity that prepared submittal.
  7. Names of subcontractor, manufacturer, and supplier.
  8. Category and type of submittal.
  9. Submittal purpose and description.
  10. Specification Section number and title.
  11. Drawing number and detail references, as appropriate.
  12. Location(s) where product is to be installed, as appropriate.
  13. Related physical samples submitted directly.
  14. Indication of full or partial submittal.

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15. Transmittal number, numbered consecutively.
16. Submittal and transmittal distribution record.
17. Other necessary identification.
18. Remarks.

- I. Metadata: Include the following information as keywords in the electronic submittal file metadata:
1. Project name.
  2. Number and title of appropriate Specification Section.
  3. Manufacturer name.
  4. Product name.

Options: Identify options requiring selection by Architect.

Deviations and Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.

Re-submittals: Make re-submittals in same form and number of copies as initial submittal.

- J. Note date and content of previous submittal.
- K. Note date and content of revision in label or title block and clearly indicate extent of revision.
- L. Resubmit submittals until they are marked with approval notation from Architect's action stamp.

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

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

**PART 3 - PRODUCTS****3.1 SUBMITTAL PROCEDURES**

**IMPORTANT NOTE:** The submittal process is not a means to change the requirements of the Contract Documents. Approval of a submittal does not constitute a change order, change directive or acceptance of a substitution. Every submittal is assumed to and required to comply fully with the Contract Documents (including prior modifications). Installed work found later not to be in compliance with Contract Documents must be removed and replaced with work that is in compliance. If deviations are required due to field conditions, product availability, coordination limitations, etc., obtain Architect's approval through Contract Modification procedures prior to preparing and submitting submittal.

General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

- A. Submit electronic submittals via email as PDF electronic files.
1. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
- B. Submittals: Submit four (4) paper copies and (1) PDF electronic copies of each submittal unless otherwise indicated. Architect will return three (3) copies.
- C. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Division 01 Section "Closeout Procedures."
- D. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.

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1. Provide a digital signature with digital certificate on electronically submitted certificates and certifications where indicated.
2. Provide a notarized statement on original paper copy certificates and certifications where indicated.

E. Test and Inspection Reports Submittals: Comply with requirements specified in Division 01 Section "Quality Requirements."

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

F. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.

G. Mark each copy of each submittal to show which products and options are applicable.

H. Include the following information, as applicable:

1. Manufacturer's catalog cuts.
2. Manufacturer's product specifications.
3. Standard color charts.
4. Statement of compliance with specified referenced standards.
5. Testing by recognized testing agency.
6. Application of testing agency labels and seals.
7. Notation of coordination requirements.
8. Availability and delivery time information.

I. Submit Product Data before or concurrent with Samples.

J. Submit Product Data in the following format:

1. Four (4) paper copies and (1) PDF electronic copies of Product Data unless otherwise indicated. Architect will return three (3) paper copies.

Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

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

1. Identification of products.
2. Schedules.
3. Compliance with specified standards.
4. Notation of coordination requirements.
5. Notation of dimensions established by field measurement.
6. Relationship and attachment to adjoining construction clearly indicated.
7. Seal and signature of professional engineer if specified.

L. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least **8-1/2 by 11 inches**, but no larger than **30 by 42 inches**.

M. Submit Shop Drawings in the following format:

1. Four (4) opaque (bond) copies and (1) PDF electronic copies of each submittal. Architect will return three (3) paper copies.

Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

N. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.

O. Identification: Attach label on unexposed side of Samples that includes the following:

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1. Generic description of Sample.
  2. Product name and name of manufacturer.
  3. Sample source.
  4. Number and title of applicable Specification Section.
  5. Specification paragraph number and generic name of each item.
- P. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.
- Q. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
1. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
  2. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
- R. Samples : Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
1. Number of Samples: Submit two (2) sets of Samples. Architect will retain one (1) Sample set; remainder will be returned.
    1. Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
    2. If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three (3) sets of paired units that show approximate limits of variations.

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

- S. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
- T. Manufacturer and product name, and model number if applicable.
- U. Number and name of room or space.
- V. Location within room or space.
- W. Submit product schedule in the following format:
1. Four (4) paper copies and (1) PDF electronic copies of product schedule or list unless otherwise indicated. Architect, will return three (3) paper copies.

Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Use CSI Form 1.5A. Include the following information in tabular form:

- X. Name, address, and telephone number of entity performing subcontract or supplying products.
- Y. Number and title of related Specification Section(s) covered by subcontract.
- Z. Submit subcontract list in the following format:
1. Four (4) paper copies and (1) PDF electronic copies.

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

**Welding Certificates:** Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.

**Installer Certificates:** Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

**Manufacturer Certificates:** Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

**Product Certificates:** Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

**Material Certificates:** Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

**Material Test Reports:** Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

**Product Test Reports:** Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

**Research Reports:** Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:

- AA. Name of evaluation organization.
- BB. Date of evaluation.
- CC. Time period when report is in effect.
- DD. Product and manufacturers' names.
- EE. Description of product.
- FF. Test procedures and results.
- GG. Limitations of use.

**Preconstruction Test Reports:** Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

**Compatibility Test Reports:** Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

**Field Test Reports:** Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

**Design Data:** Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

**FM Global Approval:** Submit to FM Global for review prior to installation, a RoofNav Contractor Package or submit the RoofNav Assembly Number along with an "Application for Acceptance of Roofing System (FM

Global form X2688) with detailed installation plans and materials submittals. Provide evidence of this review process showing FM Approval with other required action submittals.

### 3.2 DELEGATED-DESIGN SERVICES

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

- A. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF electronic file or three (3) paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.

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

## PART 4 - EXECUTION

### 4.1 CONTRACTOR'S REVIEW

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

Project Closeout and Maintenance Material Submittals: See requirements in Section 017700 "Closeout Procedures."

Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

### 4.2 ARCHITECT'S ACTION

General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.

Action Submittals: Architect will review each submittal, make marks to indicate corrections or revisions required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action, as follows:

- A. "No Exception Taken": That part of the Work covered by the submittal may proceed provided that it complies with the requirements of the contract Documents; final acceptance will depend upon compliance.
- B. "Make Corrections Noted": That part of the Work covered by the submittal may proceed provided it complies with the notations or correction on the submittal and requirements of the Contract Documents.
- C. "Revise and Resubmit": Do not proceed with that part of the Work covered by the submittal. Revise or prepare a new submittal in accordance with the notations, resubmit for re-review with delay.
- D. "Rejected": Do not proceed with that part of the Work covered by the submittal. Revise or prepare a new submittal in accordance with the Contract Documents; resubmit for re-review without delay.
- E. "Submit Specified Item": Do not proceed with that part of the Work covered by the submittal. This mark indicates that a non-specified item was submitted without proper approval of a substitution request, or that information on a specified item has not been submitted as required by that part of the Work covered by the submittal. Prepare a new submittal that utilizes specified item or an approved substitution.

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

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

Incomplete and unstamped submittals are unacceptable, will be considered non-responsive, and will be returned for re-submittal without review.

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

END OF SECTION S.4

**SECTION 01 77 00 - CLOSEOUT PROCEDURES****PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
  1. Substantial Completion procedures.
  2. Final completion procedures.
  3. Warranties.
  4. Final cleaning.
  5. Repair of the Work.
- B. Related Sections include the following:
  1. Section 01 78 39 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.

**1.3 SUBMITTALS**

- A. Product Data: For cleaning agents.
- B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
- C. Certified List of Incomplete Items: Final submittal at Final Completion.

**1.4 CLOSEOUT SUBMITTALS**

- A. Certificates of Release: From authorities having jurisdiction.
- B. Certificate of Insurance: For continuing coverage.

**1.5 MAINTENANCE MATERIAL SUBMITTALS**

- A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

**1.6 SUBSTANTIAL COMPLETION PROCEDURES**

- A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.
- B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

**Keller Roof Replacement****Schedule A - Supplemental General Conditions**

1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
  2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
  3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
  4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Owner. Label with manufacturer's name and model number where applicable.
    - a) Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Owner's signature for receipt of submittals.
  5. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
- C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
1. Advise Owner of pending insurance changeover requirements.
  2. Instruct Owner's personnel in maintenance of products
  3. Participate with Owner in conducting inspection and walkthrough with designated personnel.
  4. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
  5. Complete final cleaning requirements, including touchup painting.
  6. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.
  2. Results of completed inspection will form the basis of requirements for final completion.

**1.7 FINAL COMPLETION PROCEDURES**

- A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:
1. Submit a final Application for Payment.
  2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
  3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.

- B. **Reviews:** Submit a written request for final review to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final review and tests. On receipt of request, Architect will either proceed with review or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
1. **Re-review:** Request re-review when the Work identified in previous inspections as incomplete is completed or corrected.
  2. **Extra-review:** Where the Architect performs more than two reviews for Substantial Completion or for the Final Review due to failure of the Work to comply with claims of completeness or correctness made by the Contractor, all costs (including additional Architect and Owner services made necessary by such failure) shall be reimbursed by Contractor.

#### 1.8 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. **Organization of List:** Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction. Use CSI Form 14.1A or approved..
1. Include the following information at the top of each page:
    - a) Project name.
    - b) Date.
    - c) Name of Architect and Owner
    - d) Name of Contractor.
    - e) Page number.
  2. Submit list of incomplete items in the following format:
    - a) MS Excel, PDF electronic files, or three paper copies. Architect will return annotated list.

#### 1.9 SUBMITTAL OF PROJECT WARRANTIES

- A. **Time of Submittal:** Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.
- B. **Partial Occupancy:** Submit properly executed warranties within 10 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.
- C. **Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.**
1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
  2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
  3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
  4. **Warranty Electronic File:** Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
- D. Provide additional copies of each warranty to include in operation and maintenance manuals.

**PART 2 - PRODUCTS**

## 2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.
  - 1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

**PART 3 - EXECUTION**

## 3.1 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
  - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
    - a) Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
    - b) Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
    - c) Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
    - d) Remove tools, construction equipment, machinery, and surplus material from Project site.
    - e) Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
    - f) Remove debris and surface dust from limited access spaces, including roofs.
    - g) Sweep concrete floors broom clean in unoccupied spaces.
    - h) Remove labels that are not permanent.
    - i) Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
    - j) Leave Project clean and ready for occupancy.

## 3.2 REPAIR OF THE WORK

- A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.
- B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
  - 1. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that already show evidence of repair or restoration.
    - a) Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
  - 2. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.

**SECTION S.6 - PROJECT RECORD DOCUMENTS****PART 1 - GENERAL**

## 1.1 RELATED DOCUMENTS

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

## 1.2 SUMMARY

- A. Section includes administrative and procedural requirements for project record documents, including the following:
  - 1. Record Drawings.
  - 2. Record Specifications.
  - 3. Record Product Data.
  - 4. Miscellaneous record submittals.
- B. Related Sections include the following:
  - 1. Section 01 77 00 "Closeout Procedures" for general closeout procedures.

## 1.3 CLOSEOUT SUBMITTALS

- A. Record Drawings: Comply with the following:
  - 1. Number of Copies: Submit copies of Record Drawings as follows:
    - a) Submit one (1) paper-copy set and two (2) CD's containing PDF files of marked-up record prints.
    - b) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.
- B. Record Specifications: Submit one (1) paper copy and annotated PDF electronic files of Project's Specifications, including addenda and contract modifications.
- C. Record Product Data: Submit one (1) paper copy and annotated PDF electronic files and directories of each submittal.

Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.

- D. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit one (1) and annotated PDF electronic files and directories of each submittal.
- E. Reports: Submit written report weekly indicating items incorporated into project record documents concurrent with progress of the Work, including revisions, concealed conditions, field changes, product selections, and other notations incorporated.

**PART 2 – PRODUCTS**

## 2.1 RECORD DRAWINGS

- A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.
  - 1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
    - a) Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
    - b) Accurately record information in an acceptable drawing technique.

- c) Record data as soon as possible after obtaining it.
  - d) Record and check the markup before enclosing concealed installations.
  - e) Cross-reference record prints to corresponding archive photographic documentation.
2. Content: Types of items requiring marking include, but are not limited to, the following:
    - a) Dimensional changes to Drawings.
    - b) Revisions to details shown on Drawings.
    - c) Revisions to routing of piping and conduits.
    - d) Revisions to electrical circuitry.
    - e) Actual equipment locations.
    - f) Locations of concealed internal utilities.
    - g) Changes made by Change Order or Change Directive.
    - h) Changes made following Architect's written orders.
    - i) Details not on the original Contract Drawings.
    - j) Field records for variable and concealed conditions.
    - k) Record information on the Work that is shown only schematically.
  3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
  4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
  5. Mark important additional information that was either shown schematically or omitted from original Drawings.
  6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Architect. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:
1. Format: Same digital data software program, version, and operating system as the original Contract Drawings.
  2. Format: DWG, Version , Microsoft Windows operating system.
  3. Format: Annotated PDF electronic file with comment function enabled.
  4. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
  5. Refer instances of uncertainty to Architect for resolution.
  6. Architect will furnish Contractor one set of digital data files of the Contract Drawings for use in recording information.
    - a) See Section 01 33 00 "Submittal Procedures" for requirements related to use of Architect's digital data files.
    - b) Architect will provide data file layer information. Record markups in separate layers.
- C. Newly Prepared Record Drawings: Prepare new Drawings instead of preparing record Drawings where Architect determines that neither the original Contract Drawings nor Shop Drawings are suitable to show actual installation.
1. New Drawings may be required when a Change Order is issued as a result of accepting an alternate, substitution, or other modification.
  2. Consult Architect for proper scale and scope of detailing and notations required to record the actual physical installation and its relation to other construction. Integrate newly prepared record Drawings into record Drawing sets; comply with procedures for formatting, organizing, copying, binding, and submitting.
- D. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Format: Annotated PDF electronic file with comment function enabled.
3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
4. Identification: As follows:
  - a) Project name.
  - b) Date.
  - c) Designation "PROJECT RECORD DRAWINGS."
  - d) Name of Architect.
  - e) Name of Contractor.

## 2.2 RECORD SPECIFICATIONS

- A Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
  1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
  2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
  3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
  4. For each principal product, indicate whether record Product Data has been submitted in operation and maintenance manuals instead of submitted as record Product Data.
  5. Note related Change Order, record Product Data, and record Drawings where applicable.
- B Format: Submit record Specifications as one (1) paper copy and scanned PDF electronic file(s) of marked-up paper copy of Specifications.

## 2.3 RECORD PRODUCT DATA

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
  1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
  2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
  3. Note related Change Orders, record Specifications, and record Drawings where applicable.
- B Format: Submit record Product Data as one (1) paper copy and scanned PDF electronic file(s) of marked-up paper copy of Specifications.
  1. Include record Product Data directory organized by Specification Section number and title, electronically linked to each item of record Product Data.

## 2.4 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.
- B. Format: Submit miscellaneous record submittals as one (1) paper copy and scanned PDF electronic file(s) of marked-up paper copy of Specifications.
  1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

**PART 3 - EXECUTION**

3.1 RECORDING AND MAINTENANCE

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

END OF SECTION S.6



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KELLER ROOF  
METROPOLITAN EXPOSITION RECREATION COMMISSION  
222 SW CLAY STREET - PORTLAND, OREGON  
CD SET

201467\_G001-CS - G001

PROJ NO. 201467  
04.22.2016

G0.01

# METRO KELLER AUDITORIUM

## ROOF REPLACEMENT

### 222 SW CLAY STREET, PORTLAND, OREGON 97201

#### PROJECT TEAM

**OWNER:**  
METRO-PARKS AND ENV. SERVICES  
600 NE GRAND AVENUE  
PORTLAND, OREGON 97232  
(503) 797- 1929  
CONTACT: NANCY STRENING

**ARCHITECT:**  
CARLETON HART ARCHITECTURE  
830 SW 10TH AVE. #200  
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(503) 206-3181  
CONTACT: SCOTT PALMER

**ROOF CONSULTANT:**  
PROFESSIONAL ROOF CONSULTANTS  
1108 SE GRAND AVENUE  
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**STRUCTURAL ENGINEER:**  
KPFF  
111 SW FIFTH AVENUE  
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PORTLAND, OREGON 97204  
(503) 764-0522  
CONTACT: ERIK KABUSREITER

#### PROJECT DESCRIPTION

THE SCOPE OF WORK INCLUDES, BUT IS NOT LIMITED TO, REMOVAL OF THE EXISTING ROOF SYSTEM AND RELATED FLASHING DOWN TO EXISTING SUBSTRATE, METAL DETECTION AND MARKING TO BE USED TO INDICATE THE LOCATIONS OF EXISTING SUSPENSION STRUCTURES SUPPORTING CATWALKS AND MAIN SUSPENDED ACOUSTICAL CEILING. REMOVAL OF EXISTING PIPE RAILS SURROUNDING MECHANICAL PITS AND REPLACEMENT WITH METAL GRATE COVERS. REPLACEMENT OF PIPE RAILINGS AT FIRE EXIT OPENINGS AND NEAR ROOF EDGE. REMOVAL OF ABANDONED PIPE PENETRATIONS. INSTALLATION OF NEW STRUCTURAL PARAPET BRACING, RIGID INSULATION ASSEMBLY, ROOFING MEMBRANE, FLASHINGS AND METAL WALL PANELS AROUND ELEVATED ROOF AREAS. SELECTIVE REPLACEMENT OF ROOF DRAINS. INSTALLATION OF NEW ROOF TIE-OFFS ATTACHED TO ROOF DECK AND PARAPET WALLS.

#### ABBREVIATIONS

NOTE: THIS IS A STANDARD LIST OF ABBREVIATIONS, THEREFORE, SOME ABBREVIATIONS APPEAR ON THIS SHEET THAT MAY NOT APPEAR IN THE DRAWINGS

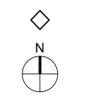
@	AT	(E)	EXISTING	JAN.	JANITOR	S.	SOUTH
A.B.	ANCHOR BOLT	E.	EAST	JT.	JOINT	SECT.	SECTION
ABBR.	ABBREVIATION	EA.	EACH	LT.	LIGHT	SH.	SHELF
A.C.	AIR CONDITIONING	ELEC.	ELECTRICAL	MECH.	MECHANICAL	SHT.	SHEET
ADJ.	ADJUSTABLE	ELEV.	ELEVATION OR ELEVATOR	M.O.	MASONRY OPENING	SIM.	SIMILAR
A.H.U.	AIR HANDLING UNIT	E.P.	ELECTRICAL PANEL	MIN.	MINIMUM	S.G.	SAFETY GLASS
ALT.	ALTERNATE	E.P.S.	EXPANDED POLYSTYRENE	MTL.	METAL	SPEC.	SPECIFICATION
AL	ALUMINUM	EQ.	EQUAL	N.	NORTH	SQ.	SQUARE
A.P.	ACCESS PANEL	EQUIP.	EQUIPMENT	NEC.	NECESSARY	S.S.	STAINLESS STEEL
		EXIST.	EXISTING	(NEW)	NEW	STD.	STANDARD
B.	BOTTOM	EXT.	EXTERIOR	N.O.	NOT IN CONTRACT	STL.	STEEL
BD.	BOARD			N.T.S.	NOT TO SCALE	STRUCT.	STRUCTURAL
BLDG.	BUILDING	F.D.	FLOOR DRAIN	OA	OVERALL	T & G	TONGUE AND GROOVE
BLKG.	BLOCKING	FIN.	FINISH	O.C	ON CENTER	T.G.	TEMPERED GLASS
B.O.	BY OWNER	F.F.	FINISHED FLOOR	O.D	OUTSIDE DIAMETER	T.O.C.	TOP OF CURB
B.U.R.	BUILT UP ROOF	FLASH.	FLASHING	OF.	OVERFLOW DRAIN	T.O.PLY.	TOP OF PLYWOOD
		F.R.T.	FIRE RETARDANT TREATED	OPP.	OPPOSITE	T.O.S.	TOP OF SLAB
CLG	CEILING	FRMG.	FRAMING			T.O.W.	TOP OF WALL
CLR.	CLEAR	FT.	FOOT OR FEET			T.S.	TUBE SECTION
C.M.U.	CONCRETE MASONRY UNIT	GA	GAUGE	P.	PAINT	TYP.	TYPICAL
COL	COLUMN	GALV.	GALVANIZED	P.F.	PREFINISHED	U.O.N.	UNLESS OTHERWISE NOTED
CONC.	CONCRETE	GL	GLASS	P.L	PROPERTY LINE	V.B.	VAPOR BARRIER
CONT	CONTINUOUS	GYP.	GYPSUM	PLYWD.	PLYWOOD	VERT.	VERTICAL
				POLYISO.	POLYISOCYANURATE	W.	WEST
DET.	DETAIL	H.B.	HOSE BIB	PRPT.	PARAPET	WD	WOOD
DIA.	DIAMETER	H.M.	HOLLOW METAL	RD.	ROOF DRAIN	WP.	WATERPROOF
DM.	DIMENSION	HORIZ.	HORIZONTAL	REF.	REFERENCE	W/	WITH
DN.	DOWN	HT.	HEIGHT	REQ.	REQUIRED	W/O	WITHOUT
D.P.	DIMENSION POINT	HVAC	HEATING/AIR CONDITIONING	REV.	REVERSE OR REVISED	WT.	WBIGHT
DS.	DOWNSPOUT	INFO.	INFORMATION	R.O.	ROUGH OPENING		
DWG.	DRAWING	INT.	INTERIOR	RM.	ROOM		

#### DRAWING SYMBOLS

NOTE: THIS IS A STANDARD LIST OF SYMBOLS, THEREFORE, SOME SYMBOLS APPEAR ON THIS SHEET THAT MAY NOT APPEAR IN THE DRAWINGS

SYMBOL	DESCRIPTION
	DETAIL REFERENCE SYMBOL
	WALL SECTION REFERENCE SYMBOL
	EXTERIOR ELEVATION REFERENCE SYMBOL
	GRID IDENTIFICATION SYMBOL
	DIMENSION LINE - F.O.S. OR C.L. OF OPENING U.O.N.
	KEYNOTE
	NORTH ARROW

1"=0"



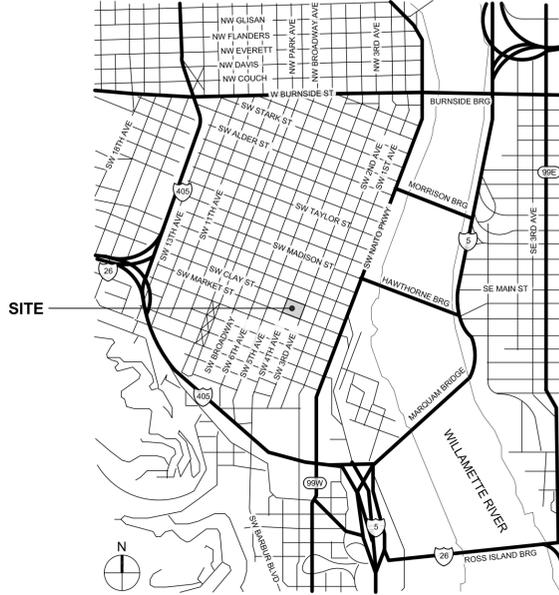
#### SHEET INDEX

G0.01	COVER SHEET
G1.01	STAGING & ACCESS PLAN
G1.02	ROOF ASSEMBLY KEY PLAN
D2.01	DEMO ROOF PLAN
A2.01	ROOF PLAN
A3.01	ENLARGED PLANS - MECHANICAL PITS
A4.01	REFLECTED CEILING PLAN
A5.01	DETAILS
A5.02	DETAILS
A5.03	DETAILS
A5.04	DETAILS
A5.05	DETAILS
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A5.07	DETAILS
A5.08	DETAILS
S0.01	DRAWING INDEX & ABBREVIATIONS
S0.02	GENERAL STRUCTURAL NOTES
S0.03	GENERAL STRUCTURAL NOTES CONT. SPECIAL INSPECTIONS AND TESTING
S0.04	SPECIAL INSPECTIONS AND TESTING
S2.01	ROOF FRAMING PLAN
S2.02	ROOF FRAMING PARTIAL PLANS
S6.01	FRAMING DETAILS
S6.02	FRAMING DETAILS

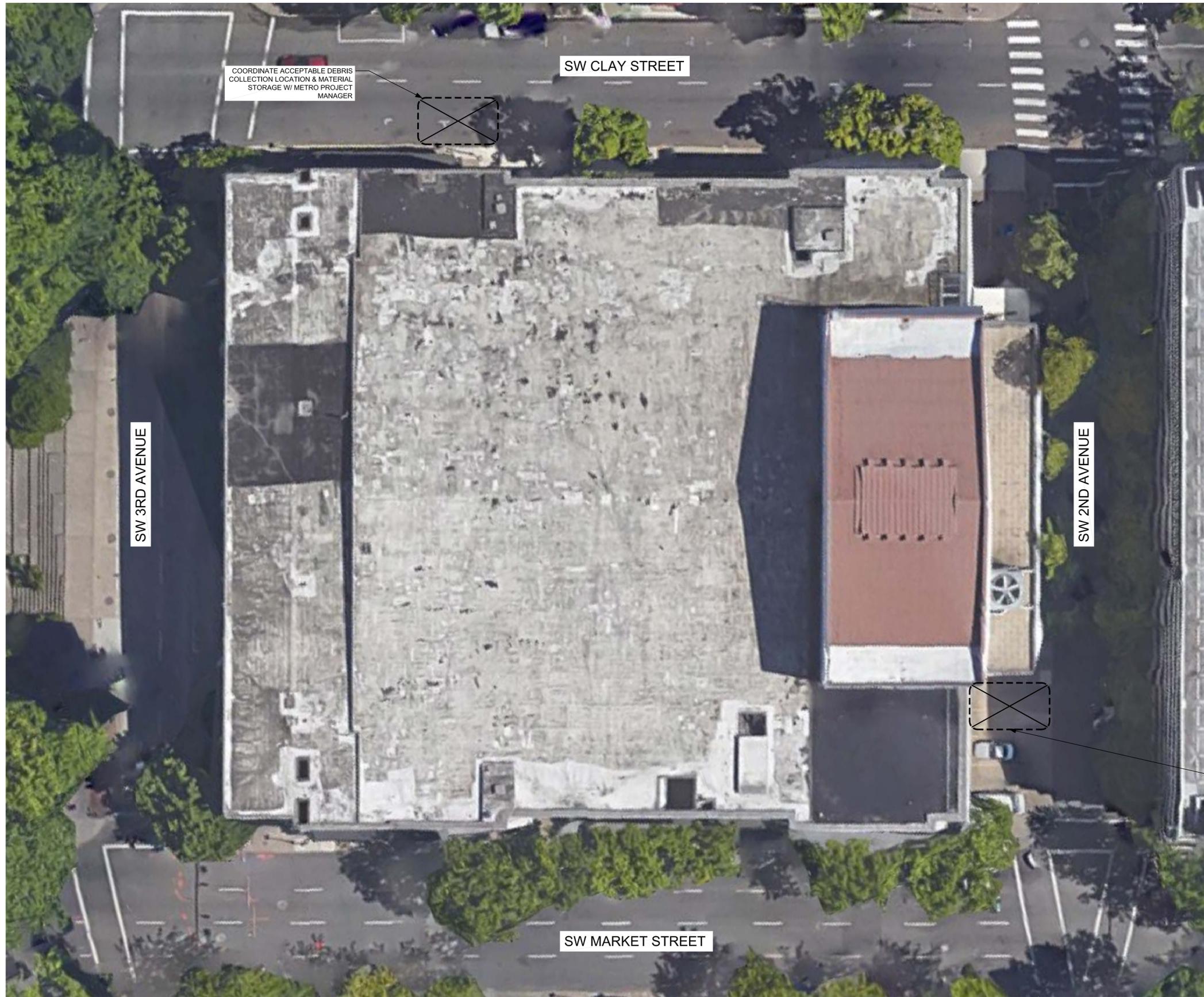


#### LOCATION MAP

NOT TO SCALE



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COORDINATE ACCEPTABLE DEBRIS  
COLLECTION LOCATION & MATERIAL  
STORAGE W/ METRO PROJECT  
MANAGER

SW CLAY STREET

SW 3RD AVENUE

SW 2ND AVENUE

SW MARKET STREET

EXTERIOR STAIR AND TRUCK  
UNLOADING AREA - STRUCTURAL  
CAPACITY OF VAULTS IN THIS AREA  
TO BE VERIFIED BY CONTRACTOR  
FOR REQUIRED NEEDS.

**GENERAL NOTES**

- NO MATERIALS SHALL BE STORED ON ROOF.
- ALL ACCESS TO THE ROOF SHALL BE FROM THE EXTERIOR - NO INTERIOR ACCESS PROVIDED.
- CONTRACTOR SHALL ENSURE ALL TEMPORARY MEANS OF ACCESS TO ROOF ARE SECURED TO PREVENT UNAUTHORIZED ACCESS.
- NOTIFICATION OF UTILITIES AND AGENCIES FOR STREET CLOSURE:  
  
BEFORE CLOSING, OR PARTIALLY CLOSING, ANY STREET, SIDEWALK OR OTHER PATHWAY USED BY MEMBERS OF THE PUBLIC OR BY EMERGENCY SERVICES, THE CONTRACTOR SHALL TAKE THE FOLLOWING ACTIONS:  
  
1. OBTAIN THE PERMITS, IF ANY, THAT ARE NEEDED TO ALLOW CLOSURE TO OCCUR;  
  
2. OBTAIN ADVANCE APPROVAL FROM THE OWNER; AND  
  
3. NOTIFY ALL PUBLIC AND PRIVATE AGENCIES RESPONSIBLE FOR EMERGENCY SERVICES OF THE IMPENDING CLOSURE AT LEAST TWO FULL BUSINESS DAYS IN ADVANCE. THIS INCLUDES, BUT IS NOT LIMITED TO, POLICE, FIRE AND AMBULANCE SERVICES.



**CD**

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**KELLER ROOF**  
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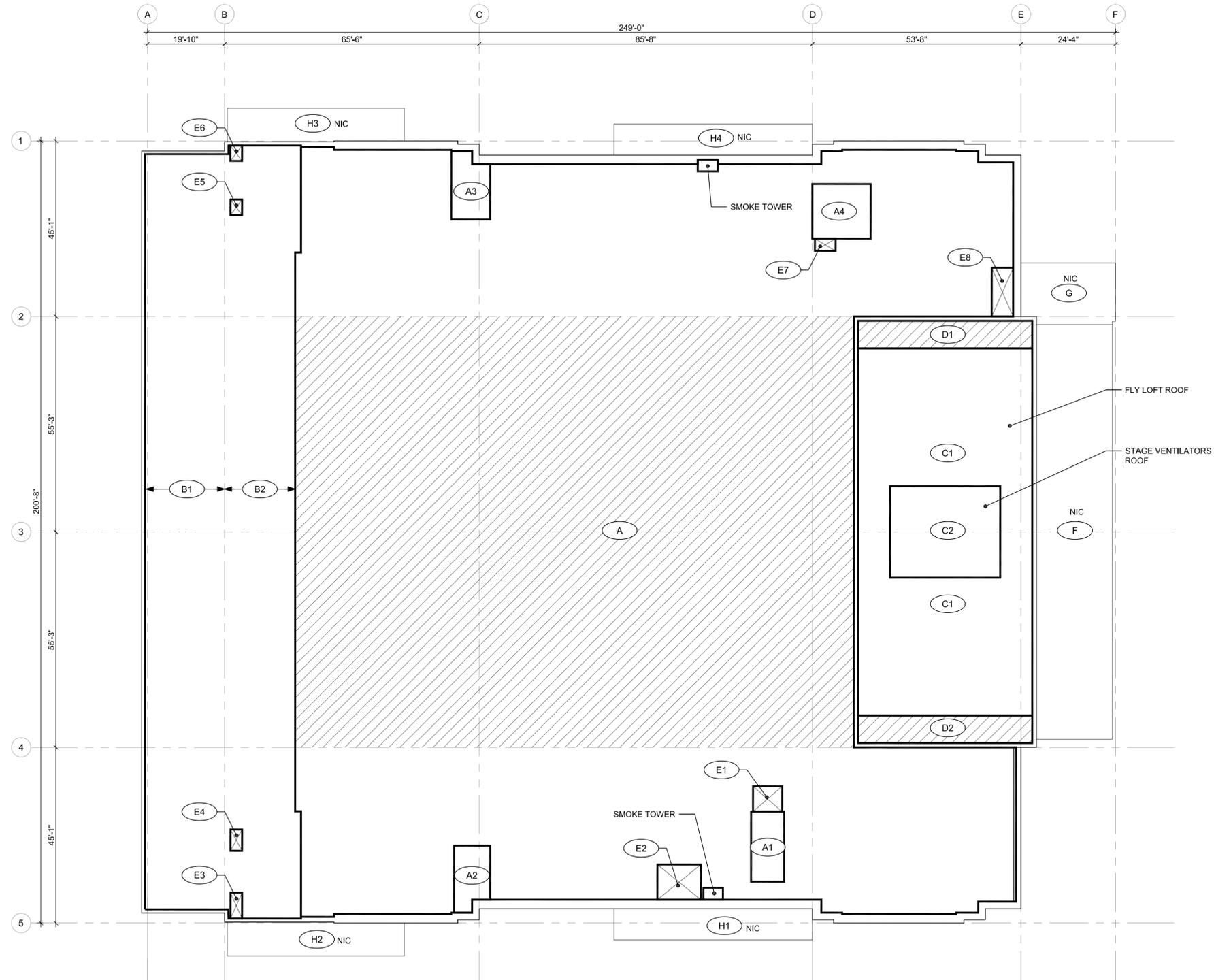
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STAGING & ACCESS  
PLAN  
PROJ NO.  
201467  
04.22.2016

**1 STAGING PLAN**  
SCALE: 1/16" = 1'-0"



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**1 ROOF KEY PLAN**  
SCALE: 1/16" = 1'-0"



**KEY PLAN - GENERAL NOTES**

- SEE D2.01 FOR EXISTING ROOF TOP EQUIPMENT, PENETRATIONS, & STRUCTURES.
- GRID LINES AND DIMENSIONS FOR REFERENCE ONLY. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.

**EXISTING ASSEMBLY**

ROOF AREA	SF	ASSEMBLY	DETAIL
A	29,975	ASPHALT BUR	A/A5.01
A1-A4	667	ASPHALT BUR	B/A5.01
B1	3,954	ASPHALT BUR	B/A5.01
B2	3,620	ASPHALT BUR	A/A5.01
C1	3,556	METAL PANEL	D/A5.01
C2	666	METAL PANEL	E/A5.01
D1-D2	635	APP	C/A5.01
E1-E8	295	ASPHALT BUR	A/A5.01
F	2,074	SINGLE-PLY	NIC
G	360	APP	NIC
H1-H4	1,582	SINGLE-PLY	NIC

**PROPOSED ASSEMBLY**

ROOF AREA	SF	ASSEMBLY	DETAIL
A	29,975	SINGLE-PLY	F/A5.01
A1-A4	667	SINGLE-PLY	G/A5.01
B1	3,954	SINGLE-PLY	F/A5.01
B2	3,620	SINGLE-PLY	F/A5.01
C1	3,556	SINGLE-PLY	H/A5.01
C2	666	SINGLE-PLY	I/A5.01
D1-D2	635	SINGLE-PLY	F/A5.01
E1-E8	295	SINGLE-PLY	G/A5.01
F	2,074	NIC	-
G	360	NIC	-
H1-H4	1,582	NIC	-

**LEGEND**

- KNOWN BOLT ZONE
- ROOF AREA LABEL
- ROOF PIT



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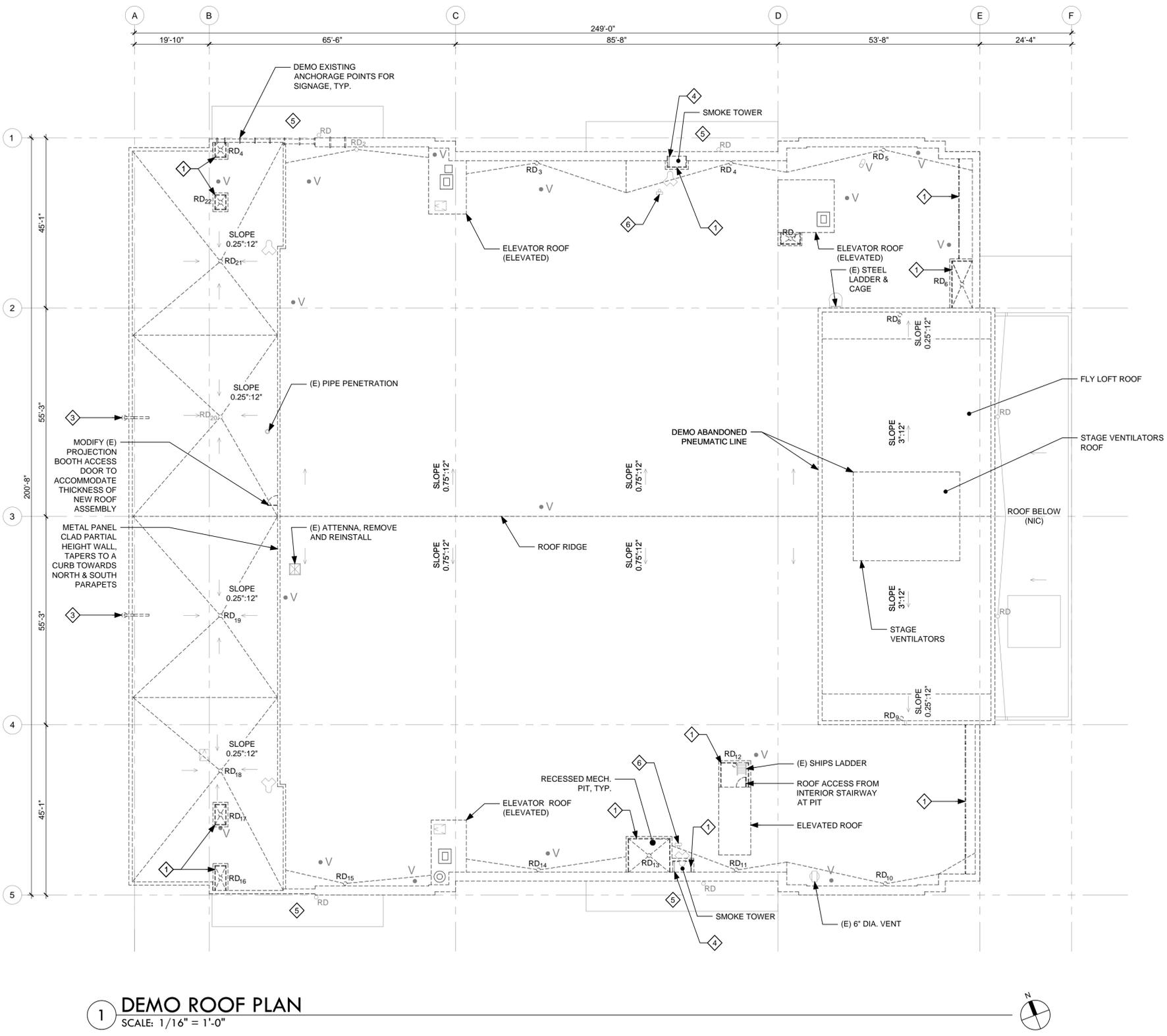


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ROOF ASSEMBLY  
KEY PLAN  
PROJ NO.  
201467  
04.22.2016

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**G1.02**



**1 DEMO ROOF PLAN**  
SCALE: 1/16" = 1'-0"



**DEMO PLAN - GENERAL NOTES**

- CONTRACTOR SHALL INDEPENDENTLY VERIFY TYPE, LOCATION AND CONDITION OF ALL ROOFTOP EQUIPMENT, PENETRATIONS & STRUCTURES.
- ALL EXISTING EQUIPMENT & ACCESSORIES TO REMAIN UNLESS OTHERWISE NOTED.
- ALL MECHANICAL, ELECTRICAL AND PLUMBING WORK SHALL BE COMPLETED BY QUALIFIED AND PROPERLY LICENSED MECHANICAL AND ELECTRICAL CONTRACTORS. ALL DISCONNECTIONS AND RECONNECTIONS SHALL BE COORDINATED WITH THE METRO PROJECT MANAGER PRIOR TO ANTICIPATED INTERRUPTION.
- CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS AND CONDITIONS OF THE PROJECT, INCLUDING VERIFICATION OF EXISTING ROOF SYSTEM CONSTRUCTION AND MATERIALS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING BUILDING SURFACES, FINISHES, AND SYSTEMS FROM DAMAGE, DISCOLORATION, ETC. DURING THE COURSE OF ALL CONSTRUCTION ACTIVITIES.
- FALL PROTECTION DEVICES ARE NOT, NOR WILL BE, PROVIDED BY THE OWNER ON ANY ROOF AREA WHETHER DESIGNATED TO RECEIVE WORK OR NOT. PERSONAL FALL PROTECTION IS THE RESPONSIBILITY OF THE CONTRACTOR.
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT BUILDING OCCUPANTS AND PASSERS-BY FROM FALLING DEBRIS OR EQUIPMENT. DO NOT THROW MATERIALS FROM THE ROOF.

**DEMO PLAN - KEY NOTES**

- 1 DEMO FALL PROTECTION PIPE RAILINGS AROUND PITS AND ROOF EDGE
- 2 PATCH & COVER ABANDONED ROOF PENETRATION
- 3 DEMO SECURITY CAMERA
- 4 (E) STEEL LADDER
- 5 CANOPY ROOF BELOW (NIC)
- 6 (E) J-BOX

**LEGEND**

- - - DEMO ROOFING ASSEMBLY, CRICKETS AND FLASHINGS
- EXISTING ROOF SLOPE
- V (E) VENT PIPE PENETRATION
- ⊞ (E) ROOF HATCH
- RD<sub>9c</sub> DEMO ROOF DRAIN
- RD<sub>20o</sub> (E) ROOF DRAIN
- ⊞ (E) DRY STAND PIPE FDC
- ⊞ (E) CURB MOUNTED EXHAUST FAN



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DEMOLITION ROOF PLAN  
PROJ NO. 201467  
04.22.2016

**D2.01**



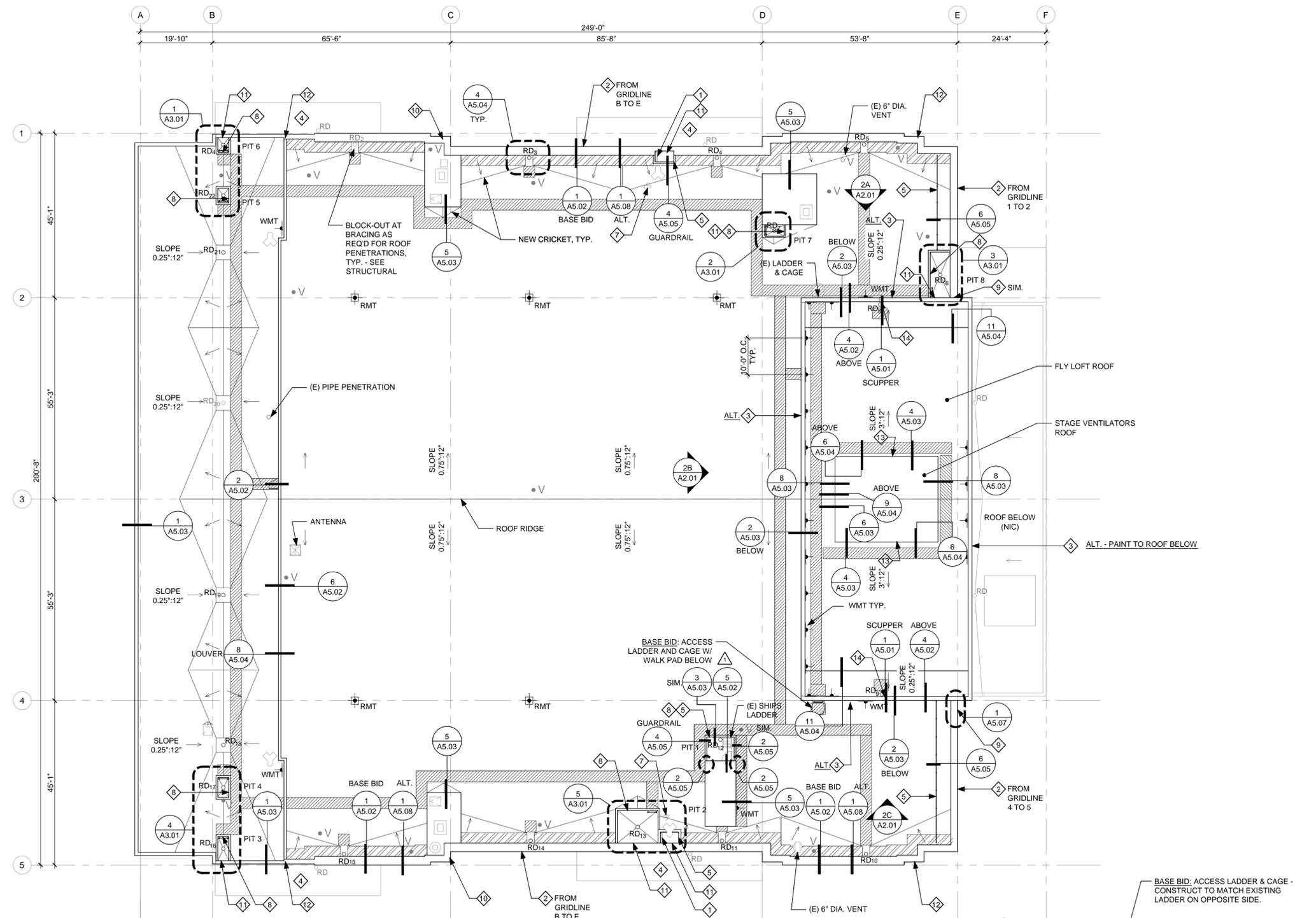
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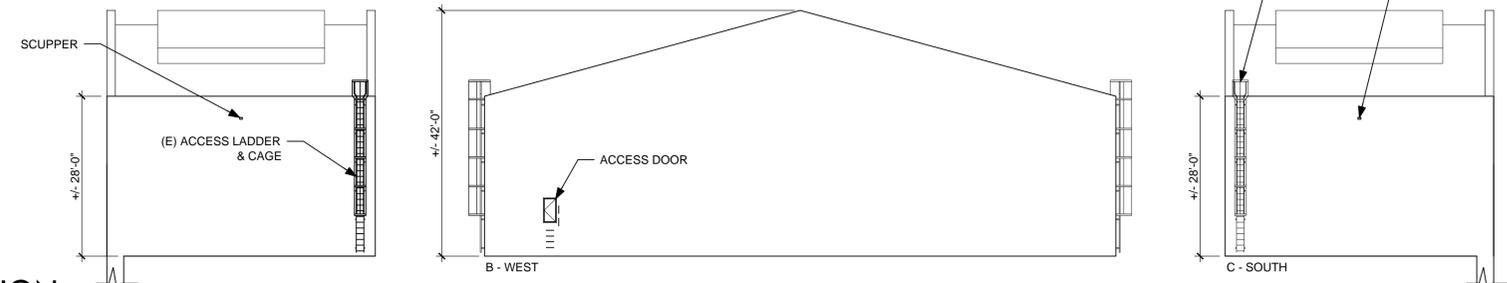
ROOF PLAN  
PROJ. NO. 201467  
04.22.2016

A2.01



1 ROOF PLAN  
SCALE: 1/16" = 1'-0"

2 FLY LOFT ELEVATION  
SCALE: 1/16" = 1'-0"



ROOF PLAN - GENERAL NOTES

- 1. CONTRACTOR SHALL INDEPENDENTLY VERIFY TYPE, LOCATION AND CONDITION OF ALL ROOFTOP EQUIPMENT, PENETRATIONS & STRUCTURES.
- 2. ALL EXISTING EQUIPMENT & ACCESSORIES TO REMAIN UNLESS OTHERWISE NOTED.
- 3. ALL MECHANICAL, ELECTRICAL AND PLUMBING WORK SHALL BE COMPLETED BY QUALIFIED AND PROPERLY LICENSED MECHANICAL AND ELECTRICAL CONTRACTORS. ALL DISCONNECTIONS AND RECONNECTIONS SHALL BE COORDINATED WITH THE METRO PROJECT MANAGER PRIOR TO ANTICIPATED INTERRUPTION.
- 4. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS AND CONDITIONS OF THE PROJECT, INCLUDING VERIFICATION OF EXISTING ROOF SYSTEM CONSTRUCTION AND MATERIALS.
- 5. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING BUILDING SURFACES, FINISHES, AND SYSTEMS FROM DAMAGE, DISCOLORATION, ETC. DURING THE COURSE OF ALL CONSTRUCTION ACTIVITIES.
- 6. FALL PROTECTION DEVICES ARE NOT, NOR WILL BE, PROVIDED BY THE OWNER ON ANY ROOF AREA WHETHER DESIGNATED TO RECEIVE WORK OR NOT. PERSONAL FALL PROTECTION IS THE RESPONSIBILITY OF THE CONTRACTOR.
- 7. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT BUILDING OCCUPANTS AND PASSERS-BY FROM FALLING DEBRIS OR EQUIPMENT. DO NOT THROW MATERIALS FROM THE ROOF.

ROOF PLAN - KEY NOTES

- 1 EXISTING ACCESS LADDER
- 2 WASH CONCRETE PANEL AREA FROM T.O. PARAPET TO 4 FT. BELOW
- 3 ALT: PAINT STUCCO WALLS
- 4 ROOF CANOPY BELOW (NIC)
- 5 NEW PIPE RAILING
- 6 PATCH ABANDONED ROOF PENETRATION
- 7 (E) J-BOX
- 8 PAINT (E) METAL PANEL CLADDING AT ALL SIDES OF ROOF PIT
- 9 EXTEND FLASHING SHEET UP AND OVER AT LOW PARAPET WALL, REFERENCE 1/A5.07
- 10 PROVIDE BACK SLOPE TO ROOF INTERIOR AT ELEVATOR SHAFT ROOF/PARAPET WALL INTERFACE
- 11 EXTEND NEW SHEET METAL WALL PANELS OR COPING TO WEATHER LAP EXISTING WALL PANELS 2" MIN.
- 12 PROVIDED MITERED CORNERS AT ANGLE CHANGES IN COPING AND ONE-PIECE TRANSITIONS AT PARAPET WALL WIDTH, CHANGES TYP.
- 13 TEMPORARILY REMOVE ELECTRICAL LINES AND RE-INSTALL AFTER NEW FRAMING AND ROOF ASSEMBLY INSTALL
- 14 INCREASE EXISTING SCUPPER OPENING AS SHOWN ON 1/A5.01 AND 4/A5.04

LEGEND

- ROOF SLOPE
- (E) VENT PIPE PENETRATION
- (E) ROOF HATCH
- NEW ROOF DRAIN
- (E) ROOF DRAIN
- (E) STAND PIPE FDC
- (E) CURB MOUNTED EXHAUST FAN
- ROOF MOUNTED TIE-OFF, SEE STRUCTURAL
- WALL MOUNTED TIE-OFF, SEE STRUCTURAL
- ROOF WALK PAD
- URM PARAPET BRACING AS ALTERNATE, SEE STRUCTURAL



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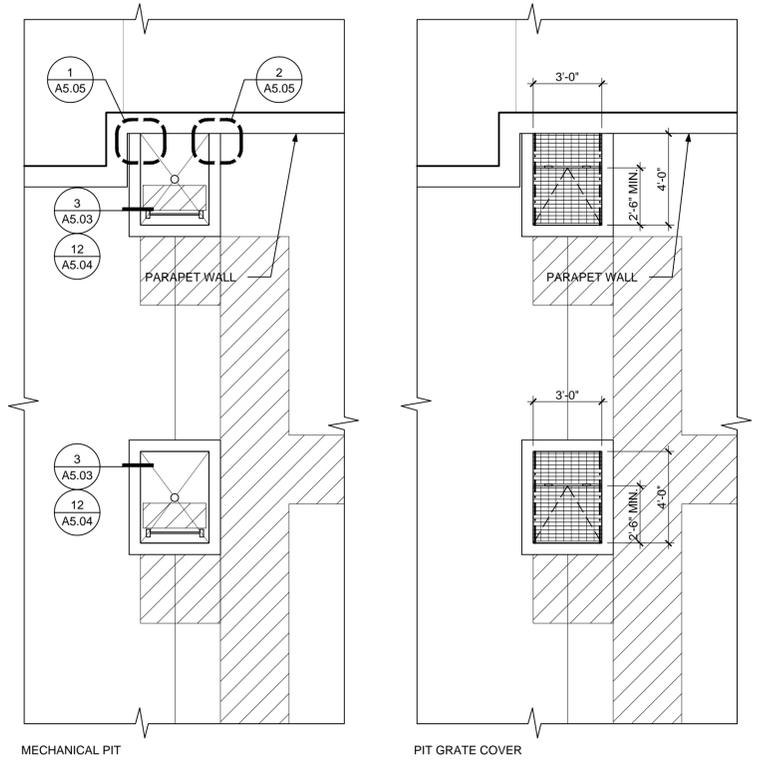
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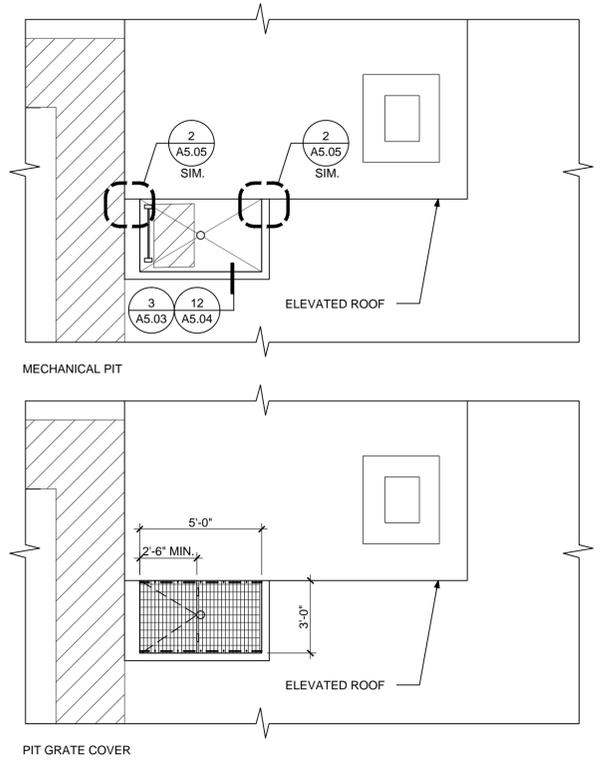
ENLARGED PLANS - MECHANICAL PITS

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04.22.2016

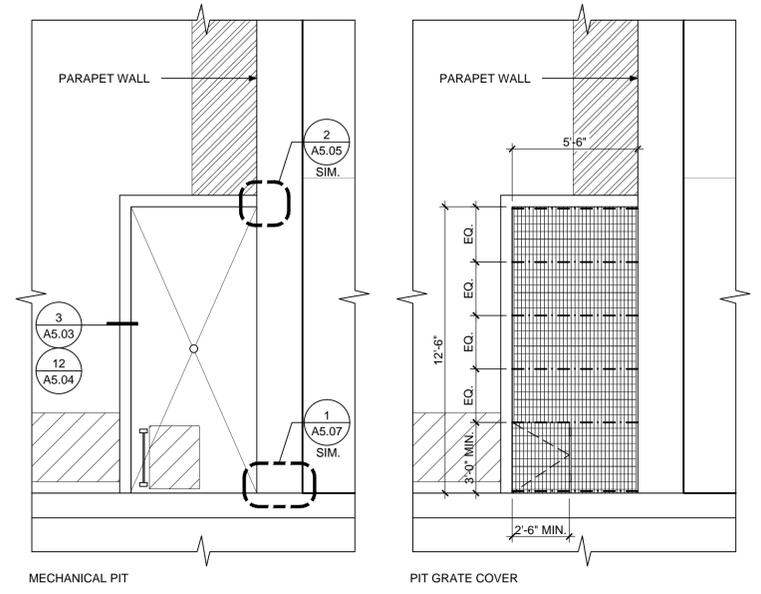
A3.01



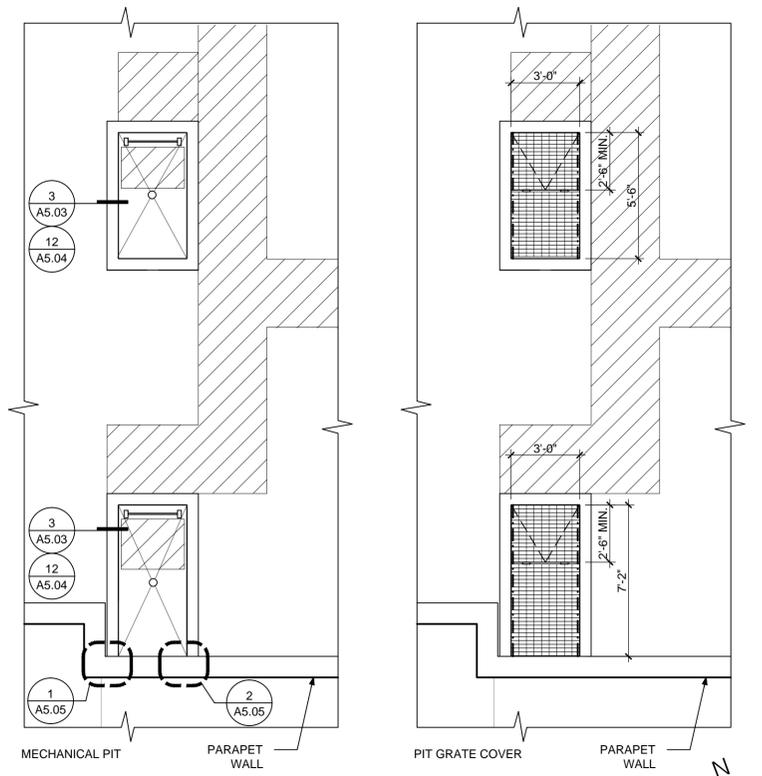
1 ENLARGED ROOF PLAN  
SCALE: 1/4" = 1'-0"  
PITS E6 & E5



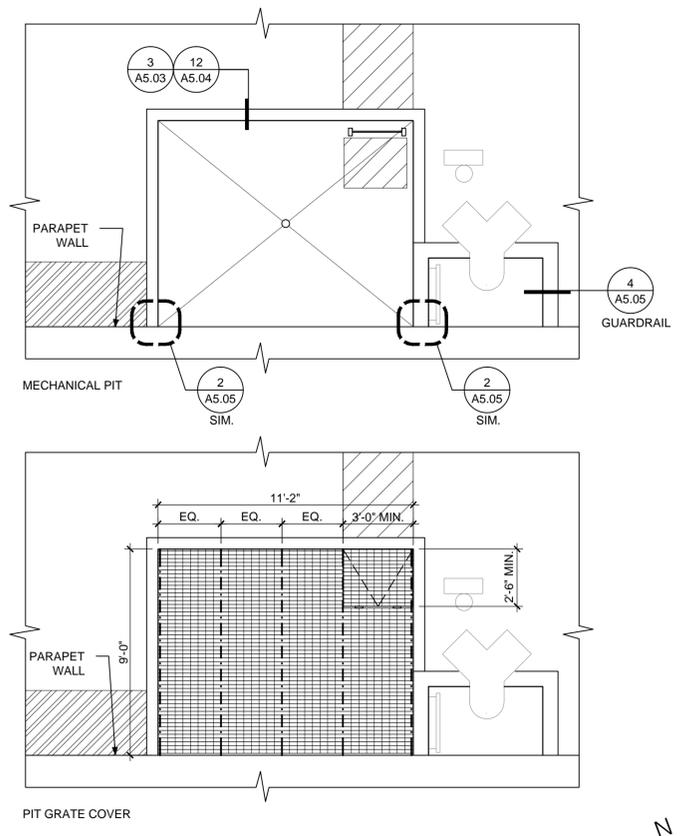
2 ENLARGED ROOF PLAN  
SCALE: 1/4" = 1'-0"  
PIT E7



3 ENLARGED ROOF PLAN  
SCALE: 1/4" = 1'-0"  
PIT E8



4 ENLARGED ROOF PLAN  
SCALE: 1/4" = 1'-0"  
PITS E4 & E3



5 ENLARGED ROOF PLAN  
SCALE: 1/4" = 1'-0"  
PIT E2

GENERAL NOTES	
1.	SEE STRUCTURAL PLANS AND DETAILS FOR METAL GRATE SUPPORTS.
2.	CONTRACTOR TO FIELD VERIFY DIMENSIONS.
3.	PAINT EXISTING METAL PANEL CLADDING AT ALL SIDES OF ROOF PITS.
LEGEND	
	W-19-4 METAL GRATE OVER MECHANICAL PIT
	HINGED ACCESS PANEL
	ROOF DRAIN (2) A5.01
	ACCESS LADDER (3) A5.05
	PARAPET BRACING AS REQUIRED, SEE STRUCTURAL
	WALK PAD



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REFLECTED CEILING PLAN

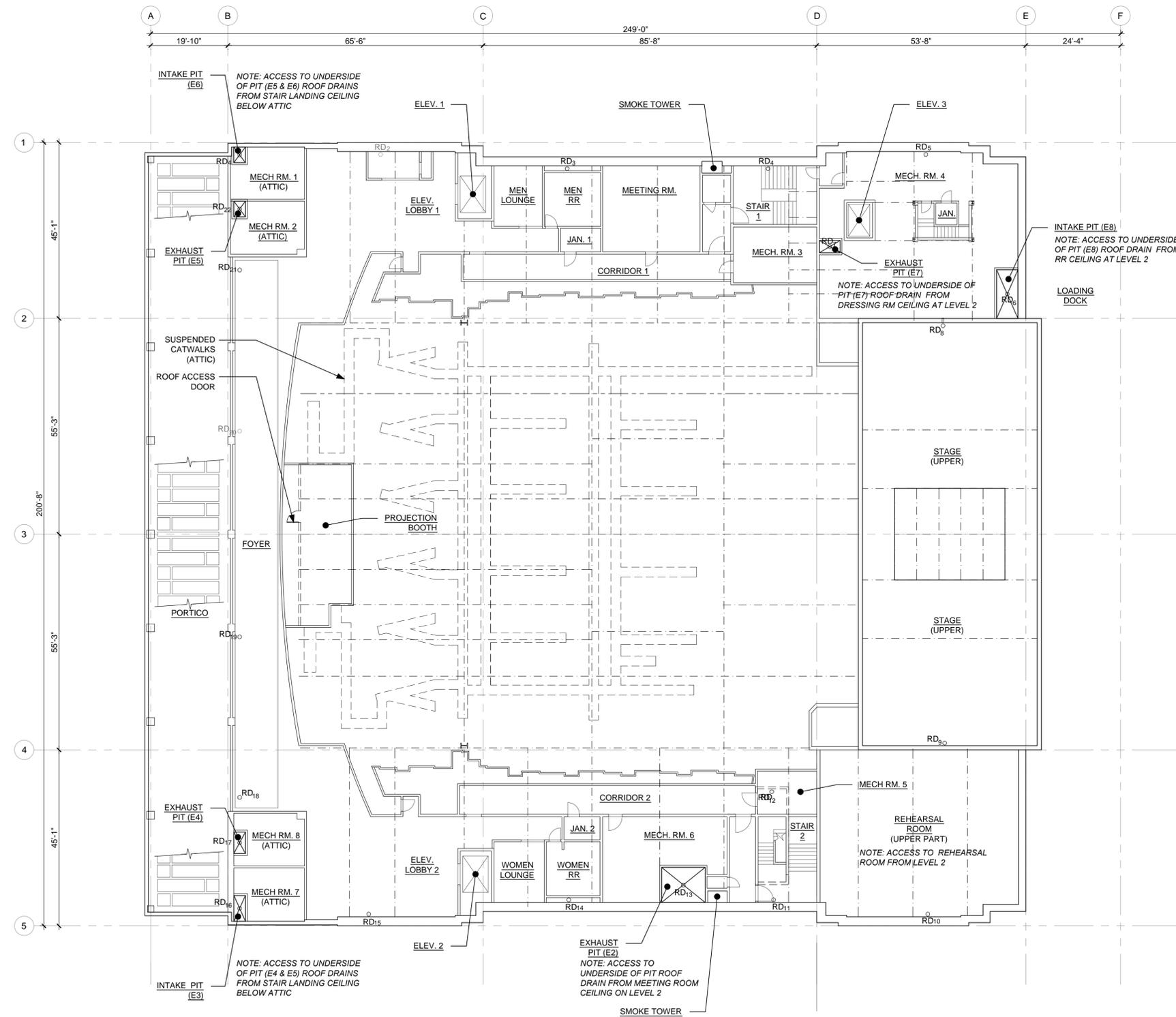
PROJ NO.  
201467  
04.22.2016

**A4.01**

RCP - GENERAL NOTES	
1.	INFORMATION FOR UNDERSIDE ACCESS TO ROOF.
2.	ACCESS TO ROOF DRAINS FROM UNDERSIDE OF CEILING AT LEVEL 3, UNLESS OTHERWISE NOTED ON PLAN.

LEGEND	
○RD	ROOF DRAIN
---	ATTIC ROOF TRUSS



**1 REFLECTED CEILING PLAN (LEVEL 3/ATTIC)**  
SCALE: 1/16" = 1'-0"





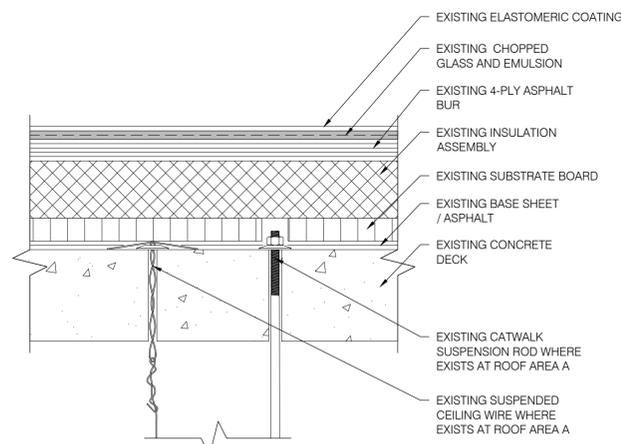
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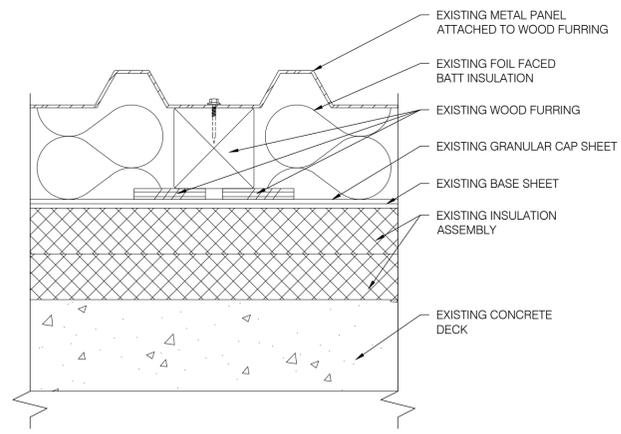
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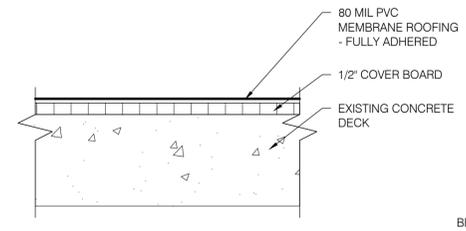
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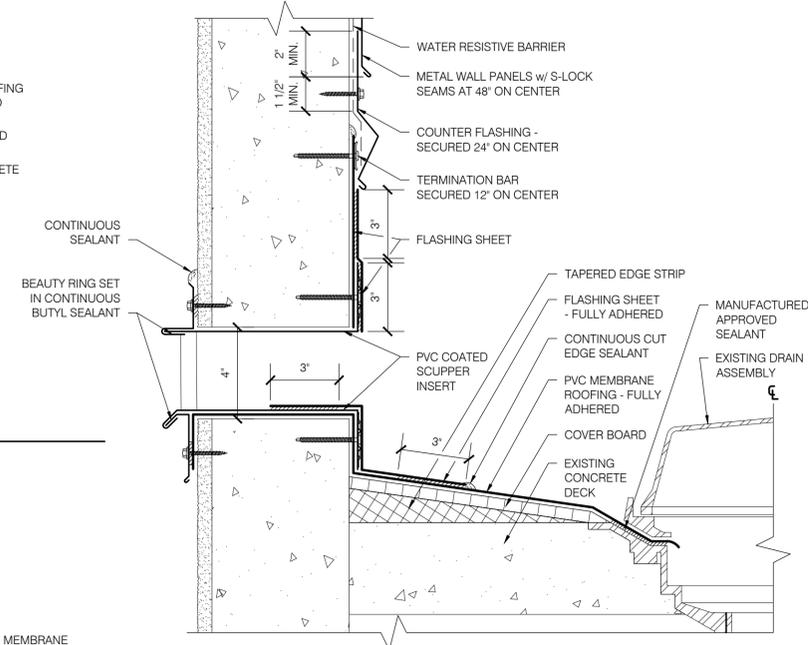
**A** EXISTING ROOF ASSEMBLY  
AT AREAS A, B2, E1 - E8  
SCALE: 3" = 1'-0"



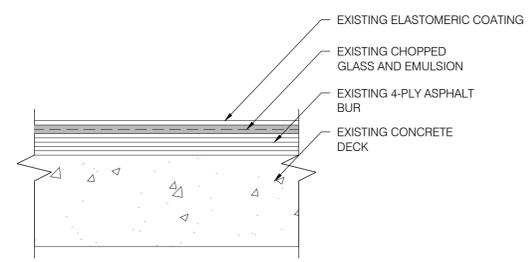
**D** EXISTING ROOF ASSEMBLY  
AT AREA C1  
SCALE: 3" = 1'-0"



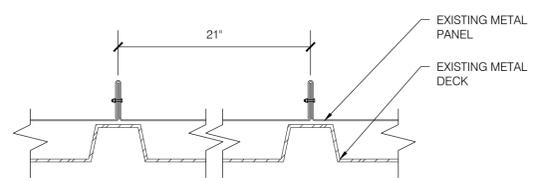
**G** NEW ROOF ASSEMBLY AT  
AREAS A1 - A4, E1 - E8  
SCALE: 3" = 1'-0"



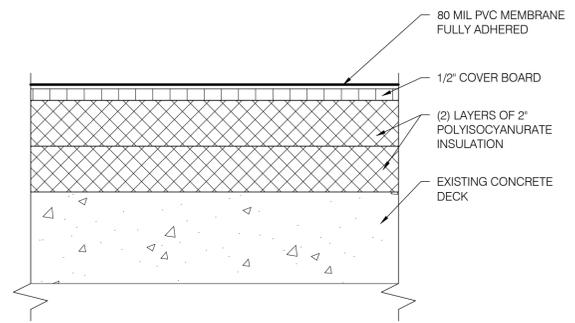
**1** OVERFLOW SCUPPER  
SCALE: 3" = 1'-0"



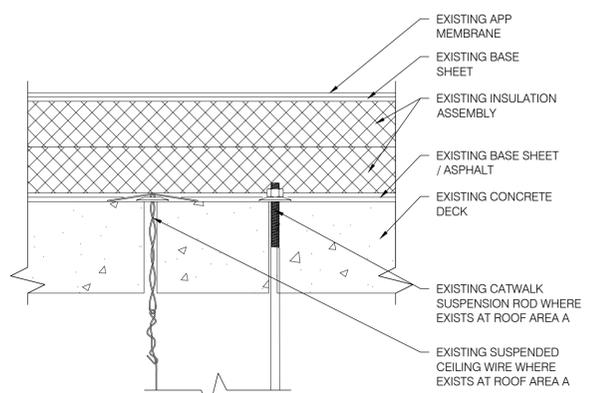
**B** EXISTING ROOF ASSEMBLY  
AT AREAS B1, A1 - A4  
SCALE: 3" = 1'-0"



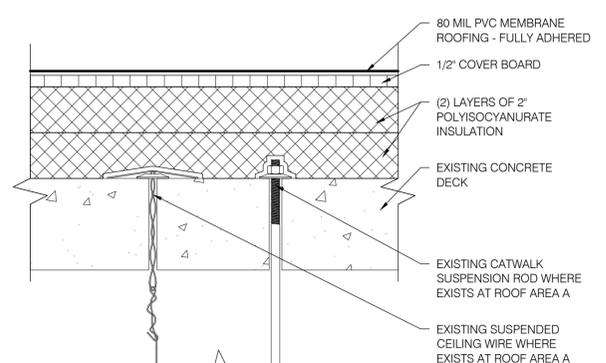
**E** EXISTING ROOF ASSEMBLY  
AT AREA C2  
SCALE: 3" = 1'-0"



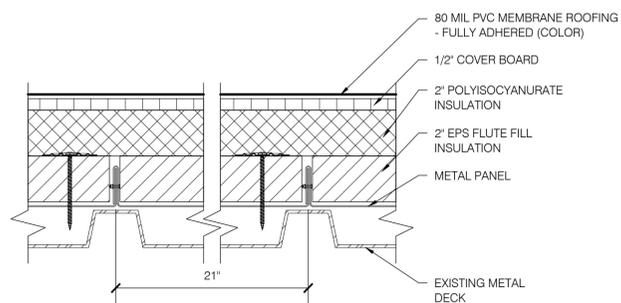
**H** NEW ROOF ASSEMBLY  
AT AREA C1  
SCALE: 3" = 1'-0"



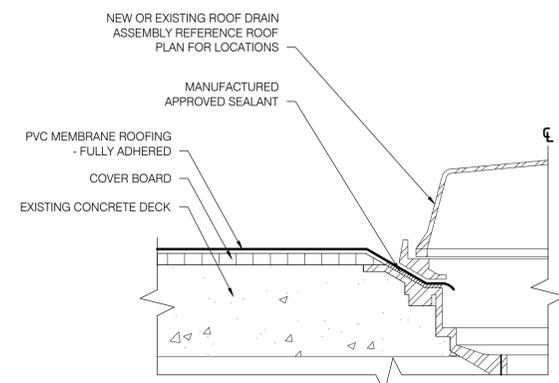
**C** EXISTING ROOF ASSEMBLY  
AT AREAS D1 AND D2  
SCALE: 3" = 1'-0"



**F** NEW ROOF ASSEMBLY AT  
AREAS A, B1, B2, C1, D1, D2  
SCALE: 3" = 1'-0"



**I** NEW ROOF ASSEMBLY  
AT AREA C2  
SCALE: 3" = 1'-0"



**2** ROOF DRAIN AT MECHANICAL PITS  
SCALE: 3" = 1'-0"

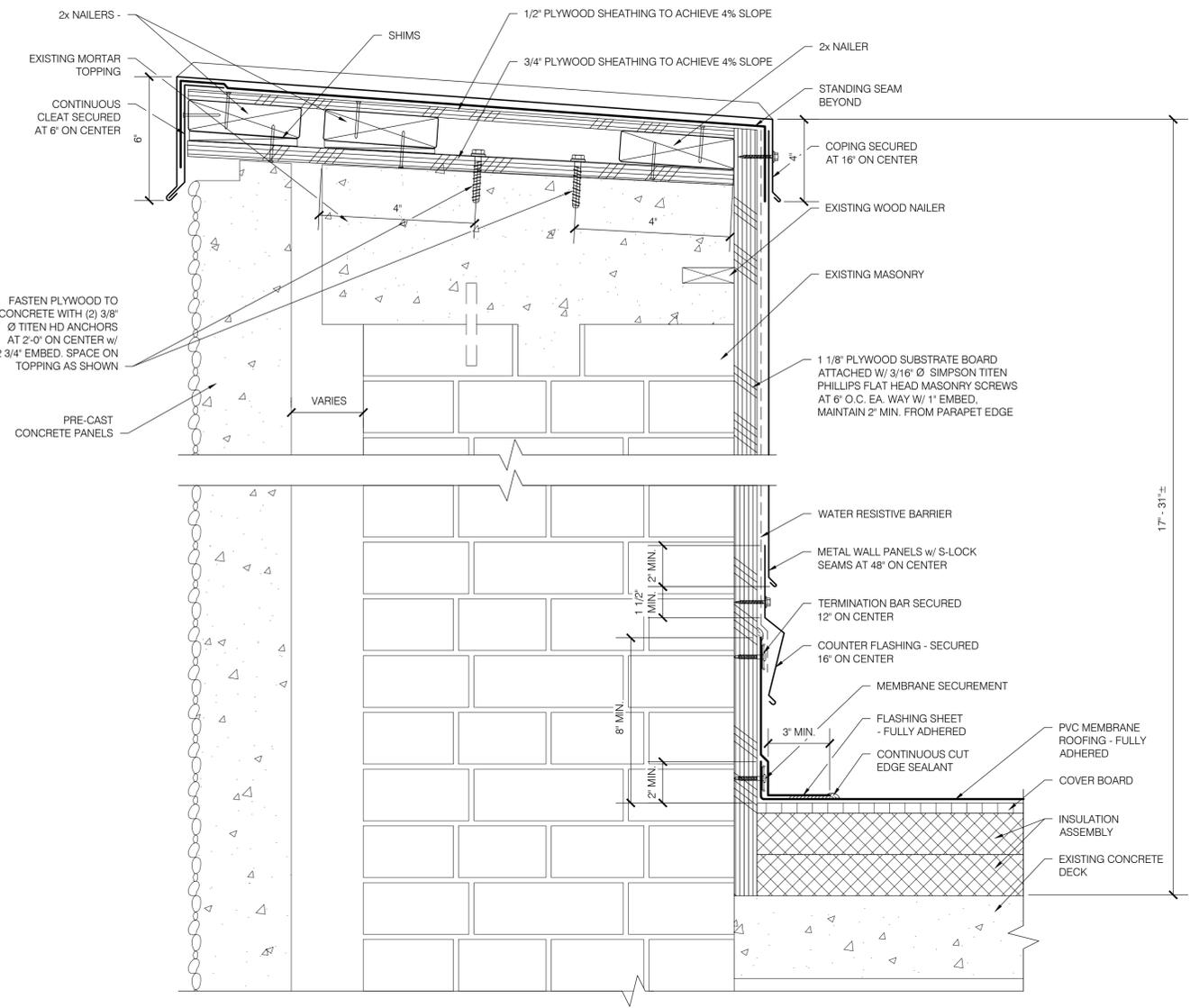


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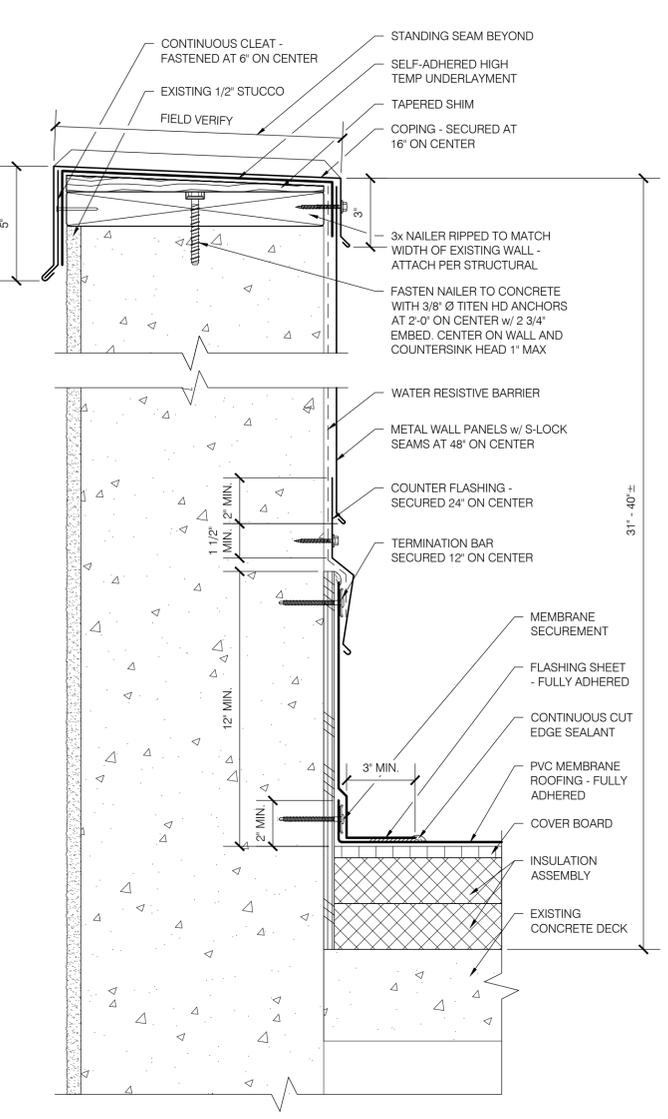
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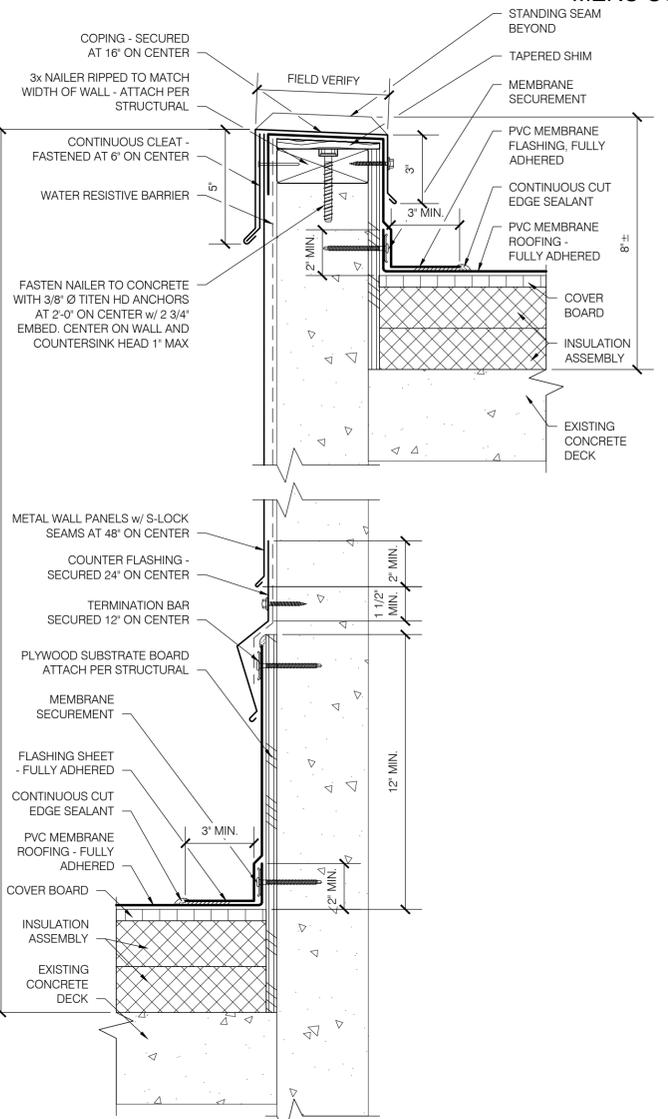
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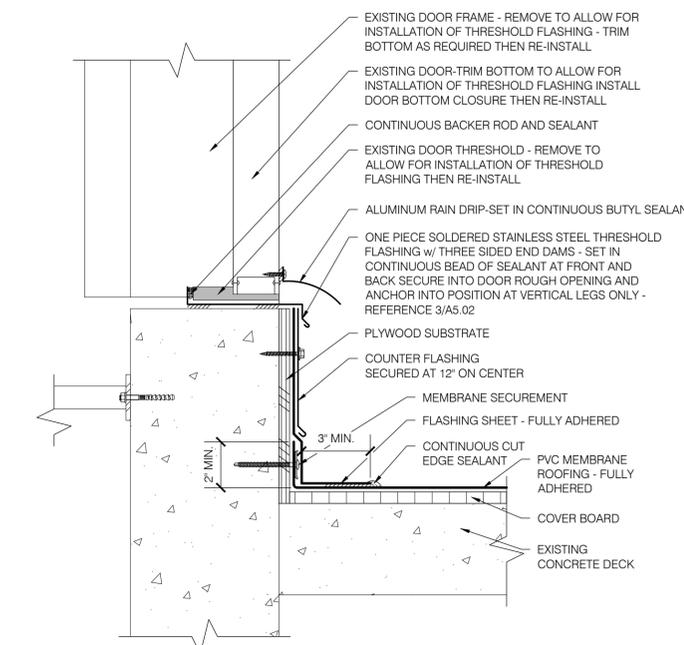
**1 PARAPET WALL - BASE BID**  
 SCALE: 3" = 1'-0"



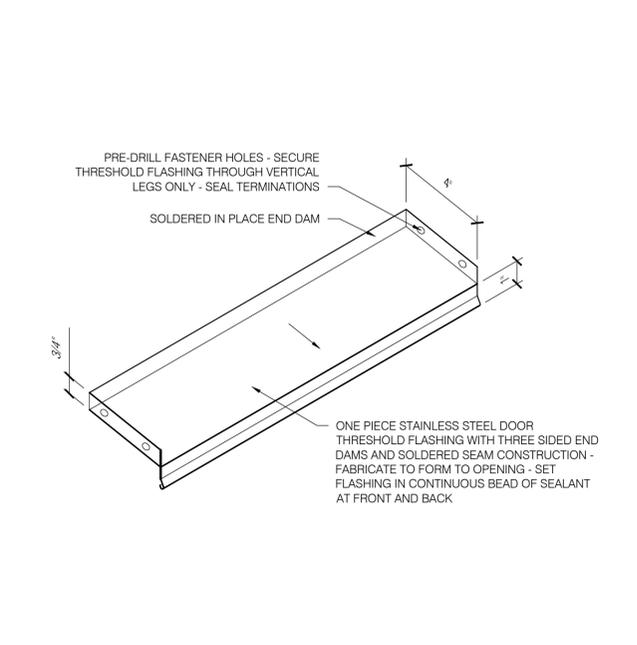
**4 PARAPET AT STAGE ROOF**  
 SCALE: 3" = 1'-0"



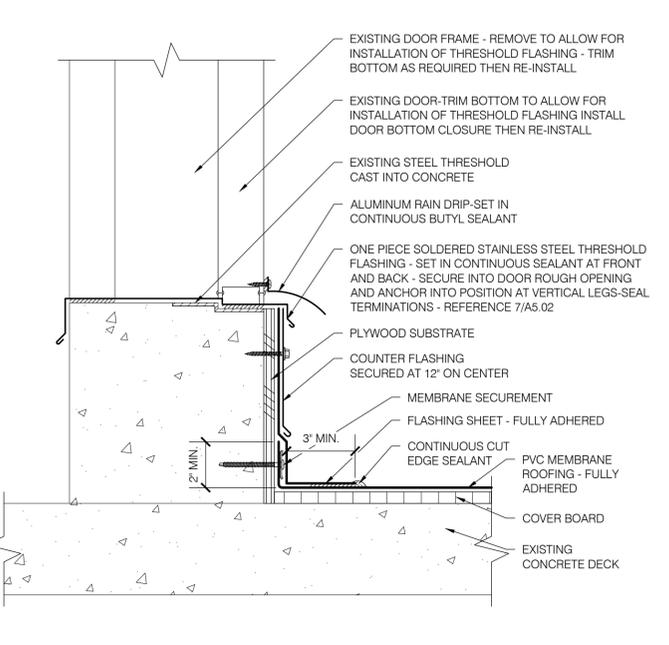
**6 DIVIDING WALL**  
 SCALE: 3" = 1'-0"



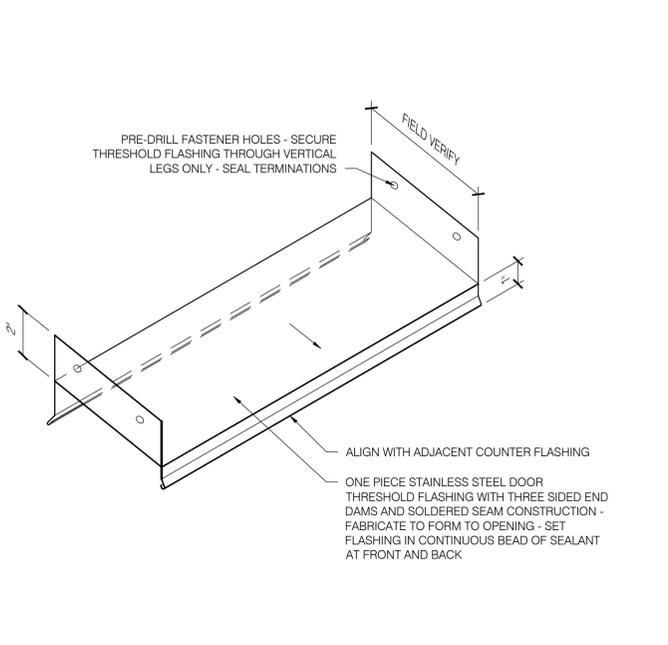
**2 DOOR THRESHOLD**  
 SCALE: 3" = 1'-0"



**3 DOOR THRESHOLD FLASHING**  
 SCALE: 3" = 1'-0"



**5 DOOR THRESHOLD**  
 SCALE: 3" = 1'-0"



**7 DOOR THRESHOLD**  
 SCALE: 3" = 1'-0"



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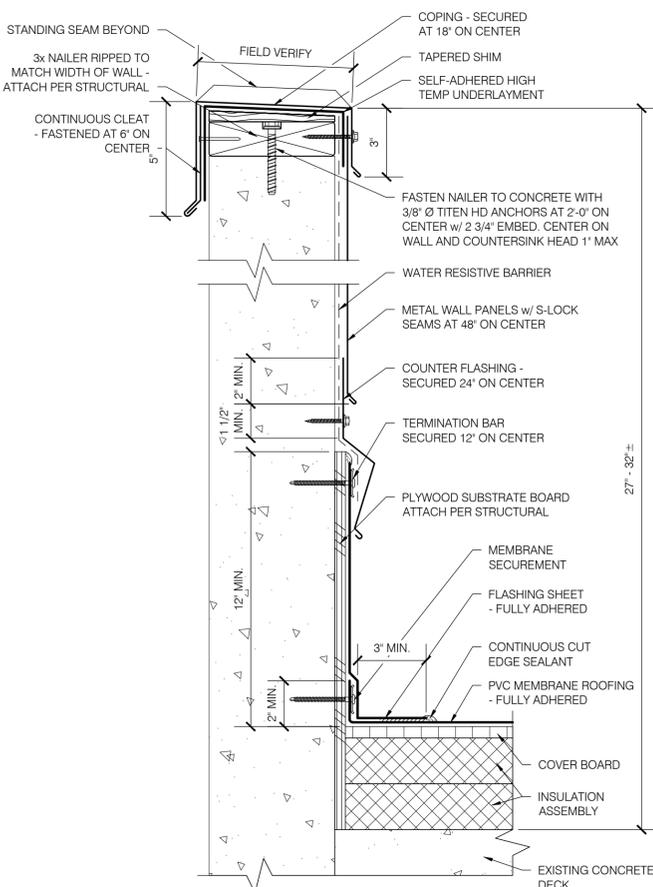


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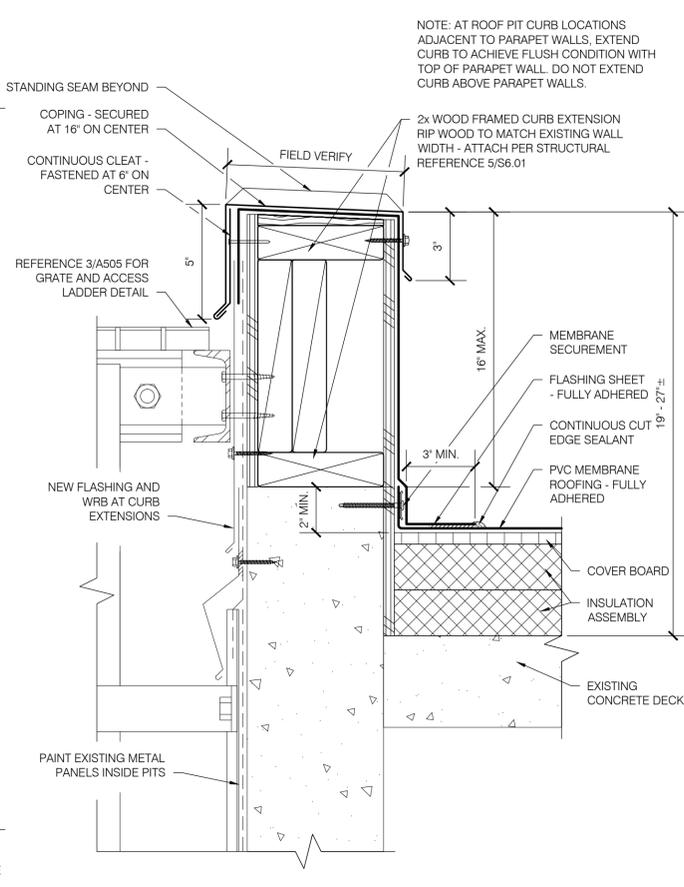
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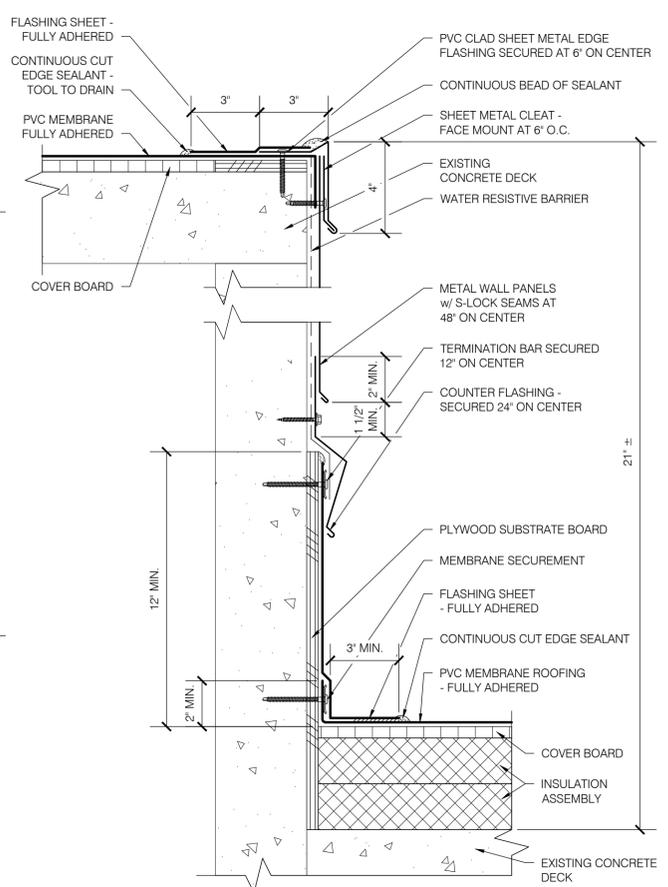
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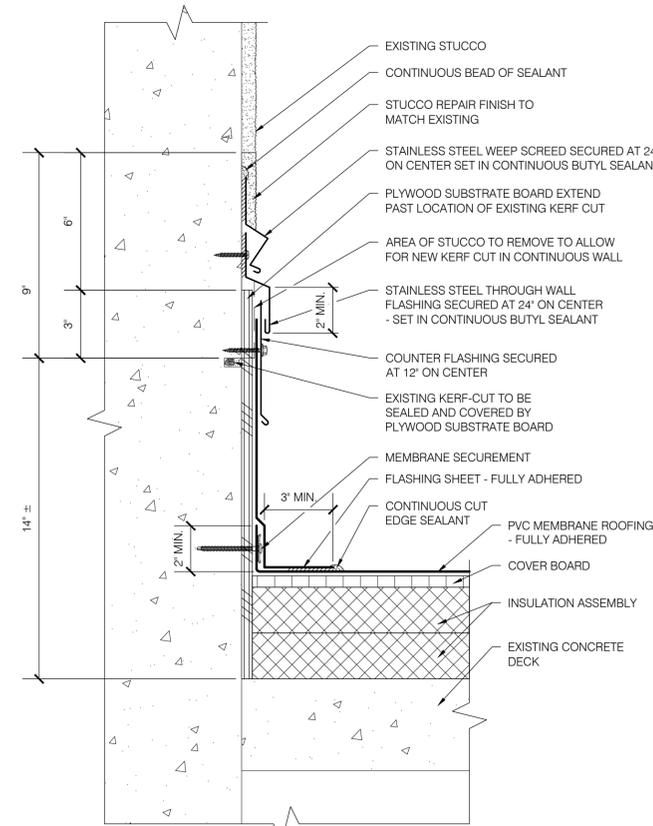
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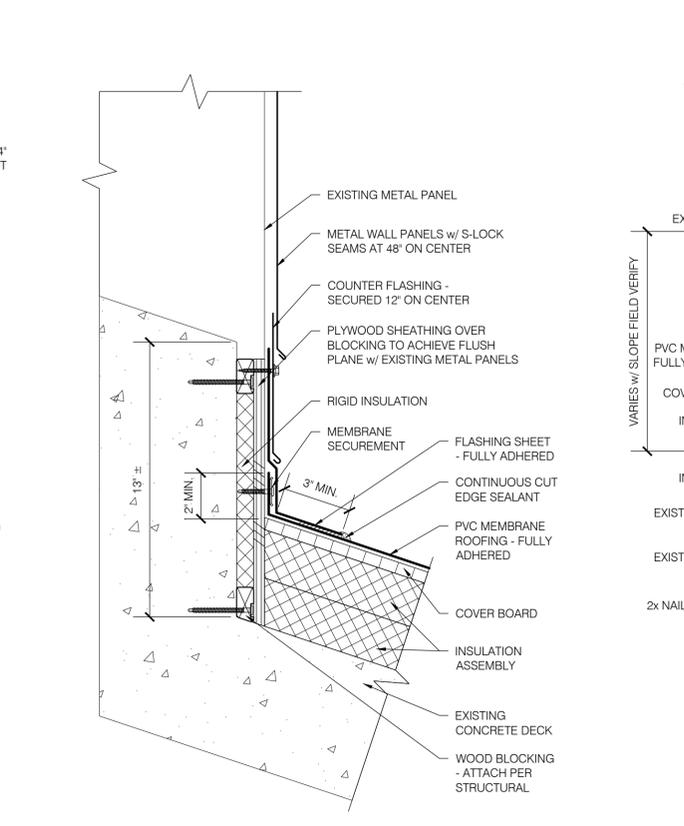
3 ROOF PIT CURB  
SCALE: 3" = 1'-0"



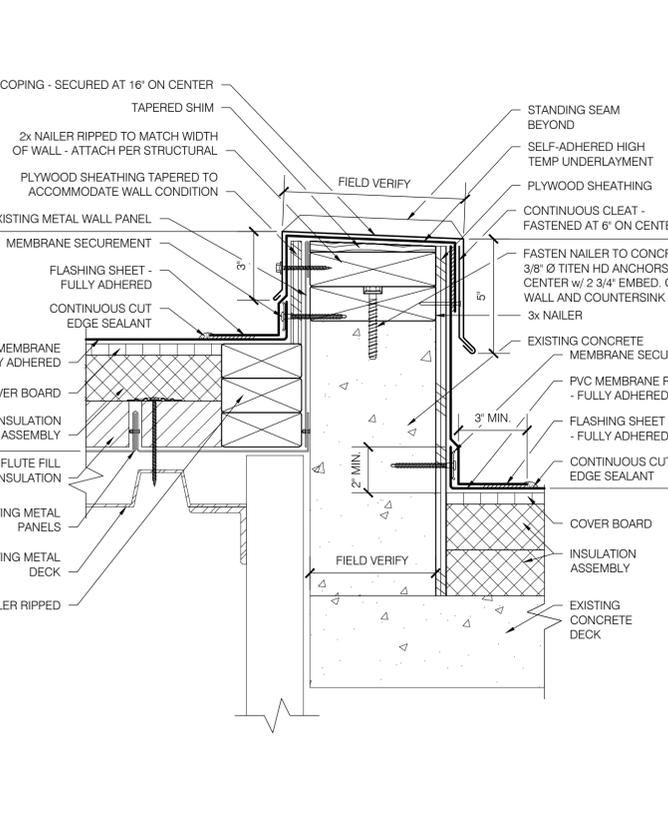
5 ELEVATOR SHAFT  
SCALE: 3" = 1'-0"



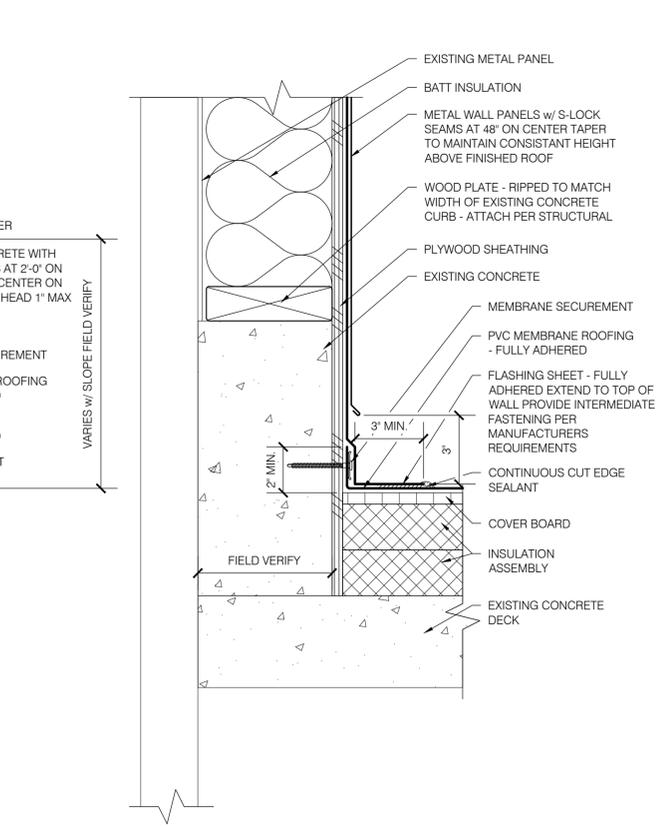
2 HIGH WALL COUNTER FLASHING  
SCALE: 3" = 1'-0"



4 HEAD WALL  
SCALE: 3" = 1'-0"



6 BASE FLASHING  
SCALE: 3" = 1'-0"



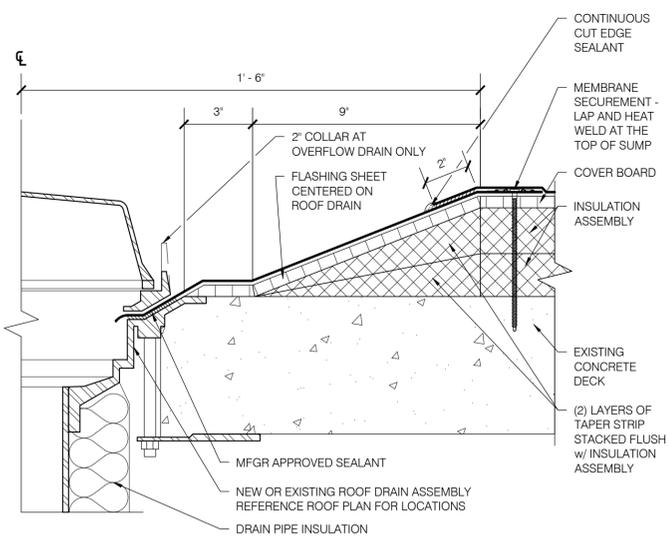
8 SIDE WALL  
SCALE: 3" = 1'-0"



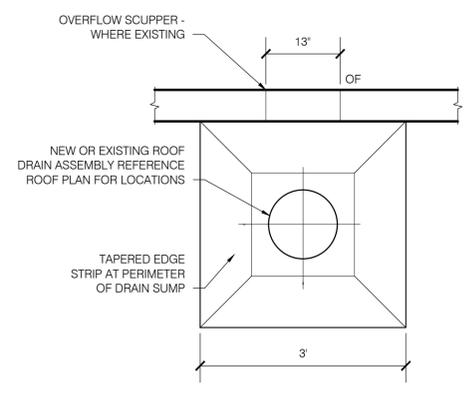
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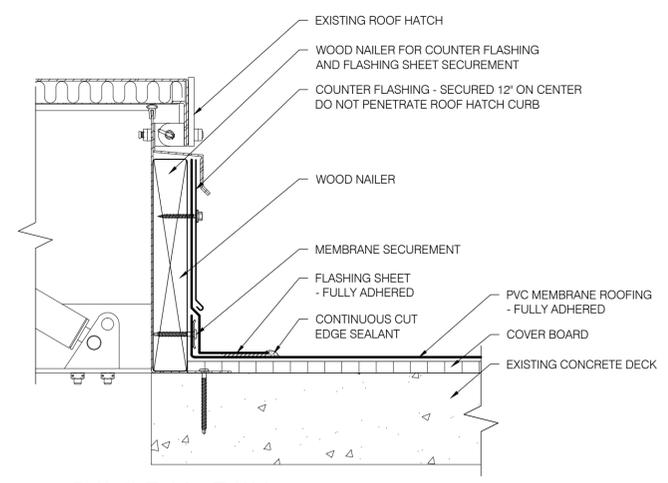
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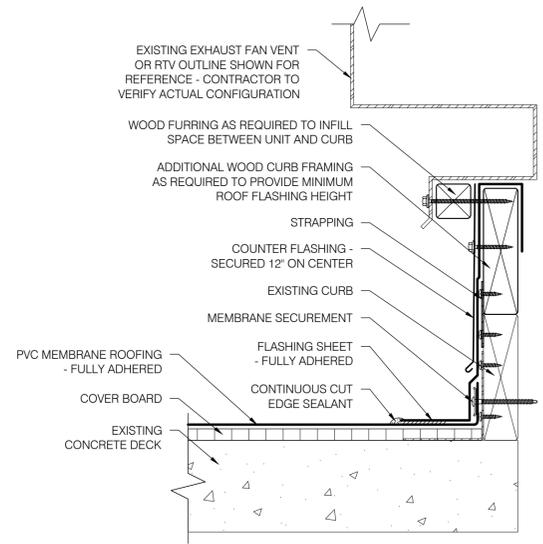
1 DRAIN  
SCALE: 3" = 1'-0"



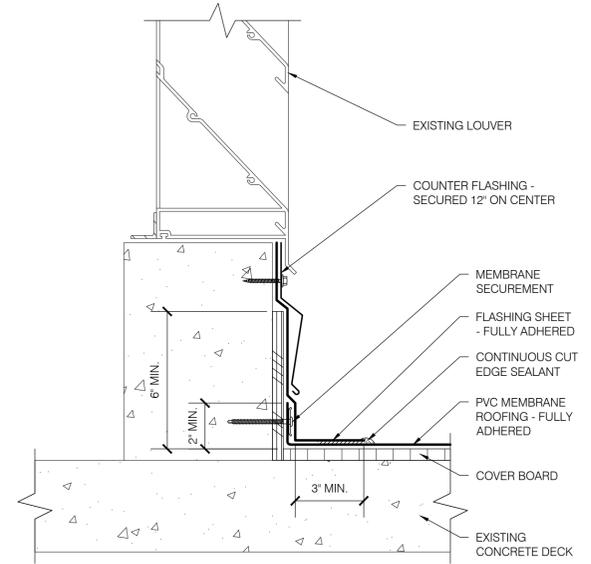
4 DRAIN SUMP LAYOUT  
SCALE: 3/4" = 1'-0"



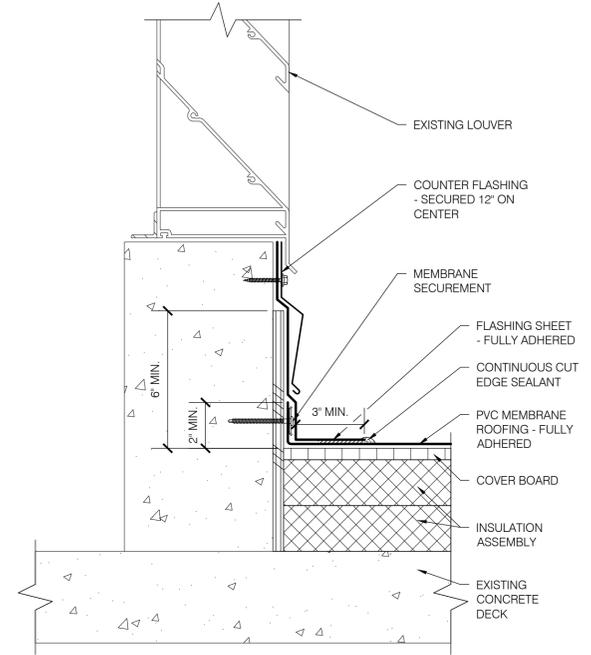
10 ROOF HATCH  
SCALE: 3" = 1'-0"



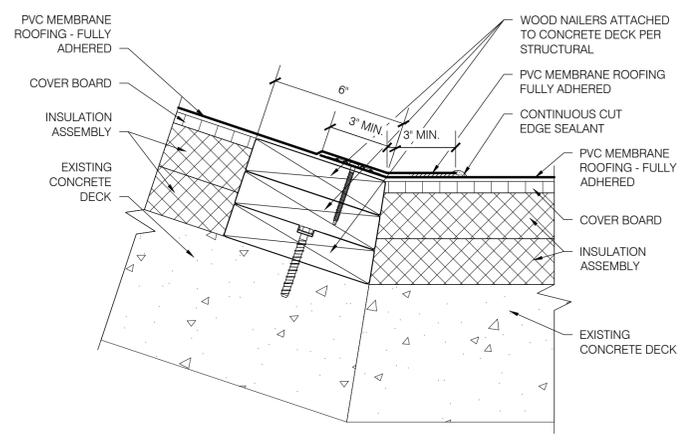
2 CURBED UNIT  
SCALE: 3" = 1'-0"



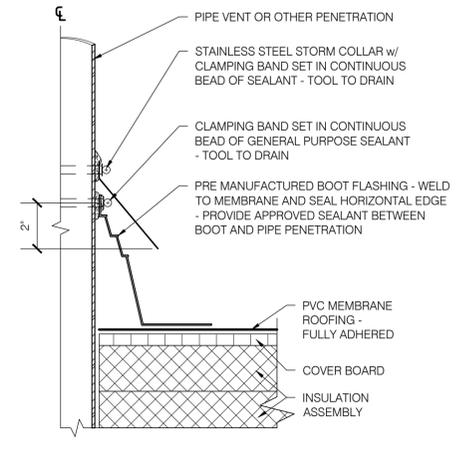
5 LOUVER VENT  
SCALE: 3" = 1'-0"



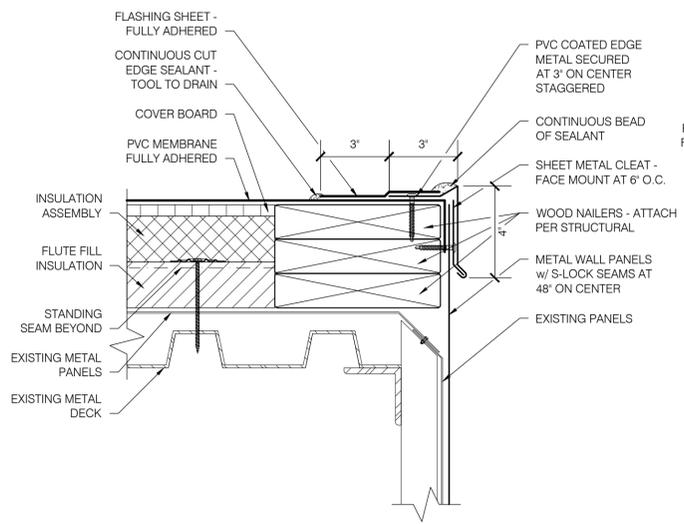
8 LOUVER VENT  
SCALE: 3" = 1'-0"



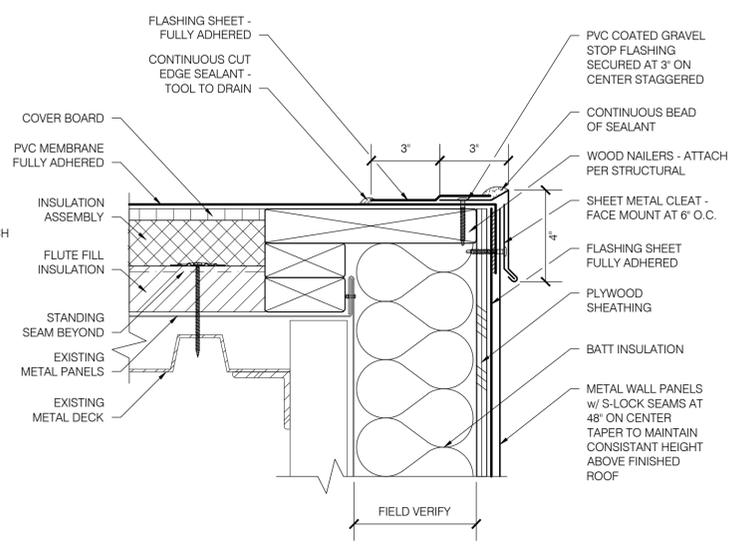
11 TRANSITION  
SCALE: 3" = 1'-0"



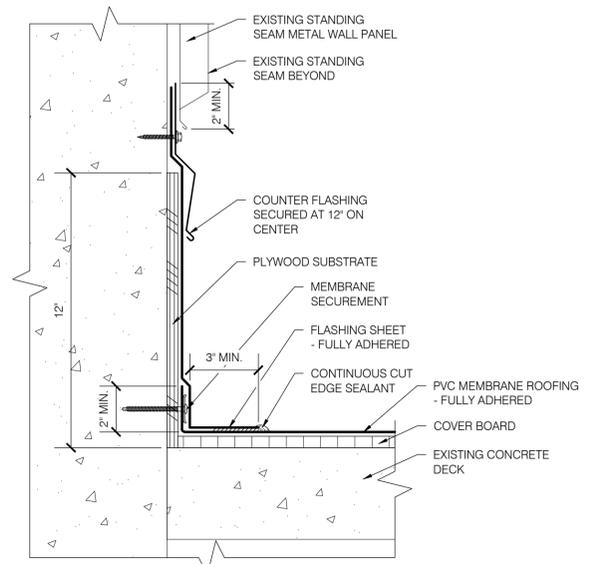
3 PENETRATION FLASHING  
SCALE: 3" = 1'-0"



6 EDGE FLASHING  
SCALE: 3" = 1'-0"



9 RAKE EDGE  
SCALE: 3" = 1'-0"



12 ROOF PIT BASE FLASHING  
SCALE: 3" = 1'-0"

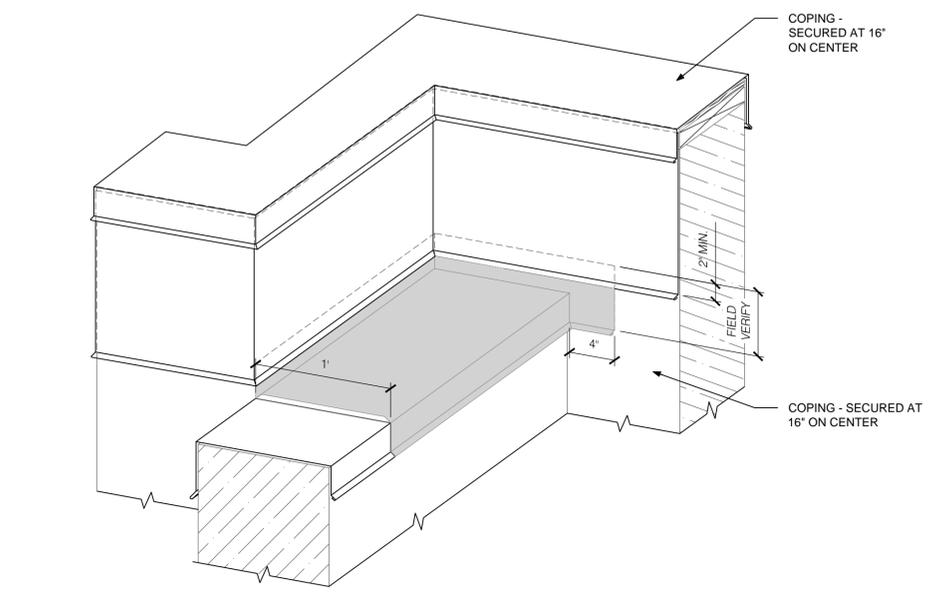


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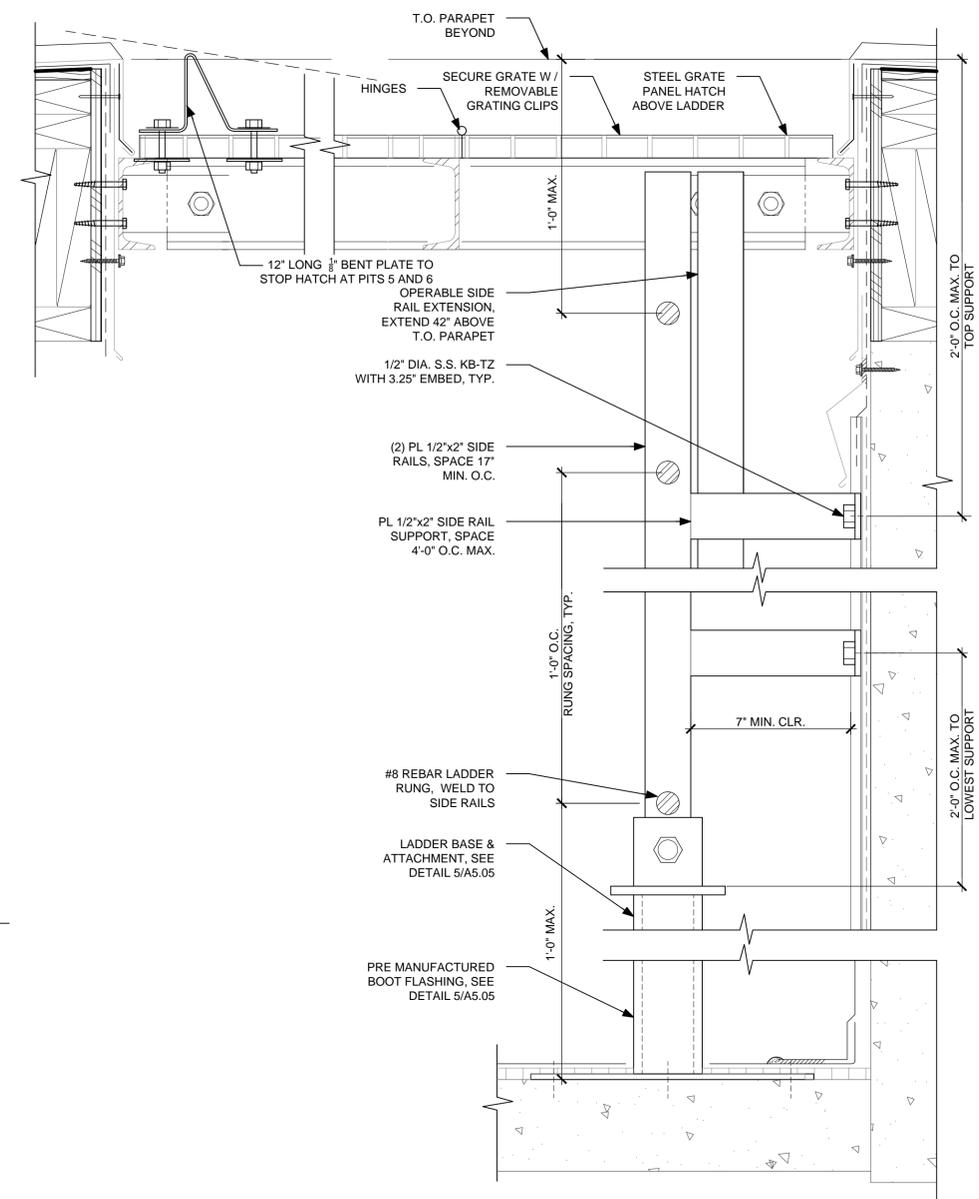
DETAILS

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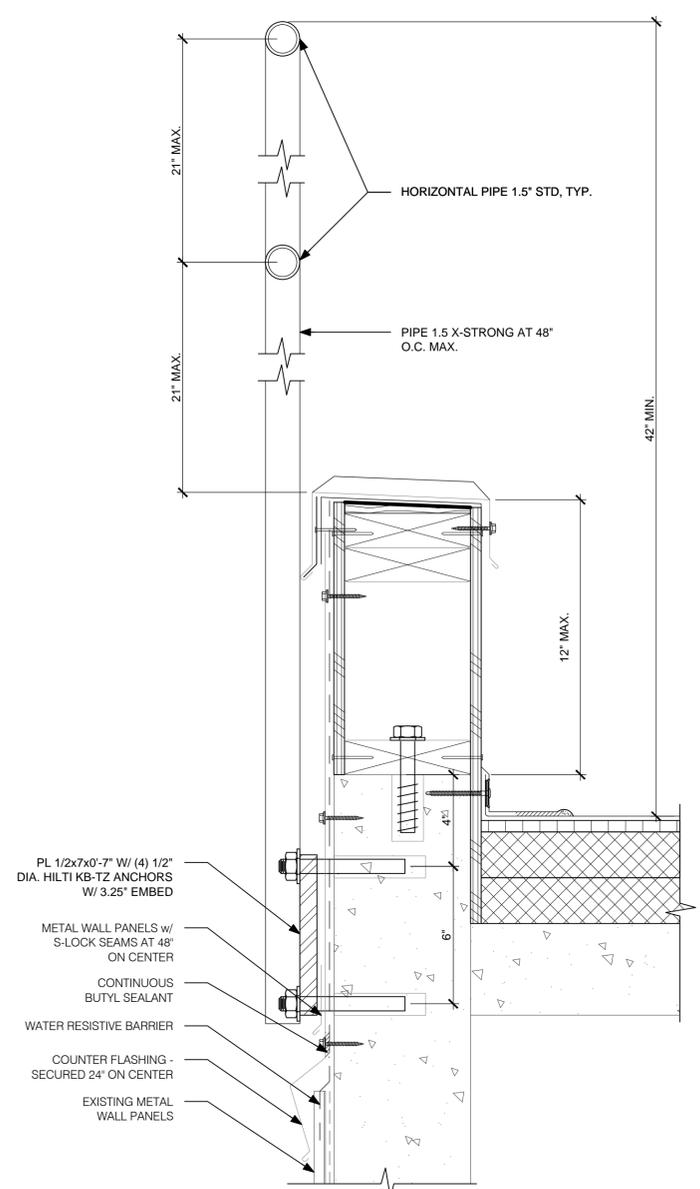
**A5.05**



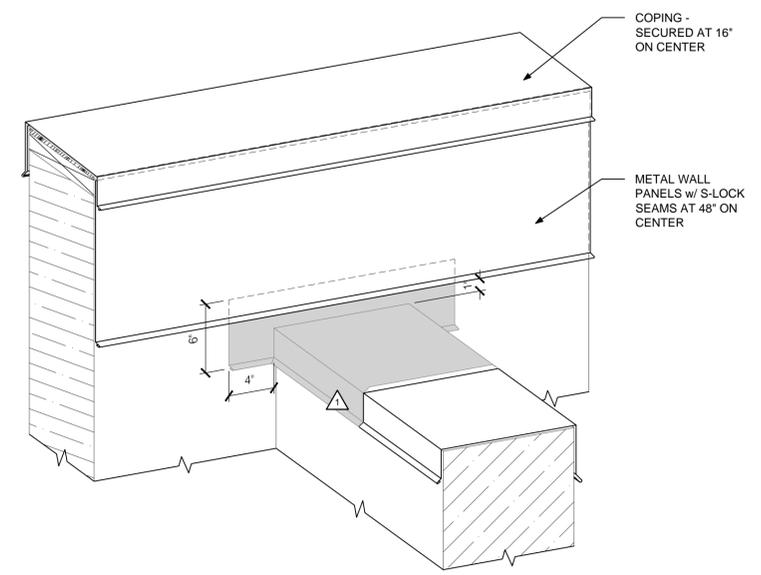
**1 COPING SADDLE**  
 SCALE: 1 1/2" = 1'-0"



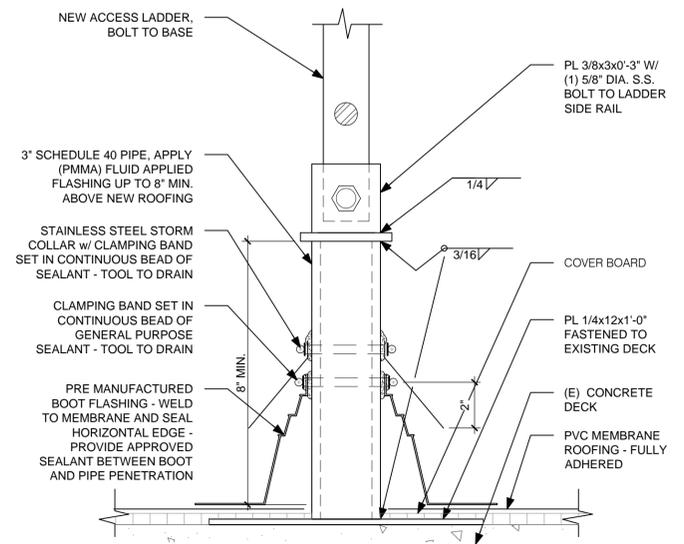
**3 ROOF PIT ACCESS LADDER**  
 SCALE: 3" = 1'-0"



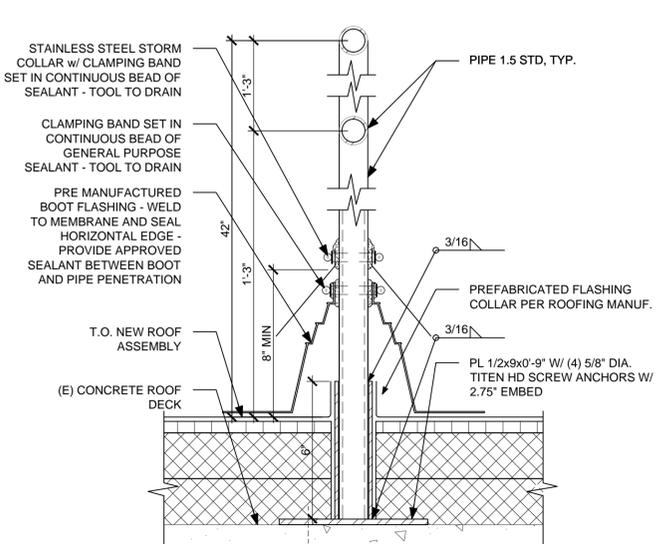
**4 GUARDRAIL AT ROOF CURB**  
 SCALE: 3" = 1'-0"



**2 COPING SADDLE FLASHING**  
 SCALE: 1 1/2" = 1'-0"



**5 LADDER BASE ATTACHMENT**  
 SCALE: 3" = 1'-0"



**6 PIPE RAILING**  
 SCALE: 3" = 1'-0"

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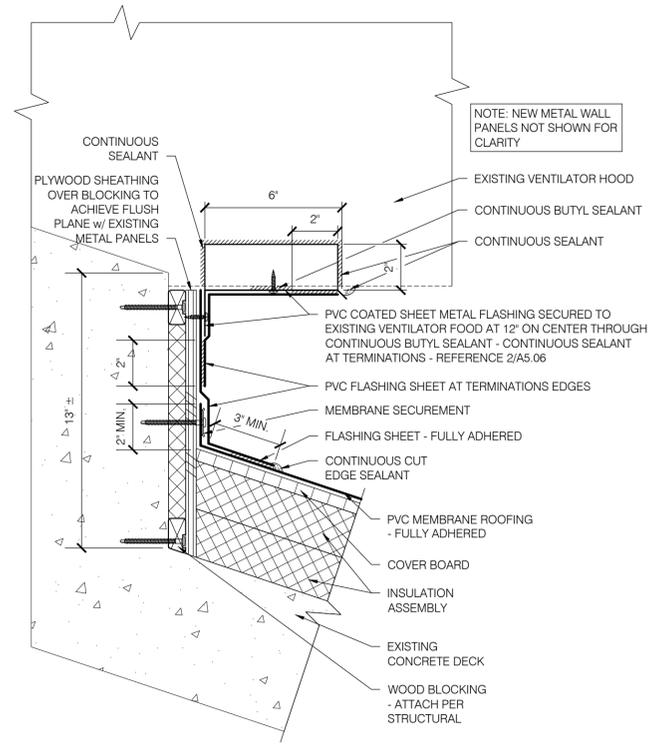
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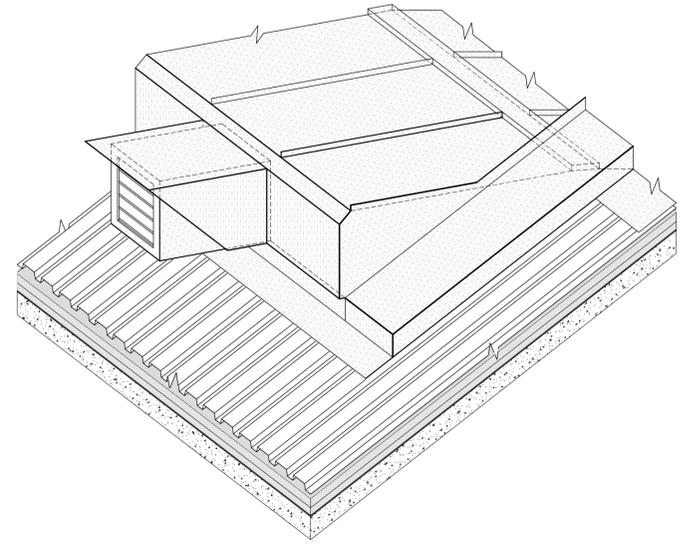
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**A5.06**

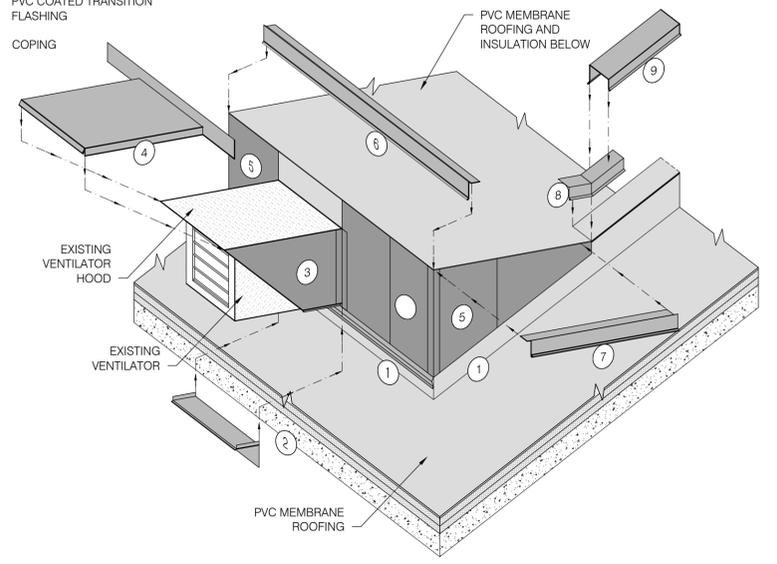


**1 FLASHING TERMINATION AT VENTILATOR HOODS**  
 SCALE: 3" = 1'-0"

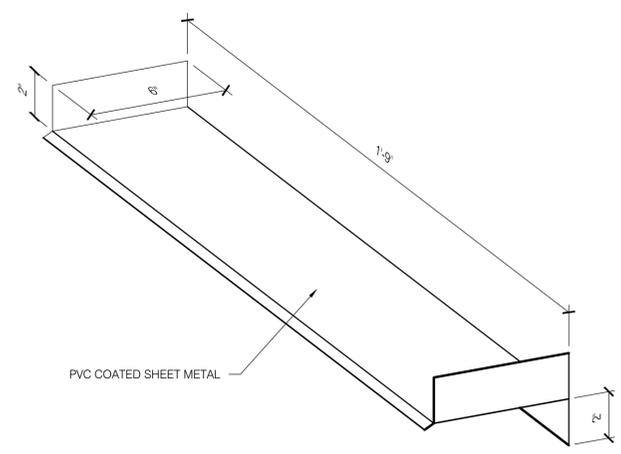


**3 EXISTING CONDITION AT STAGE VENTILATOR ROOF (DIAGRAMATIC)**  
 SCALE: 1/2" = 1'-0"

- 1 COUNTER FLASHING
- 2 PVC COATED SHEET METAL TERMINATION FLASHING.
- 3 METAL WALL PANEL w/ S-LOCK
- 4 VENTILATOR HOOD COVER
- 5 METAL WALL PANEL w/ S-LOCK
- 6 PVC COATED EDGE FLASHING
- 7 PVC COATED RAKE FLASHING
- 8 PVC COATED TRANSITION FLASHING
- 9 COPING

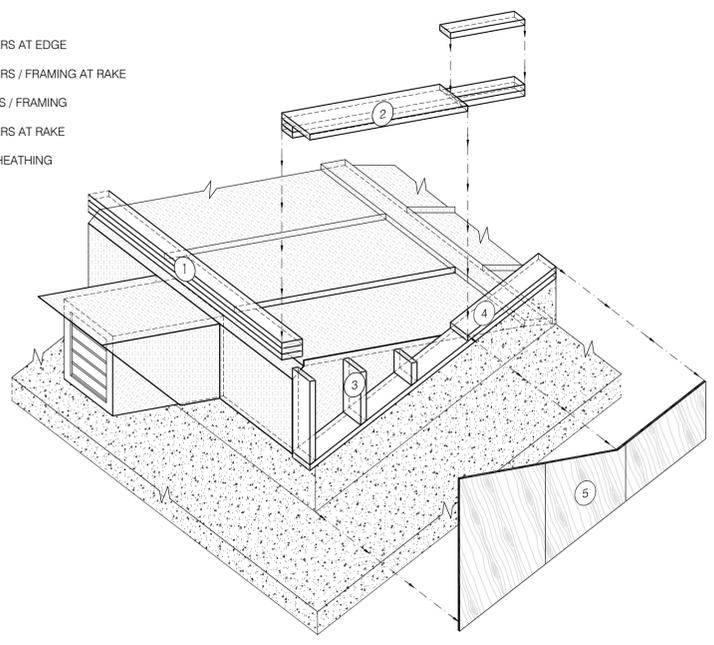


**5 SHEET METAL AT STAGE VENTILATOR ROOF (DIAGRAMATIC)**  
 SCALE: 1/2" = 1'-0"

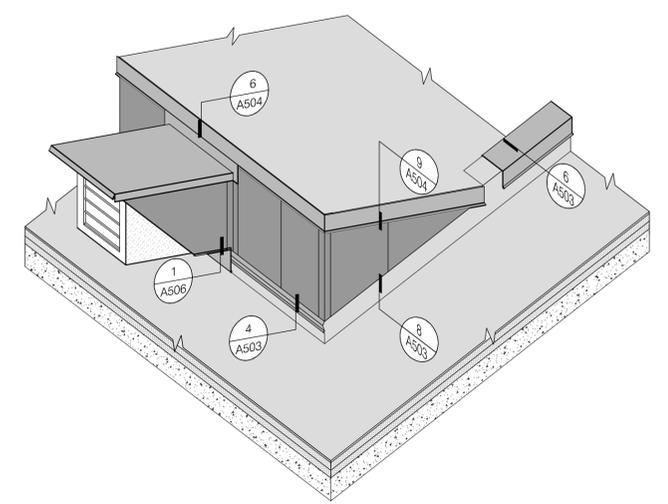


**2 FLASHING TERMINATION AT VENTILATOR HOODS**  
 SCALE: 3" = 1'-0"

- 1 WOOD NAILERS AT EDGE
- 2 WOOD NAILERS / FRAMING AT RAKE
- 3 WOOD STUDS / FRAMING
- 4 WOOD NAILERS AT RAKE
- 5 PLYWOOD SHEATHING



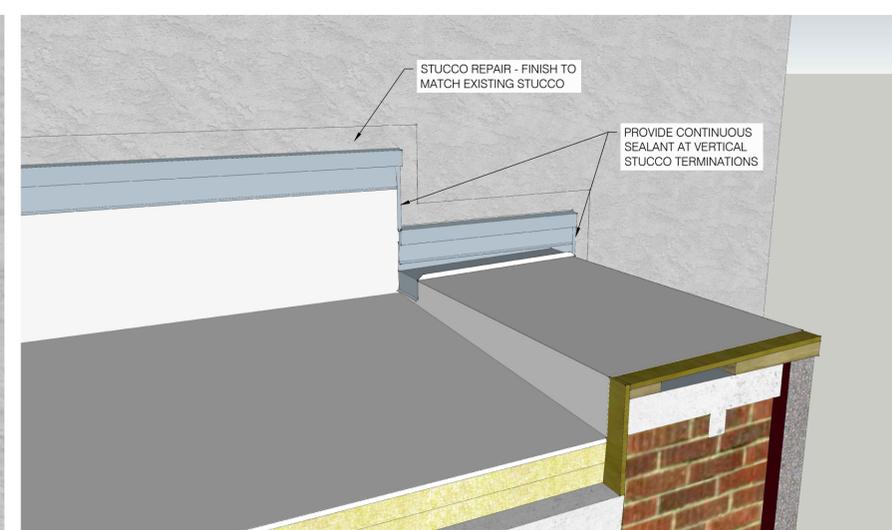
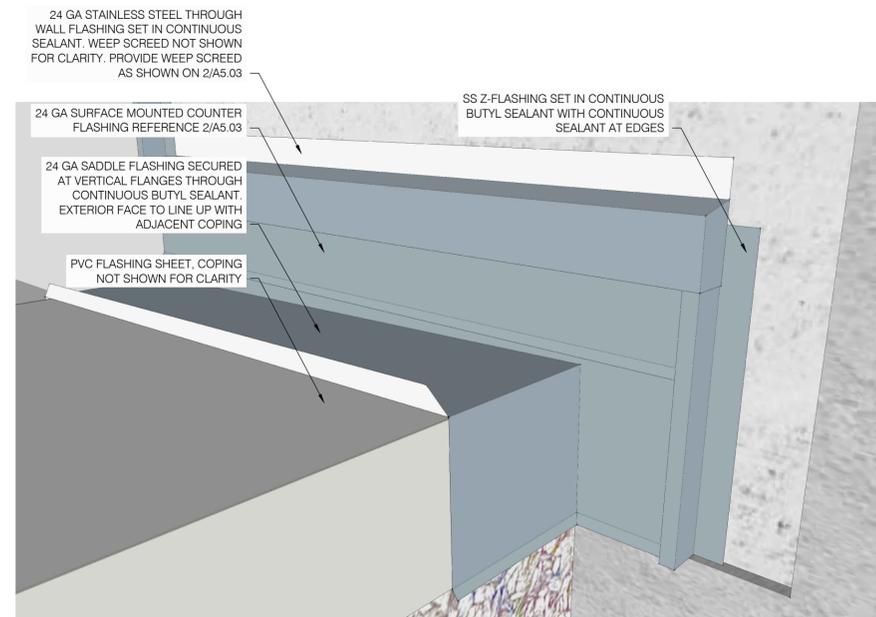
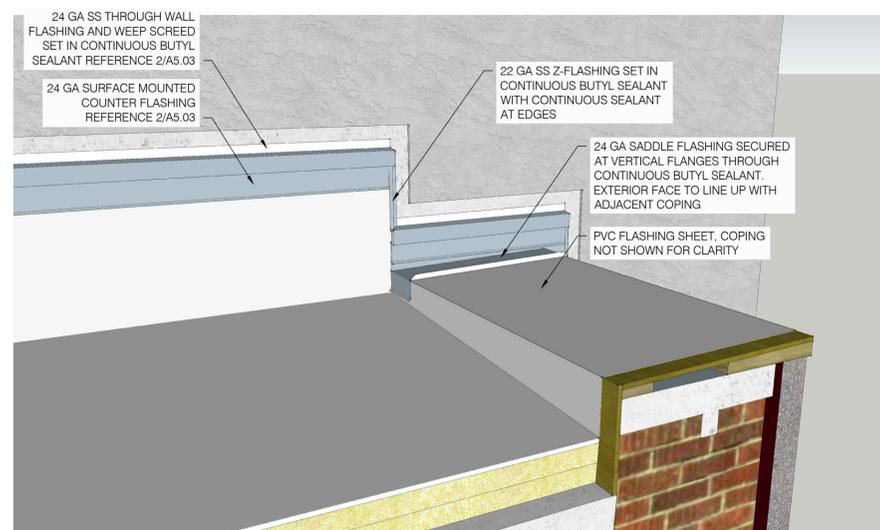
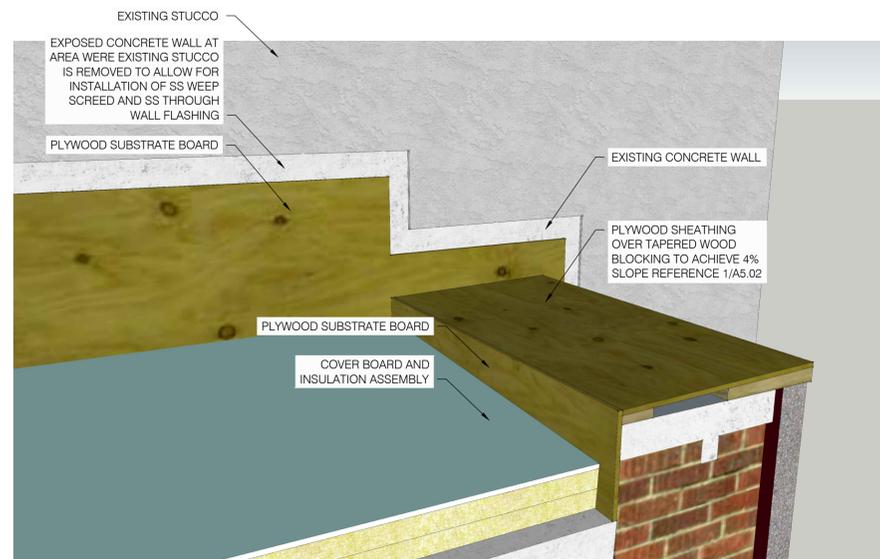
**4 FRAMING AT STAGE VENTILATOR ROOF (DIAGRAMATIC)**  
 SCALE: 1/2" = 1'-0"



**6 STAGE VENTILATOR AFTER NEW FRAMING, ROOF ASSEMBLY AND SHEET METAL (DIAGRAMATIC)**  
 SCALE: 1/2" = 1'-0"



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1 PARAPET / CONCRETE WALL INTERFACE  
SCALE: 3" = 1'-0"

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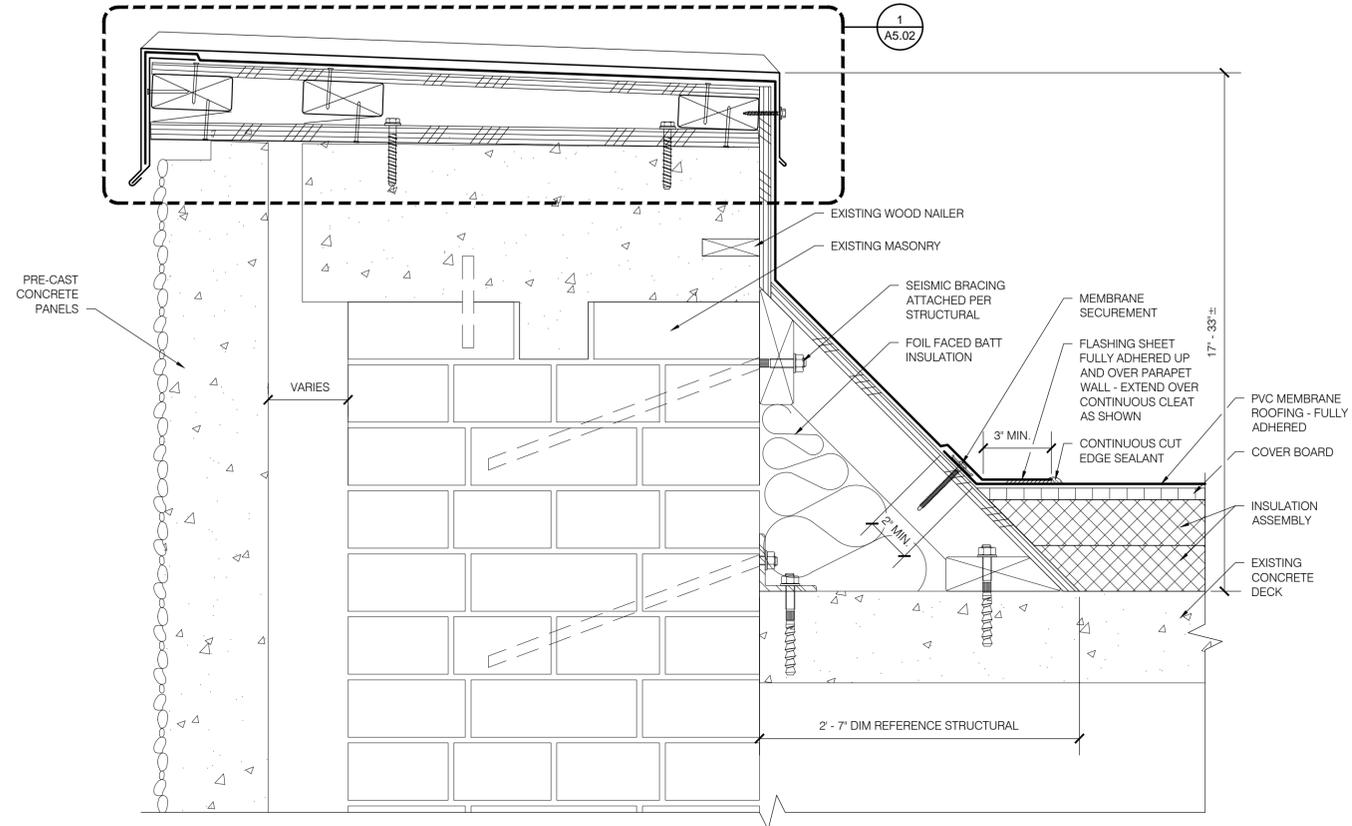
A5.07



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**1 PARAPET WALL AT SEISMIC BRACING - ALTERNATE**  
 SCALE: 3" = 1'-0"

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03.14.2016

△ 03.29.16 ADDENDUM #1

**A5.08**



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DRAWING INDEX		ISSUE LOG				
		PERMIT SET	BID SET	ADDENDUM #1	CD SET	
S0.01	DRAWING INDEX AND ABBREVIATIONS	X	X	*	X	
S0.02	GENERAL STRUCTURAL NOTES	X	X	*	X	
S0.03	GENERAL STRUCTURAL NOTES CONT. AND SPECIAL INSPECTIONS	X	X	*	X	
S0.04	SPECIAL INSPECTIONS	X	X	*	X	
S2.01	ROOF FRAMING PLAN	X	X	*	X	
S2.02	ROOF FRAMING PARTIAL PLANS	X	X	*	X	
S6.01	FRAMING DETAILS	X	X	X	X	
S6.02	FRAMING DETAILS		X	*	X	
ISSUE LOG KEY:		DATE	03-01-2016	03-14-2016	03-29-2016	04-22-2016
' X ' ISSUED AS PART OF A SET						
' - ' NOT A PART OF ISSUED SET						
' * ' FOR INFORMATION ONLY						

## ABBREVIATIONS

A.B. ANCHOR BOLT	FTG. FOOTING	PSI POUNDS PER SQUARE INCH
ACI AMERICAN CONCRETE INSTITUTE	GA. GAUGE	P/T POST-TENSIONED
ADD'L. ADDITIONAL	GALV. GALVANIZED	P.T. PRESSURE TREATED
AESS ARCHITECTURAL EXPOSED STRUCTURAL STEEL	HORIZ. HORIZONTAL	PVC POLYVINYL CHLORIDE
AISC AMERICAN INSTITUTE OF STEEL CONSTRUCTION INCORPORATED	HSS HOLLOW STRUCTURAL SECTION	R, RAD. RADIUS
ALT. ALTERNATE	IBC INTERNATIONAL BUILDING CODE	RCSC RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS
ALUM. ALUMINUM	ICBO INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS	REF. REFERENCE
ARCH. ARCHITECT	ICC INTERNATIONAL CODE COUNCIL	RET. RETURN
ASCE AMERICAN SOCIETY OF CIVIL ENGINEERS	I.D. INSIDE DIAMETER	REINF. REINFORCING
ASTM AMERICAN SOCIETY FOR TESTING AND MATERIALS	IN. INCH	REQ'D. REQUIRED
AWS AMERICAN WELDING SOCIETY	INT. INTERIOR	REQ'MTS. REQUIREMENTS
BLDG. BUILDING	K KIPS	SCHED. SCHEDULE
BOT. BOTTOM	KSF KIPS PER SQUARE FOOT	S.C. SLIP CRITICAL
C.G. CENTER OF GRAVITY	KSI KIPS PER SQUARE INCH	SIM. SIMILAR
C.I.P. CAST IN PLACE	LBS. POUND	SLRS SEISMIC LOAD RESISTING SYSTEM
C.J. CONTROL JOINT	LL. LIVE LOAD	S.O.G. SLAB ON GRADE
C.J.P. COMPLETE JOINT PENETRATION	LLH LONG LEG HORIZONTAL	SPEC. SPECIFICATION
CL CENTERLINE	LLV LONG LEG VERTICAL	SQ. SQUARE
CLR. CLEAR	LOC. LOCATION	SS STAINLESS STEEL
CMU CONCRETE MASONRY UNIT	LONG. LONGITUDINAL	SSMA STEEL STUD MANUFACTURERS ASSOCIATION
COL. COLUMN	LVF LOW VELOCITY FASTENER	STD. STANDARD
CONC. CONCRETE	MAX. MAXIMUM	STRUCT. STRUCTURAL
CONN. CONNECTION	MBMA METAL BUILDING MANUFACTURERS ASSOCIATION	SYM. SYMMETRICAL
CONST. CONSTRUCTION	MECH. MECHANICAL	THRU THROUGH
CONT. CONTINUOUS	MFR. MANUFACTURER	TRANS. TRANSVERSE
db BAR DIAMETER	MIN. MINIMUM	TS LIGHT GAUGE TUBE STEEL
DBA DEFORMED BAR ANCHOR	MISC. MISCELLANEOUS	TYP. TYPICAL
DET. DETAIL	MPH MILES PER HOUR	U.N.O. UNLESS NOTED OTHERWISE
DIA., Ø DIAMETER	MT MAGNETIC PARTICLE TESTING	UT ULTRASONIC TESTING
DIAG. DIAGONAL	(N) NEW	VERT. VERTICAL
D.L. DEAD LOAD	N.I.C. NOT IN CONTRACT	V.I.F. VERIFY IN FIELD
DWG. DRAWING	NOM. NOMINAL	w/ WITH
ELEC. ELECTRICAL	NO. NUMBER	WF WIDE FLANGE
EL. ELEVATION	N.T.S. NOT TO SCALE	w/o WITHOUT
EQ. EQUAL	o.c. ON CENTER	W.P. WORK POINT
EXIST., (E) EXISTING	O.D. OUTSIDE DIAMETER	WPS WELDING PROCEDURE SPECIFICATION
EXP. EXPANSION	OPP. OPPOSITE	WWF WELDED WIRE FABRIC
EXT. EXTERIOR	PAF POWDER ACTUATED FASTENER	
FDN. FOUNDATION	PART. PARTITION	
FIN. FINISH	P/C PRECAST	
FLR. FLOOR	PCF POUNDS PER CUBIC FOOT	
FT. FOOT	PL PLATE	
	P.P. PARTIAL PENETRATION	

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**PROFESSIONAL ROOF CONSULTANTS**

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DRAWING INDEX AND LIST OF ABBREVIATIONS  
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GENERAL STRUCTURAL NOTES

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S0.02

# GENERAL STRUCTURAL NOTES

**LATERAL UPGRADE NARRATIVE:**

THE METROPOLITAN EXPOSITION RECREATION COMMISSION PLANS ON REMOVING AND REPLACING THE EXISTING ROOFING ON KELLER AUDITORIUM. KELLER AUDITORIUM IS AN UNREINFORCED MASONRY (URM) BUILDING, REPLACEMENT OF ROOFING TRIGGERS ROOF STRENGTHENING DURING THE REROOFING PROCESS CONFORMING TO THE ASCE 41 BPOE IMPROVEMENT STANDARD PER CHAPTER 24.85.065A OF THE CITY OF PORTLAND'S CHARTER CODES AND POLICIES.

**AREAS OF THE BUILDING PREVIOUSLY UPGRADED UNDER PRIOR PERMITS**

NONE

**AREAS OF THE BUILDING RECEIVING SEISMIC UPGRADES AT THIS TIME**

ROOF PARAPET BRACING AND TYING THE URM WALLS TO THE ROOF DIAPHRAGM.

STRUCTURAL DRAWINGS ARE A PORTION OF THE CONTRACT DOCUMENTS AND ARE INTENDED TO BE USED WITH ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE REQUIREMENTS FROM THESE DRAWINGS INTO THEIR SHOP DRAWINGS AND WORK.

THESE GENERAL NOTES SUPPLEMENT THE PROJECT SPECIFICATIONS. REFER TO THE PROJECT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS. NOTES AND DETAILS ON THE STRUCTURAL DRAWINGS SHALL TAKE PRECEDENCE OVER THE GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE GIVEN, CONSTRUCTION SHALL BE AS SHOWN FOR SIMILAR WORK.

**CODE REQUIREMENTS:**

CONFORM TO THE 2014 OREGON STRUCTURAL SPECIALTY CODE (OSSC), BASED ON THE 2012 INTERNATIONAL BUILDING CODE (IBC), FOR NEW CONSTRUCTION AND THE 2013 SEISMIC EVALUATION FOR EXISTING BUILDINGS (ASCE 41-13) FOR THE SEISMIC RETROFIT OF THE ROOF.

**TEMPORARY CONDITIONS:**

THE STRUCTURE IS DESIGNED TO FUNCTION AS A UNIT UPON COMPLETION. THE CONTRACTOR IS RESPONSIBLE FOR FURNISHING ALL TEMPORARY BRACING AND/OR SUPPORT THAT MAY BE REQUIRED AS THE RESULT OF THE CONTRACTOR'S CONSTRUCTION METHODS AND/OR SEQUENCES.

CONTRACTOR'S CONSTRUCTION AND/OR ERECTION SEQUENCES SHALL RECOGNIZE AND CONSIDER THE EFFECTS OF THERMAL MOVEMENTS OF STRUCTURAL ELEMENTS DURING THE CONSTRUCTION PERIOD.

**EXISTING CONDITIONS:**

ALL EXISTING CONDITIONS, DIMENSIONS AND ELEVATIONS SHALL BE FIELD VERIFIED. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT OF ANY SIGNIFICANT DISCREPANCIES FROM CONDITIONS SHOWN ON THE DRAWINGS.

**DESIGN CRITERIA:**

DESIGN WAS BASED ON THE STRENGTH AND DEFLECTION CRITERIA OF THE OSSC. IN ADDITION TO THE DEAD LOADS, THE FOLLOWING LOADS AND ALLOWABLES WERE USED FOR DESIGN, WITH LIVE LOADS (L.L.) REDUCED PER OSSC:

DESIGN CRITERIA		
GRAVITY SYSTEM CRITERIA		
ROOF LIVE/SNOW LOAD	25 PSF L.L. (FOR GRATING DESIGN)	
NOTES:	1. LIVE LOADS REDUCED PER OSSC. 2. MEMBER DESIGNED FOR MORE CRITICAL OF UNIFORM OR CONCENTRATED LOAD.	
WIND CRITERIA		
RISK CATEGORY	II	
MAIN WIND FORCE RESISTING SYSTEM	V <sub>ult</sub> = 120 MPH ULTIMATE DESIGN WIND SPEED (3-SECOND GUST)	
COMPONENTS AND CLADDINGS	V <sub>ult</sub> = 120 MPH ULTIMATE DESIGN WIND SPEED (3-SECOND GUST)	
EXPOSURE CATEGORY	B	
GUST/INTERNAL PRESSURE	GC <sub>pi</sub> = +/- 0.18	
SEISMIC CRITERIA - FOR SEISMIC RETROFIT OF EXISTING BUILDING		
DESIGN STANDARD	ASCE 41-13	
REHABILITATION OBJECTIVE BSE-1	GREATER OF BSE-1E AND 75% OF BSE-1N	
REHABILITATION OBJECTIVE BSE-2	GREATER OF BSE-2E AND 75% OF BSE-2N	
BSE-1	LIFE SAFETY STRUCTURAL PERFORMANCE	
BSE-2	COLLAPSE PREVENTION STRUCTURAL PERFORMANCE	
SITE CLASS	D	
BASIC SAFETY EARTHQUAKE 2N (2% IN 50 YERS) - 75% OF VALUE FOR (N) BUILDINGS		
SPECIAL ACCELERATION	S <sub>s</sub> (2/50) = 0.988	S (1, 2/50) = 0.424
SITE COEFFICIENT	F <sub>a</sub> = 1.104	F <sub>v</sub> = 1.578
DESIGN SPECIAL ACCELERATION	S <sub>x</sub> s, BSE-2N = 1.091	S <sub>x</sub> 1, BSE-2N = 0.669
DESIGN SPECIAL ACCELERATION	0.75* S <sub>x</sub> s, BSE-2N = 0.818	0.75* S <sub>x</sub> 1, BSE-2N = 0.502
BASIC SAFETY EARTHQUAKE 2E (5% IN 50 YEARS)		
SPECIAL ACCELERATION	S <sub>s</sub> (5/50) = 0.714	S (1, 5/50) = 0.307
SITE COEFFICIENT	F <sub>a</sub> = 1.230	F <sub>v</sub> = 1.785
DESIGN SPECIAL ACCELERATION	S <sub>x</sub> s, BSE-2E = 0.878	S <sub>x</sub> 1, BSE-2E = 0.548
CONTROLLING BSE-2 EVENT		
DESIGN SPECTRAL ACCELERATION (CONTROL)	S <sub>x</sub> s, BSE-2 = 1.091	S <sub>x</sub> 1, BSE-2 = 0.669
BASIC SAFETY EARTHQUAKE 1N (2/3 OF 2% IN 50 YERS) - 75% OF VALUE FOR (N) BUILDINGS		
SPECIAL ACCELERATION	S <sub>s</sub> (2/50) = 0.988	S (1, 2/50) = 0.424
SITE COEFFICIENT	F <sub>a</sub> = 1.104	F <sub>v</sub> = 1.578
DESIGN SPECIAL ACCELERATION	2/3 S <sub>x</sub> s, 2/50 = 0.727	2/3 S <sub>x</sub> 1, 2/50 = 0.446
DESIGN SPECIAL ACCELERATION	0.75* 2/3 S <sub>x</sub> s, 2/50 = 0.545	0.75* 2/3 S <sub>x</sub> 1, 2/50 = 0.335
BASIC SAFETY EARTHQUAKE 1E (20% IN 50 YEARS)		
SPECIAL ACCELERATION	S <sub>s</sub> (20/50) = 0.296	S (1, 20/50) = 0.112
SITE COEFFICIENT	F <sub>a</sub> = 1.564	F <sub>v</sub> = 2.348
DESIGN SPECIAL ACCELERATION	S <sub>x</sub> s, BSE-1E = 0.463	S <sub>x</sub> 1, BSE-1E = 0.263
CONTROLLING BSE-1 EVENT		
DESIGN SPECIAL ACCELERATION (CONTROL)	S <sub>x</sub> s, BSE-1 = 0.545	S <sub>x</sub> 1, BSE-1 = 0.446

**STRUCTURAL OBSERVATION:**

THE STRUCTURAL ENGINEER OF RECORD (SER) WILL PERFORM STRUCTURAL OBSERVATION BASED ON THE REQUIREMENTS OF THE OSSC AT THE STAGES OF CONSTRUCTION LISTED BELOW. CONTRACTOR SHALL PROVIDE SUFFICIENT NOTICE AND ACCESS FOR THE SER TO PERFORM THESE OBSERVATIONS.

ITEM	OBSERVED BY (2)		COMMENTS
	AOR	SER	
DURING INITIAL STEEL ERECTION		X	REF. NOTES 1,3,4
AS REQUIRED TO ADDRESS STRUCTURAL ISSUES		X	REF. NOTES 1,3,4

**FOOTNOTES:**

- CONTRACTOR IS RESPONSIBLE FOR NOTIFYING THE SER IN ADVANCE.
- SER - STRUCTURAL ENGINEER OF RECORD.  
AOR - ARCHITECT OF RECORD.
- A FIELD REPORT WILL BE SUBMITTED TO THE BUILDING DEPARTMENT FOLLOWING EACH SITE VISIT.
- STRUCTURAL OBSERVATION IS FOR THE GENERAL CONFORMANCE OF THE STRUCTURAL DRAWING, SPECIAL INSPECTION IS STILL REQUIRED.

**SPECIAL INSPECTION AND TESTING:**

SPECIAL INSPECTION WILL BE PROVIDED BY THE OWNER BASED ON THE REQUIREMENTS OF THE OSSC AS SUMMARIZED IN THE SPECIAL INSPECTION AND TESTING PROGRAM ON SHEETS S0.03 & S0.04. CONTRACTOR SHALL PROVIDE SUFFICIENT NOTICE AND ACCESS FOR THE SPECIAL INSPECTOR TO PERFORM THESE INSPECTIONS.

**SUBMITTALS:**

SHOP DRAWINGS SHALL BE SUBMITTED TO THE ARCHITECT PRIOR TO FABRICATION AND CONSTRUCTION OF ALL STRUCTURAL ITEMS, INCLUDING THE FOLLOWING:

ITEM	SUBMITTALS		COMMENTS
	SUBMITTAL (1,3)	DEFERRED SUBMITTAL (2,3)	
CONCRETE ANCHORAGES	X		
STRUCTURAL STEEL	X		
STEEL WELDING PROCEDURES	X		
STEEL FASTENERS	X		
ROOF FALL PROTECTION		X	
RAILINGS		X	

**FOOTNOTES:**

- SHOP DRAWINGS SHALL BE SUBMITTED TO THE ARCHITECT PRIOR TO FABRICATION AND CONSTRUCTION OF STRUCTURAL ITEMS. IF THE SHOP DRAWINGS DIFFER FROM OR ADD TO THE DESIGN OF THE STRUCTURAL DRAWINGS, THEY SHALL BEAR THE SEAL AND SIGNATURE OF A STRUCTURAL ENGINEER REGISTERED IN THE STATE OF OREGON. ANY CHANGES TO THE STRUCTURAL DRAWINGS SHALL BE SUBMITTED TO THE ARCHITECT AND ARE SUBJECT TO REVIEW AND ACCEPTANCE OF THE STRUCTURAL ENGINEER.
- DESIGN DRAWINGS, SHOP DRAWINGS, AND CALCULATIONS FOR THE DESIGN AND FABRICATION OF ITEMS THAT ARE DESIGNED BY OTHERS SHALL BEAR THE SEAL AND SIGNATURE OF A STRUCTURAL ENGINEER REGISTERED IN THE STATE OF OREGON, AND SHALL BE SUBMITTED TO THE ARCHITECT PRIOR TO FABRICATION. CALCULATIONS SHALL BE INCLUDED FOR ALL CONNECTIONS TO THE STRUCTURE, CONSIDERING LOCALIZED EFFECTS ON STRUCTURAL ELEMENTS INDUCED BY THE CONNECTION LOADS. DESIGN SHALL BE BASED ON THE REQUIREMENTS OF THE OSSC AND AS NOTED UNDER "DESIGN CRITERIA".
- FIELD ENGINEERED DETAILS DEVELOPED BY THE CONTRACTOR THAT DIFFER FROM OR ADD TO THE STRUCTURAL DRAWINGS SHALL BEAR THE SEAL AND SIGNATURE OF A STRUCTURAL ENGINEER REGISTERED IN THE STATE OF OREGON AND SHALL BE SUBMITTED TO THE ARCHITECT PRIOR TO CONSTRUCTION.

**CONCRETE ACCESSORIES:**

POST-INSTALLED ANCHORS SHALL BE OF THE TYPE AND PRODUCT SPECIFIED ON THE DRAWINGS OR AS FOLLOWS:

POST INSTALLED CONCRETE ANCHORS	
TYPE	APPROVED ANCHORS
EXPANSION	HILTI KWIK BOLT TZ (ICC ESR-1917) SIMPSON STRONG-BOLT 2 (ICC ESR-3037)
CONCRETE SCREW	HILTI KWIK HUS-EZ (ICC ESR-3027) SIMPSON TITEN HD (ICC ESR-2713)
EPOXY ADHESIVE	HILTI HIT-HY200 (ICC ESR-3187) HILTI HIT-RE 500-SD (ESR-2322) SIMPSON SET-XP (ICC ESR-2508)

ALL ANCHORS SHALL BE INSTALLED IN STRICT CONFORMANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND PRODUCT EVALUATION REPORTS. EMBEDMENTS SPECIFIED ON DRAWINGS ARE "EFFECTIVE" EMBEDMENTS. REFERENCE MANUFACTURER LITERATURE FOR CORRESPONDING ACTUAL EMBEDMENT DEPTHS.

REQUESTS FOR ANCHOR SUBSTITUTIONS SHALL BE SUBMITTED TO THE EOR IN WRITING ALONG WITH EVIDENCE OF EQUAL OR GREATER CAPACITY TO THE SPECIFIED CONNECTION. DO NOT CUT REINFORCING IN NEW OR EXISTING CONCRETE DURING INSTALLATION.

INSTALLATION OF ADHESIVE ANCHORS HORIZONTALLY OR UPWARDLY INCLINED SHALL BE PERFORMED BY A CERTIFIED ADHESIVE ANCHOR INSTALLER AS CERTIFIED THROUGH ACI/CRSI AND IN ACCORDANCE WITH ACI 318-11 SECTION D.9.2.2. PROOF OF CURRENT CERTIFICATION SHALL BE SUBMITTED TO THE EOR PRIOR TO INSTALLATION.

ANCHORS EXPOSED TO EARTH OR WEATHER SHALL BE PROTECTED FROM CORROSION BY HOT-DIP GALVANIZING OR USE OF STAINLESS STEEL. PERMANENTLY EXPOSED EMBEDDED PLATES AND ANGLES SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION, UNLESS NOTED OTHERWISE.

NO LOADS OR WELDS SHALL BE PLACED ON EMBEDDED PLATES OR ANGLES FOR A MINIMUM OF 7 DAYS AFTER CASTING. IN ACCORDANCE WITH ACI 318-11 SECTION D.2.2 ADHESIVE ANCHORS SHALL NOT BE INSTALLED FOR A MINIMUM OF 21 DAYS AFTER CASTING.

**EPOXY ANCHORS FOR UNREINFORCED MASONRY:**

ADHESIVE ANCHORS IN UNREINFORCED MASONRY SHALL BE HILTI HIT HY-70 (ICC ESR-3342) OR SIMPSON SET (ICC ESR-1772). TYPICAL ANCHOR INSTALLATION SHALL BE PER DETAIL 1/S6.01. ALL HOLES SHALL BE DRILLED WITH A ROTARY DRILL. NO IMPACT/HAMMERING ACTION IS ALLOWED. REF. TABLE 2/S0.04 FOR TESTING REQUIREMENTS.

EPOXY ANCHORS	
ALLOWABLE ANCHOR CAPACITY IN TENSION IS:	1200 LBS.
ALLOWABLE ANCHOR CAPACITY IN SHEAR IS:	1000 LBS.

SUBSTITUTIONS MAY BE MADE PROVIDED TESTING IS COMPLETED IN ACCORDANCE WITH THE PREQUALIFIED TESTING PROCEDURES USED FOR THE SPECIFIED ANCHORS, AND THE RESULTS ARE EQUIVALENT TO THE VALUES SHOWN ABOVE.

**STRUCTURAL STEEL:**

STRUCTURAL STEEL SHALL BE:

STRUCTURAL STEEL	
MATERIAL GRADE	SHAPE
ASTM A36	CHANNELS, PLATES AND ANGLES, EXCEPT AS NOTED
ASTM A500, GRADE B (FY=46KSI)	HOLLOW STRUCTURAL SECTIONS (TUBES)

DESIGN, FABRICATION, AND ERECTION SHALL BE IN ACCORDANCE WITH THE "AISC SPECIFICATION FOR THE DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS" WITH "COMMENTARY" AND THE "CODE OF STANDARD PRACTICE", WITH EXCEPTIONS NOTED IN SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE HOT DIPPED GALVANIZED.

BOLTS SHALL CONFORM TO THE ASTM AND RCSC SPECIFICATIONS FOR JOINTS USING A325 OR A490 HIGH STRENGTH BOLTS. BOLTS SHALL BE SNUG-TIGHT UNLESS NOTED OTHERWISE.

WELDING SHALL CONFORM TO THE AWS CODES FOR ARC AND GAS WELDING IN BUILDING CONSTRUCTION. WELDING SHALL BE PERFORMED IN ACCORDANCE WITH A WELDED PROCEDURE SPECIFICATION (WPS) AS REQUIRED IN AWS D1.1 AND APPROVED BY THE STRUCTURAL ENGINEER. THE WPS VARIABLES SHALL BE WITHIN THE PARAMETERS ESTABLISHED BY THE FILLER-METAL MANUFACTURER.

WELDS SHALL BE MADE USING E70XX ELECTRODES AND SHALL BE 3/16" MINIMUM, UNLESS OTHERWISE NOTED. WELDING SHALL BE BY AWS CERTIFIED WELDERS MEETING CITY OF PORTLAND STANDARDS.

PROVIDE WEEP HOLES AT EXTERIOR CLOSED SECTIONS WHERE MOISTURE MAY ACCUMULATE.

# GENERAL STRUCTURAL NOTES

**SAWN LUMBER:**

SAWN LUMBER SHALL CONFORM TO THE REQUIREMENTS AS INDICATED IN THE CURRENTLY ACCEPTED NATIONAL DESIGN SPECIFICATION (NDS) DESIGN VALUES FOR WOOD CONSTRUCTION AND CONFORMING TO THE WEST COAST LUMBER INSPECTION BUREAU OR WESTERN WOOD PRODUCTS ASSOCIATION GRADING RULES. LUMBER SHALL BE THE SPECIES, GRADE, AND MOISTURE CONTENT NOTED BELOW:

SAWN LUMBER		
USE	SPECIES AND GRADE	MOISTURE CONTENT
LUMBER 2" TO 4" THICK x 5" OR WIDER (JOISTS/RAFTERS)	DOUGLAS FIR-LARCH NO. 2 & BTR	MC/KD 15

ALL LUMBER IN CONTACT WITH CONCRETE OR CMU SHALL BE PRESSURE TREATED, UNLESS AN APPROVED MOISTURE BARRIER IS PROVIDED.

FRAMING ACCESSORIES SHALL BE MANUFACTURED BY SIMPSON STRONG TIE (OR APPROVED EQUAL) AND OF THE SIZE AND TYPE SHOWN ON THE DRAWINGS. ALL NAIL HOLES SHALL BE FILLED WITH STRUCTURAL FASTENERS, UNLESS NOTED OTHERWISE ON THE DRAWINGS AND FASTENERS SHALL BE INSTALLED FOLLOWING ALL MANUFACTURERS REQUIREMENTS. IF A SUBSTITUTION IS MADE, A DOCUMENT SHALL BE SUBMITTED TO THE ARCHITECT FOR APPROVAL OUTLINING THE FRAMING ACCESSORIES BEING REPLACED AND THE SUBSTITUTED FRAMING ACCESSORIES. ALLOWABLE LOADS FOR THE SIMPSON ACCESSORIES SHALL BE TABULATED ALONG WITH ALLOWABLE LOADS FOR THE SUBSTITUTED ACCESSORIES, WHICH CLEARLY INDICATE THE SUBSTITUTED ACCESSORIES HAVING AN EQUAL OR GREATER CAPACITY.

ALL FRAMING NAILS SHALL BE OF THE SIZE AND QUANTITY INDICATED ON THE DRAWINGS AND CONFORM TO ASTM F 1667, "STANDARD SPECIFICATION OF DRIVEN FASTENERS: NAILS, SPIKES, AND STAPLES AND ICC-ES REPORT ESR-1539 "POWER-DRIVEN STAPLES AND NAILS". NAILS SHALL BE IDENTIFIED BY LABELS (ATTACHED TO THEIR CONTAINERS) THAT SHOW THE MANUFACTURER'S NAME AND ICC-ES REPORT NUMBER, NAIL SHANK DIAMETER, AND LENGTH AND SHALL BE SUBMITTED TO THE ARCHITECT PRIOR TO FRAMING. NAILING NOT SHOWN SHALL BE AS INDICATED ON OSSC TABLE 2304.9.1 OR ESR-1539. THE FOLLOWING NAIL SIZES SHALL BE USED WITH THE NAIL LENGTH DETERMINED BY MINIMUM PENETRATION INTO FRAMING MEMBER:

FRAMING NAILS		
NAIL TYPE	SHANK DIAMETER (IN.)	MINIMUM PENETRATION INTO FRAMING MEMBER (IN.)
6d	0.113	1.125
8d	0.131	1.375
10d	0.148	1.5
12d	0.148	1.5
16d	0.162	1.625

BOLTS AND LAG SCREWS SHALL CONFORM TO ANSII/ASME STANDARD B18.2.1. ALL BOLTS AND LAG SCREWS SHALL BE INSTALLED WITH STANDARD CUT WASHERS.

SALVAGED LUMBER IS ACCEPTABLE PROVIDED IT IS GRADED BY AN APPROVED GRADING AGENCY PRIOR TO USE AND MEETS A MINIMUM ALLOWABLE BENDING STRESS (Fb) OF "1,000 PSI". CONTRACTOR TO SUBMIT A GRADING REPORT ON EACH MEMBER TO THE ARCHITECT PRIOR TO INSTALLATION.

**WOOD STRUCTURAL PANELS:**

THE TERM "WOOD STRUCTURAL PANEL" REFERS TO A WOOD-BASED PANEL PRODUCT BONDED WITH A WATERPROOF ADHESIVE. INCLUDED UNDER THIS DESIGNATION ARE BOTH PLYWOOD AND ORIENTED STRAND BOARD (OSB). WOOD STRUCTURAL PANELS SHALL CONFORM TO U.S. DEPARTMENT OF COMMERCE VOLUNTARY PRODUCT STANDARDS PS1 OR PS2 FOR WOOD-BASED STRUCTURAL USE PANELS, OR APA PERFORMANCE STANDARD PRP-108 (ICC-ES ESR-2586). PANELS SHALL BE APA RATED SHEATHING OR APA RATED STURD-I-FLOOR, EXTERIOR OR EXPOSURE 1, OF THE THICKNESS AND SPAN RATING SHOWN ON THE DRAWINGS. PANELS SHALL BE STAMPED WITH THE APA TRADEMARK.

WOOD STRUCTURAL PANEL INSTALLATION SHALL BE IN CONFORMANCE WITH APA RECOMMENDATIONS. ALLOW 1/8" SPACING AT PANEL ENDS AND EDGES, UNLESS OTHERWISE RECOMMENDED BY THE PANEL MANUFACTURER.

ALL SHEATHING SHALL BE INSTALLED WITH FACE GRAIN OR STRENGTH AXIS PERPENDICULAR TO SUPPORTS, EXCEPT AS INDICATED ON THE DRAWINGS. ROOF SHEATHING SHALL EITHER BE BLOCKED, TONGUE-AND-GROOVE, OR HAVE EDGES SUPPORTED BY PLYCLIPS. WHERE BLOCKING IS SPECIFICALLY INDICATED ON THE DRAWINGS, T&G EDGES OR PLYCLIPS MAY NOT BE SUBSTITUTED. SHEATHING SHALL BE UNBLOCKED, EXCEPT AS INDICATED ON DRAWINGS.

# SPECIAL INSPECTIONS AND TESTING

**TABLE 1 - REQUIRED STRUCTURAL SPECIAL INSPECTIONS**

SYSTEM OR MATERIAL	INSPECTION				REMARKS
	OSSC CODE REFERENCE	CODE OR STANDARD REFERENCE	FREQUENCY (NOTE 6)		
			CONTINUOUS	PERIODIC	
<b>FABRICATORS</b>					
FABRICATORS	1704.2.5			X	SPECIAL INSPECTION IS REQUIRED FOR STRUCTURAL LOAD-BEARING MEMBERS AND ASSEMBLIES FABRICATED ON THE PREMISES OF A FABRICATOR'S SHOP PER TABLE 2 AND AS REQUIRED ELSEWHERE IN THE SPECIAL INSPECTION PROGRAM. THE SPECIAL INSPECTOR SHALL VERIFY THAT THE FABRICATOR MAINTAINS DETAILED FABRICATION AND QUALITY CONTROL PROCEDURES AND SHALL REVIEW FOR COMPLETENESS AND ADEQUACY RELATIVE TO THE CODE REQUIREMENT. REFERENCE SECTION 1704.2.5.2 FOR APPROVED FABRICATOR EXCEPTION.
<b>DEFERRED SUBMITTALS</b>					
DEFERRED SUBMITTALS			X	X	SPECIAL INSPECTION REQUIREMENTS FOR DEFERRED SUBMITTAL ITEMS TO BE SPECIFIED BY THE SYSTEMS ENGINEER AND INCLUDED WITH DEFERRED SUBMITTAL DOCUMENTS.
<b>STEEL</b>					
REFERENCE TABLE 1A FOR REQUIRED SPECIAL INSPECTIONS FOR STEEL					
<b>POST INSTALLED CONCRETE ANCHORS</b>					
POST INSTALLED ANCHORS INSTALLATION IN HARDENED CONCRETE AND COMPLETED MASONRY	1908.5 1909.1	ACI 318: 1.3, 3.8.6	SEE NOTE 7	SEE NOTE 7	INSPECTION REQUIREMENTS PER ICC EVALUATION REPORT
<b>WOOD</b>					
FABRICATION OF PREFABRICATED STRUCTURAL ELEMENTS	1705.5			X	REFER TO INSPECTION OF FABRICATOR REQUIREMENTS
A. VERIFY STRUCTURAL PANEL GRADE AND THICKNESS	1705.5.1 TABLE 2306.2 (2)			X	
B. VERIFY NOMINAL SIZE OF FRAMING MEMBERS AT ADJOINING PANEL EDGES	1705.5.1 TABLE 2306.2 (2)			X	
C. VERIFY NAIL OR STAPLE DIAMETER AND LENGTH, NUMBER OF FASTENER LINES AND SPACING BETWEEN FASTENERS IN EACH LINE AND AT EDGE MARGINS	1705.5.1 TABLE 2306.2 (2)			X	

**STATEMENT OF SPECIAL INSPECTION NOTES:**

- SPECIAL INSPECTIONS SHALL CONFORM TO SECTION 1705 OF THE 2014 OSSC, CONTRACT DOCUMENTS AND APPROVED SUBMITTALS. REFER TO TABLES 1 AND 1A FOR SPECIAL INSPECTIONS.
- SPECIAL INSPECTIONS AND ASSOCIATED TESTING SHALL BE PERFORMED BY AN APPROVED ACCREDITED INDEPENDENT AGENCY MEETING THE REQUIREMENTS OF ASTM E329 (MATERIALS). THE INSPECTION AND TESTING AGENCY SHALL FURNISH TO THE STRUCTURAL ENGINEER AND ARCHITECT A COPY OF THEIR SCOPE OF ACCREDITATION. SPECIAL INSPECTORS SHALL BE APPROVED BY THE BUILDING OFFICIAL. WELDING INSPECTORS SHALL BE QUALIFIED PER SECTION 6.1.4.1.1 OF AWS D1.1.
- THE SPECIAL INSPECTOR SHALL OBSERVE THE INDICATED WORK FOR COMPLIANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS. ALL DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE CONTRACTOR FOR CORRECTION AND NOTED IN THE INSPECTION REPORTS.
- THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS FOR EACH INSPECTION TO THE BUILDING OFFICIAL, STRUCTURAL ENGINEER, ARCHITECT, CONTRACTOR, AND OWNER. THE SPECIAL INSPECTION AGENCY SHALL SUBMIT A FINAL REPORT STATING THAT THE WORK REQUIRING SPECIAL INSPECTION WAS INSPECTED AND IS IN CONFORMANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS AND THAT ALL DISCREPANCIES NOTED IN THE INSPECTION REPORTS HAVE BEEN CORRECTED.
- INSPECTION TYPES  
 CONTINUOUS : THE FULL-TIME OBSERVATION OF WORK REQUIRING SPECIAL INSPECTION BY AN APPROVED SPECIAL INSPECTOR WHO IS PRESENT IN THE AREA WHERE THE WORK IS BEING PERFORMED.  
 PERIODIC : THE PART-TIME OR INTERMITTENT OBSERVATION OF WORK REQUIRING SPECIAL INSPECTION BY AN APPROVED SPECIAL INSPECTOR WHO IS PRESENT IN THE AREA WHERE THE WORK HAS BEEN OR IS BEING PERFORMED AND AT THE COMPLETION OF THE WORK.  
 OBSERVE : OBSERVE THESE FUNCTIONS ON A RANDOM, DAILY BASIS. OPERATIONS NEED NOT BE DELAYED PENDING OBSERVATIONS.  
 PERFORM : INSPECTIONS SHALL BE PERFORMED PRIOR TO THE FINAL ACCEPTANCE OF THE ITEM.
- PERFORM INSPECTION PRIOR TO FINAL ACCEPTANCE OF THE ITEM FOR TEN WELDS TO BE MADE BY A GIVEN WELDER, WITH THE WELDER DEMONSTRATING UNDERSTANDING OF REQUIREMENTS AND POSSESSION OF SKILLS AND TOOLS TO VERIFY THESE ITEMS. THE PERFORM DESIGNATION OF THIS TASK SHALL BE REDUCED TO OBSERVE, AND THE WELDER SHALL PERFORM THIS TASK. SHOULD THE INSPECTOR DETERMINE THAT THE WELDER HAS DISCONTINUED PERFORMANCE OF THIS TASK, THE TASK SHALL BE RETURNED TO PERFORM UNTIL SUCH TIME AS THE INSPECTOR HAS RE-ESTABLISHED ADEQUATE ASSURANCE THAT THE WELDER WILL PERFORM THE INSPECTION TASKS LISTED
- SPECIAL INSPECTION OF MECHANICAL POST INSTALLED ANCHORS SHALL BE IN STRICT CONFORMANCE WITH THE ICC REPORT AND MANUFACTURERS INSTALLATION REQUIREMENTS. ANCHOR INSTALLERS SHALL BE QUALIFIED AS REQUIRED BY JURISDICTION REQUIREMENTS.
  - INSPECTION REPORTS SHALL IDENTIFY NAMES OF INSTALLERS.
  - SPECIAL INSPECTOR SHALL PROVIDE DOCUMENTATION AT THE END OF ANCHOR INSTALLATIONS STATING THAT THE ANCHORS WERE INSPECTED PER APPROVED ANCHOR EVALUATION REPORT.



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GENERAL STRUCTURAL NOTES CONT. AND SPECIAL INSPECTIONS

PROJ NO. 201467  
 04.22.2016

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# SPECIAL INSPECTIONS AND TESTING

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TABLE 1A - REQUIRED STRUCTURAL STEEL SPECIAL INSPECTIONS							
SYSTEM OR MATERIAL	INSPECTION					REMARKS	
	OSSC CODE REFERENCE	CODE OR STANDARD REFERENCE	INSPECTION (NOTES 5 AND 6)				
			CONTINUOUS	PERIODIC	OBSERVE		PERFORM
<b>STEEL</b>							
CONTRACTOR QUALITY CONTROL REQUIREMENTS		AISC 360 CHAPTER N			X	X	CONTRACTOR TO PROVIDE QUALITY CONTROL FOR ALL ITEMS INDICATED TO BE OBSERVE AND/OR PERFORM IN TABLE BELOW
<b>STEEL FABRICATION</b>							
FABRICATION OF STRUCTURAL ELEMENTS	1704.2.5.2	AISC 360 N2		X			REFER TO INSPECTION OF FABRICATOR REQUIREMENTS
MATERIAL VERIFICATION OF STRUCTURAL STEEL	1705.2.1 2203.1 TABLE 1705.2	ASTM A6 ASTM STANDARDS SPECIFIED IN CONSTRUCTION DOCUMENTS AISC 360 A3.1 AISC 360 N3.2		X			CERTIFIED MILL TEST REPORTS
FOR OTHER STEEL, IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARDS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS	TABLE 1705.2	APPLICABLE ASTM STANDARDS		X			MANUFACTURER'S CERTIFIED TEST REPORTS
MATERIAL VERIFICATION OF HIGH STRENGTH BOLTS, NUTS, AND WASHERS		AISC 360 A3.3 AISC 360 N3.2 ASTM STANDARDS SPECIFIED IN CONSTRUCTION DOCUMENTS RCSC 2.1		X			MANUFACTURER'S CERTIFIED TEST REPORTS
MATERIAL VERIFICATION OF ANCHOR BOLTS AND THREADED RODS		AISC 360 A3.4 AISC 360 N3.2 ASTM STANDARDS SPECIFIED IN CONSTRUCTION DOCUMENTS		X			MANUFACTURER'S CERTIFIED TEST REPORTS
MATERIAL VERIFICATION OF WELD FILLER METALS	TABLE 1705.2	AISC 360 A3.5 AISC 360 N3.2 APPLICABLE AWS A5 DOCUMENTS		X			MANUFACTURER'S CERTIFIED TEST REPORTS
<b>STRUCTURAL STEEL WELDING</b>							
VERIFYING USE OF PROPER WPS'S		AISC 360 N3.2					RETAIN A RECORD OF WELDING PROCEDURE SPECIFICATIONS
VERIFYING WELDER QUALIFICATIONS	1705.2.2.1			X			RETAIN A RECORD OF QUALIFICATION CARDS
COMPLETE AND PARTIAL JOINT PENETRATION GROOVE WELDS	TABLE 1705.2	AWS D1.1 SECTION 6	X				ALL WELDS VISUALLY INSPECTED PER AWS D1.16.9
MULTIPASS FILLET WELDS			X				
SINGLE PASS FILLET WELDS GREATER THAN 5/16"			X				
PLUG AND SLOT WELDS			X				
SINGLE PASS FILLET WELDS LESS THAN OR EQUAL TO 5/16"					X		
WELDING STAIR AND RAILING SYSTEMS	1705.2(2.5)	AWS D1.1 SECTION 6		X			ALL WELDS VISUALLY INSPECTED PER AWS D1.1 6.9
DOCUMENT ACCEPTANCE OR REJECTION OF STEEL ELEMENTS						X	

TABLE 2 - REQUIRED TESTING FOR SPECIAL INSPECTIONS				
SYSTEM OR MATERIAL	INSPECTION			REMARKS
	IBC CODE REFERENCE	CODE OR STANDARD REFERENCE	FREQUENCY (NOTE 5)	
			CONTINUOUS	
<b>URM EPOXY ANCHORS</b>				
EPOXY ANCHORS IN URM WALLS			X	REF. NOTE 1

**STATEMENT OF SPECIAL INSPECTION NOTE:**

1. CAPACITY OF EPOXY ANCHORS TO URM SHALL BE PROOF TESTED TO VERIFY ALLOWABLE CAPACITY. THE PROOF LOAD SHALL BE IN TENSION EQUAL TO 3,500 POUNDS. A MINIMUM OF (2) ANCHORS SHALL BE TESTED AT EACH DIFFERENT WALL ELEVATION AND FOR THE ENTIRE PROJECT AS FOLLOWS:

- FIRST 20 ANCHORS: 100% OF ANCHORS TESTED
- ANCHORS 21-250: 10% OF ANCHORS TESTED
- ANCHORS 251-1,000: 5% OF ANCHORS TESTED
- OVER 1,000 ANCHORS: 2.5% OF ANCHORS TESTED



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SPECIAL INSPECTIONS

PROJ NO.  
201467  
04.22.2016

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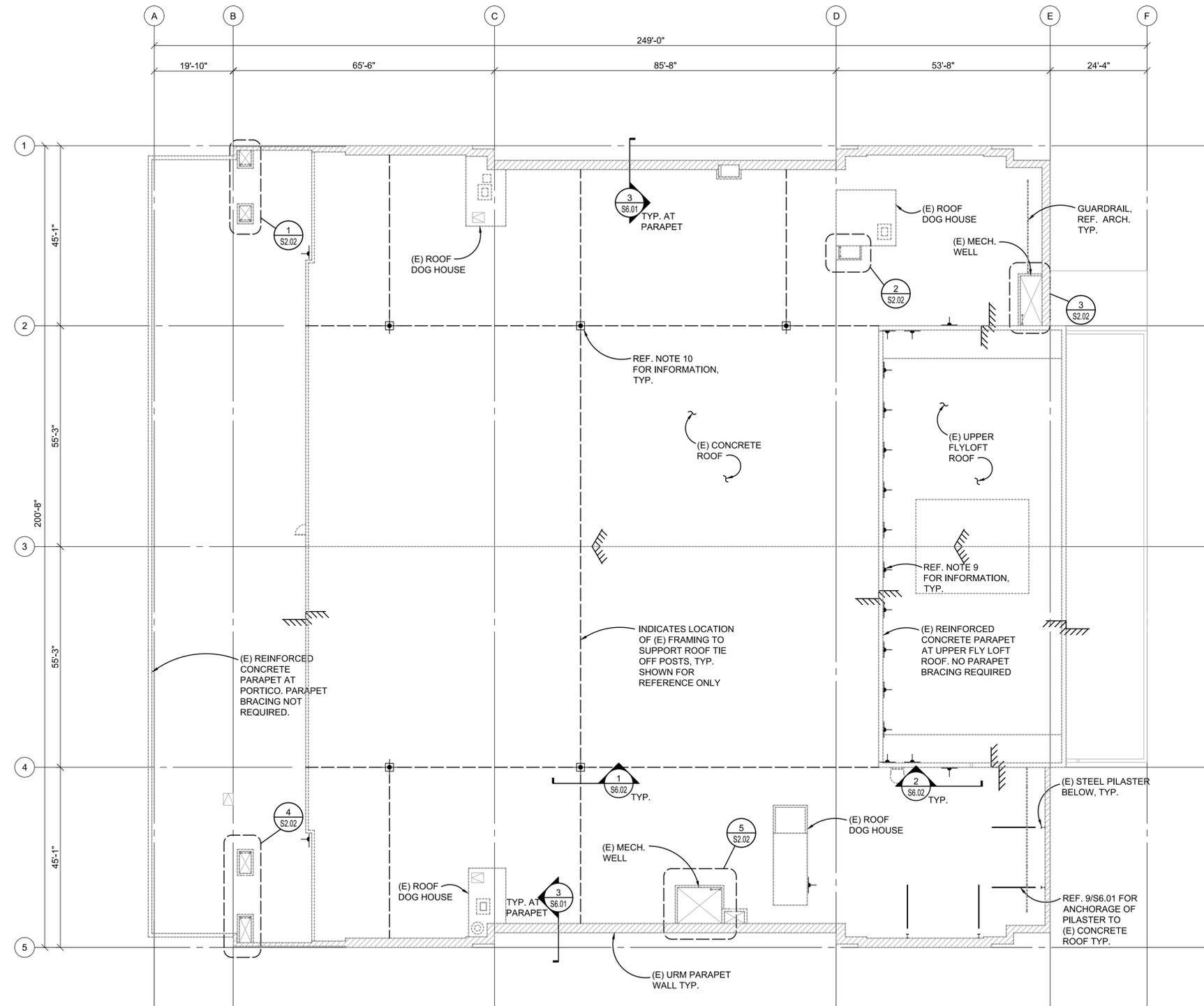
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ROOF FRAMING PLAN

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04.22.2016

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S2.01



**1 ROOF FRAMING PLAN**  
1/16"=1'-0"

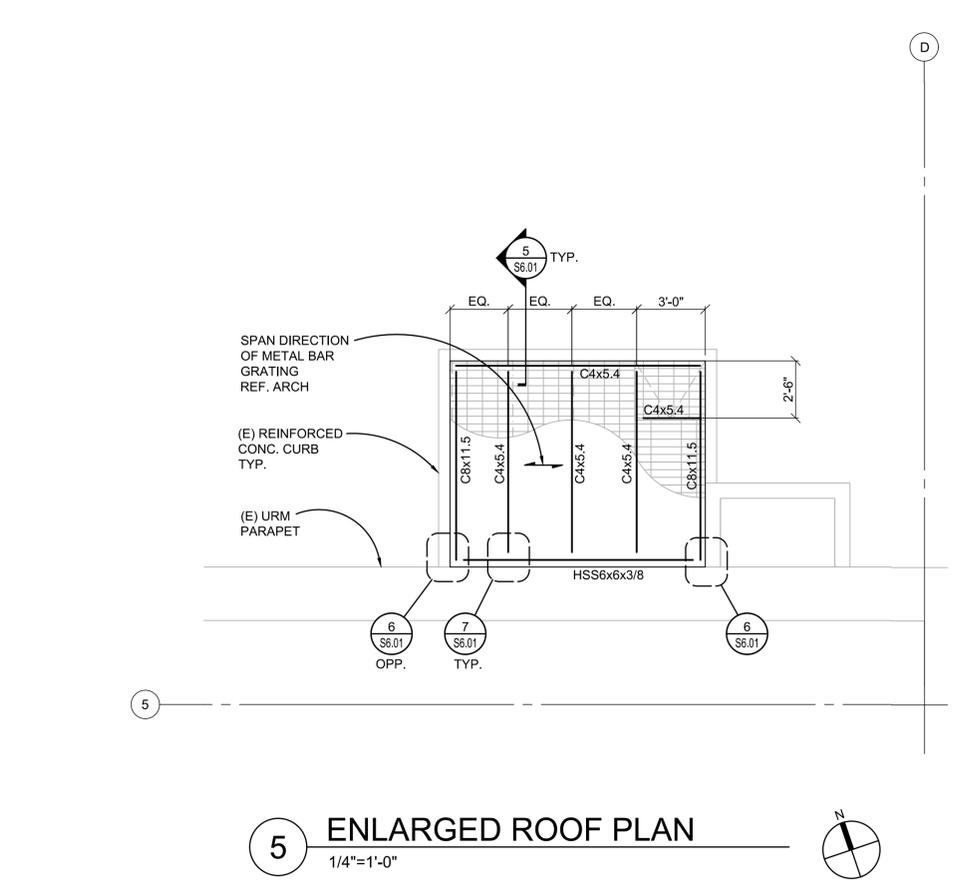
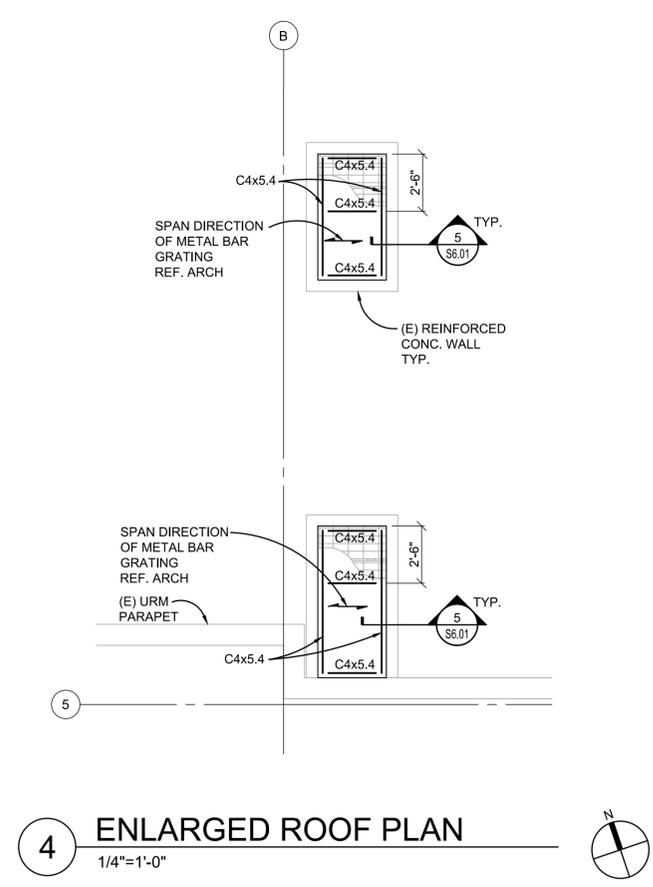
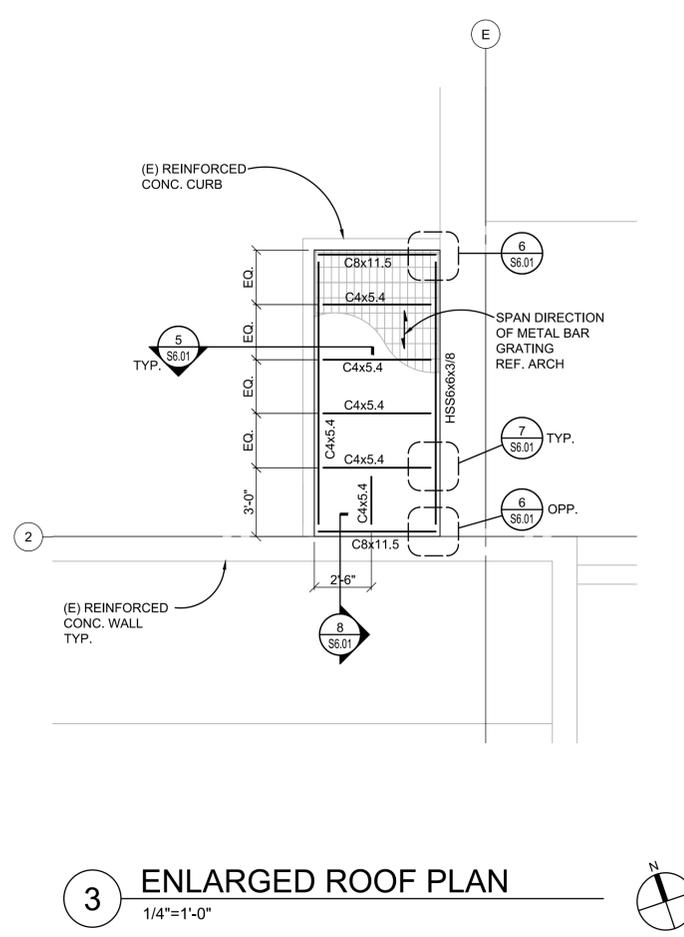
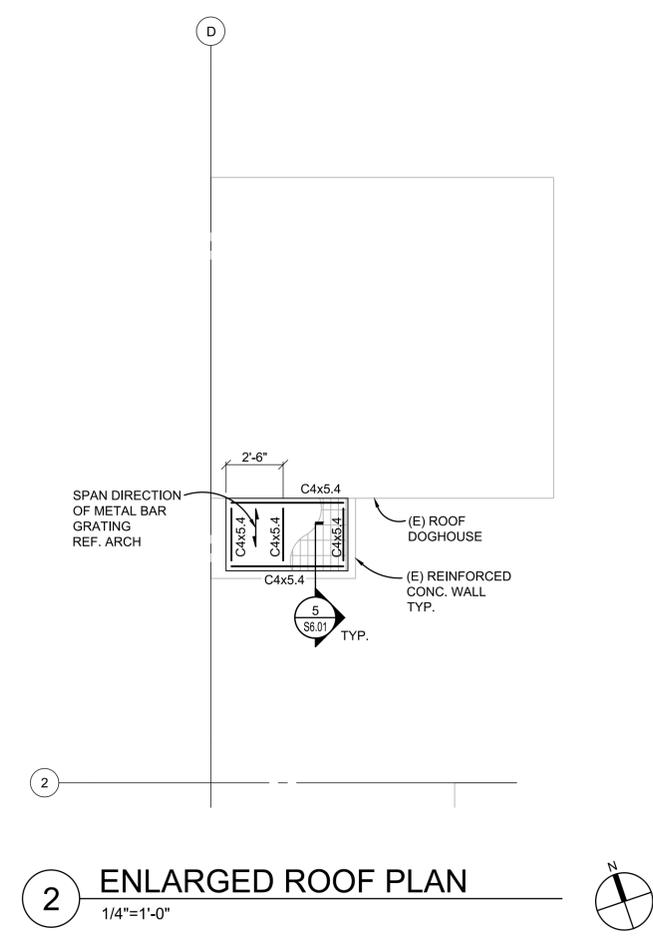
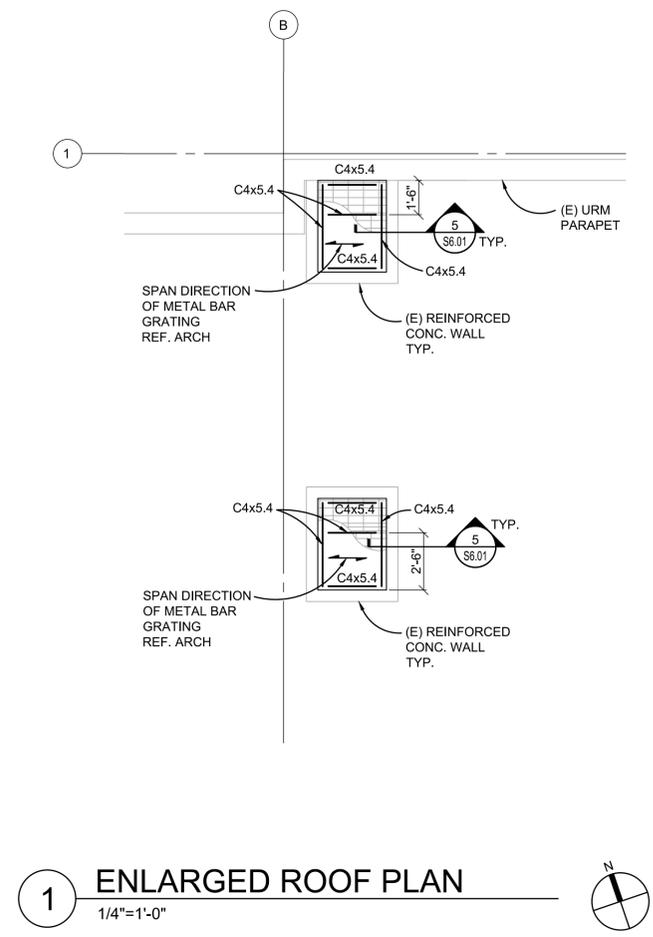


**NOTES:**

- 1. (E) INDICATES EXISTING.
- 2. ——— INDICATES EXISTING STRUCTURE.
- 3. CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS, DIMENSIONS AND ELEVATIONS PRIOR TO FABRICATION AND ERECTION. NOTIFY ARCHITECT OF ANY SIGNIFICANT DISCREPANCIES FROM THAT SHOWN ON THE DRAWINGS.
- 4. CONTRACTOR TO SHORE ALL EXISTING FRAMING AS REQUIRED FOR DEMOLITION AND REFRAMING WORK.
- 5. ALL EXPOSED FRAMING LUMBER SHALL BE INSPECTED FOR CRACKS AND DAMAGE BY THE CONTRACTOR AND FINDINGS REPORTED TO THE ARCHITECT.
- 6. INDICATES STEP IN ELEVATION.
- 7. INDICATES (E) URM PARAPET. CONTRACTOR TO VERIFY LOCATION IN FIELD PRIOR TO STARTING WORK. REF. NOTE IN DETAILS 3/S6.01 FOR PARAPET. HEIGHT / THICKNESS LIMITS REQUIRING BRACING.
- 8. ROOF TIE-OFF AT (E) CONCRETE WALLS PER OTHERS. TYP. REF. 2/S6.02 FOR CONN. AT WALL.
- 9. ROOF TIE OFF STANCHION PER OTHERS. REF. 1/S6.02 FOR CONN. TO ROOF DECK.



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ROOF FRAMING  
 PARTIAL PLANS  
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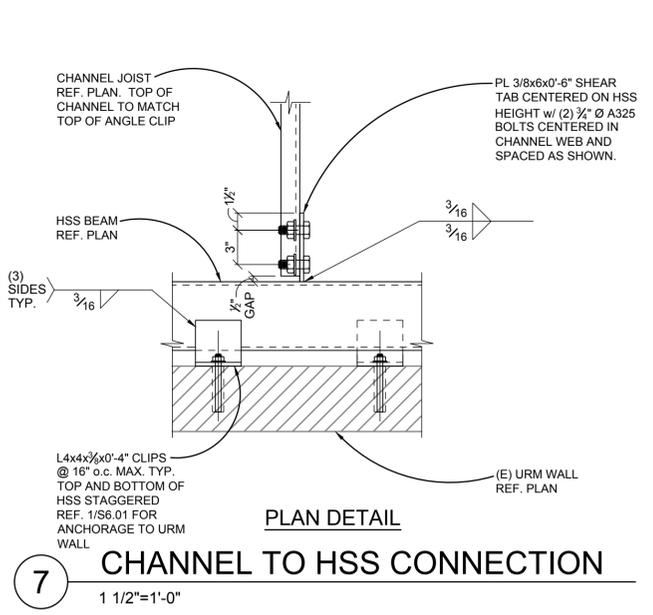


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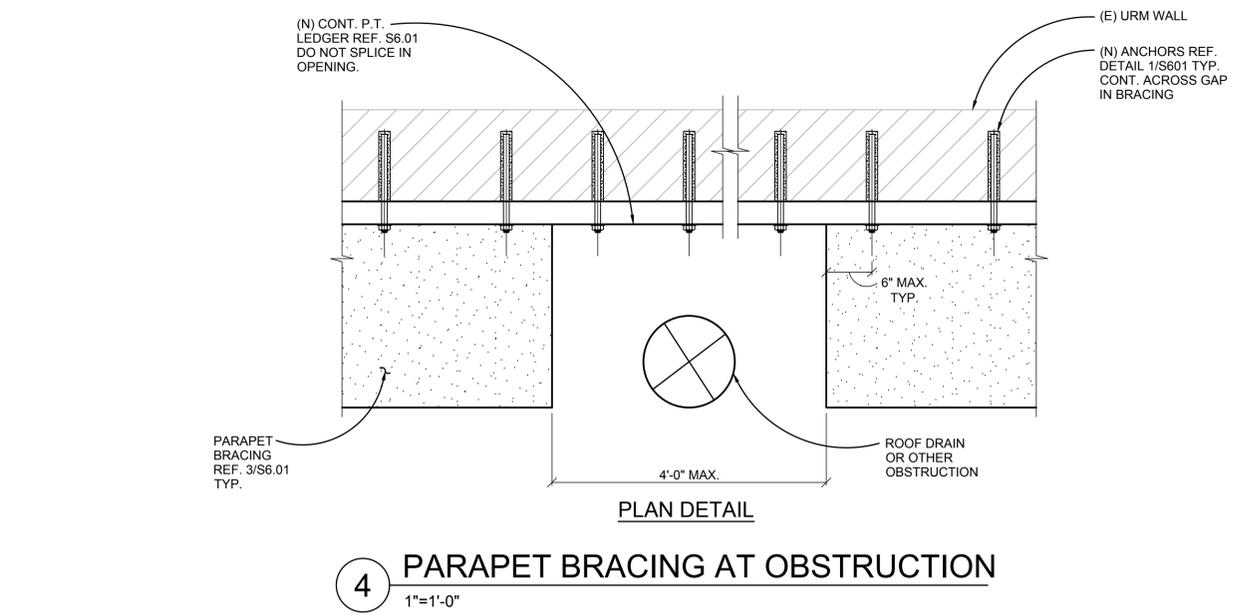


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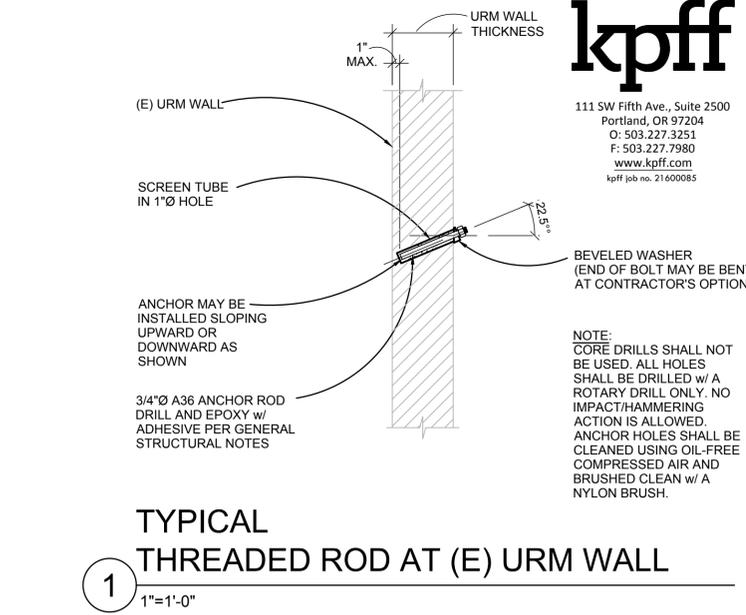
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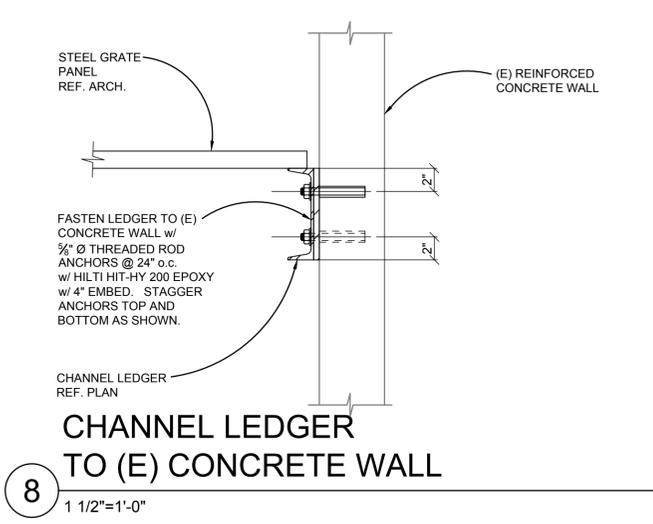
**7** CHANNEL TO HSS CONNECTION  
1 1/2"=1'-0"



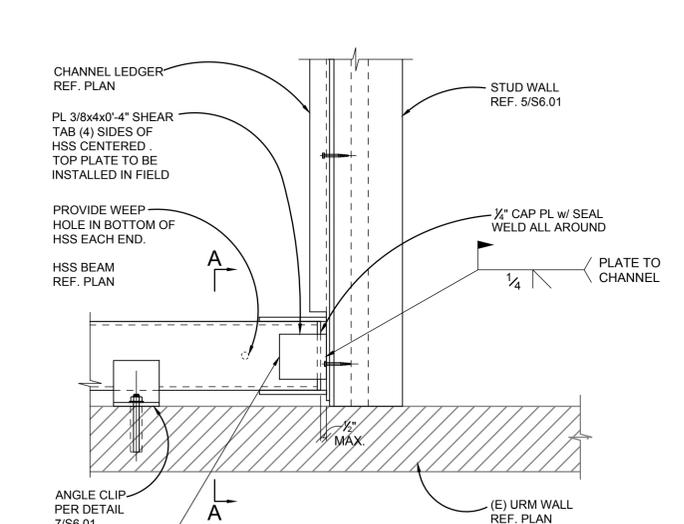
**4** PARAPET BRACING AT OBSTRUCTION  
1"=1'-0"



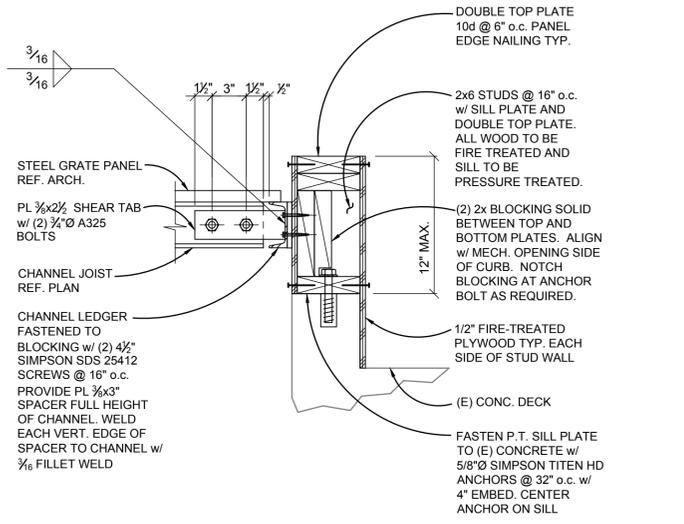
**1** TYPICAL THREADED ROD AT (E) URM WALL  
1"=1'-0"



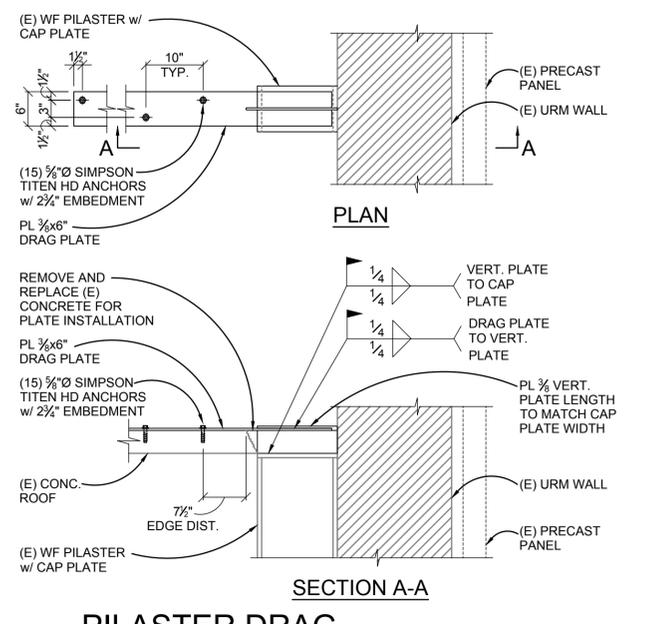
**8** CHANNEL LEDGER TO (E) CONCRETE WALL  
1 1/2"=1'-0"



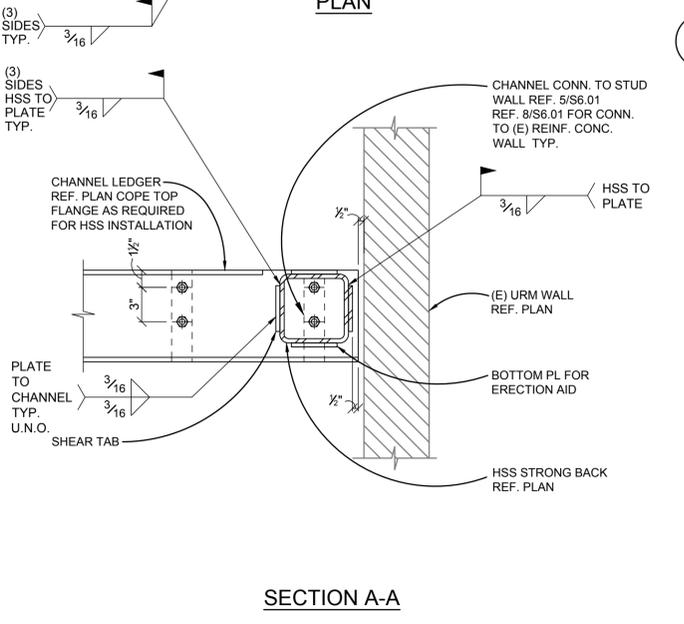
**5** GRATE AT ROOF CURB  
1 1/2"=1'-0"



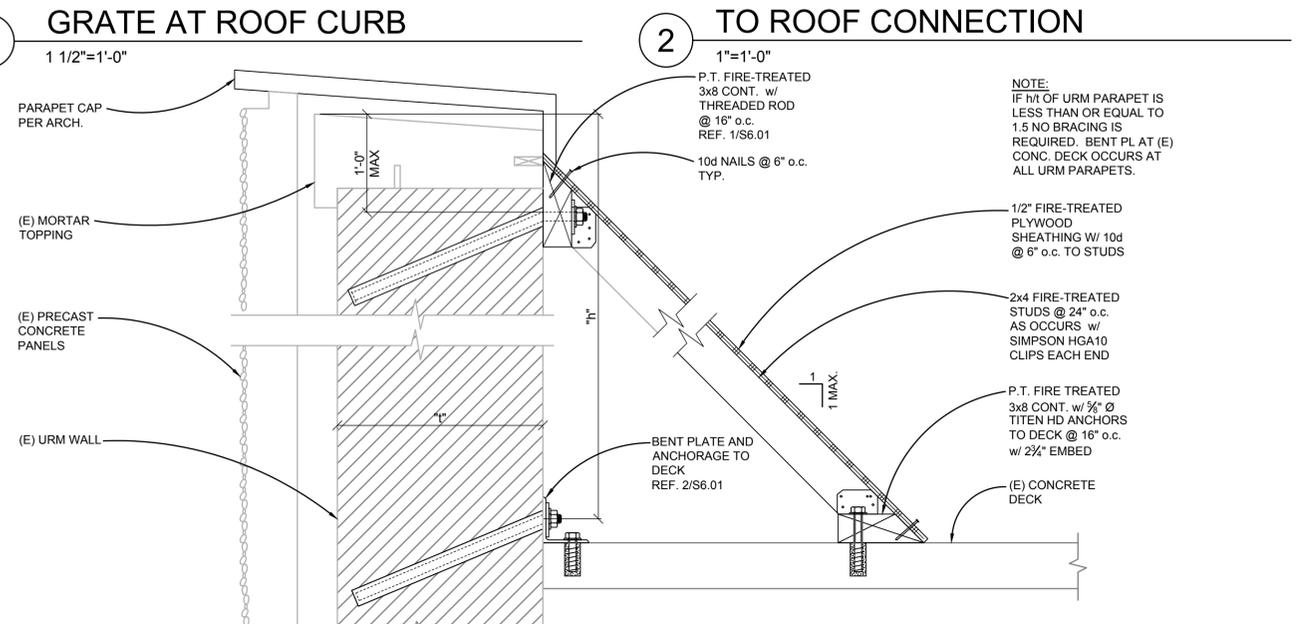
**2** TYPICAL WALL TO ROOF CONNECTION  
1"=1'-0"



**9** PILASTER DRAG PLATE CONNECTION AT ROOF  
3/4"=1'-0"



**6** STRONGBACK AT LEDGER CONN.  
1 1/2"=1'-0"



**3** TYPICAL URM PARAPET BRACING  
1 1/2"=1'-0"

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FRAMING DETAILS

PROJ NO. 201467  
04.22.2016

S6.01



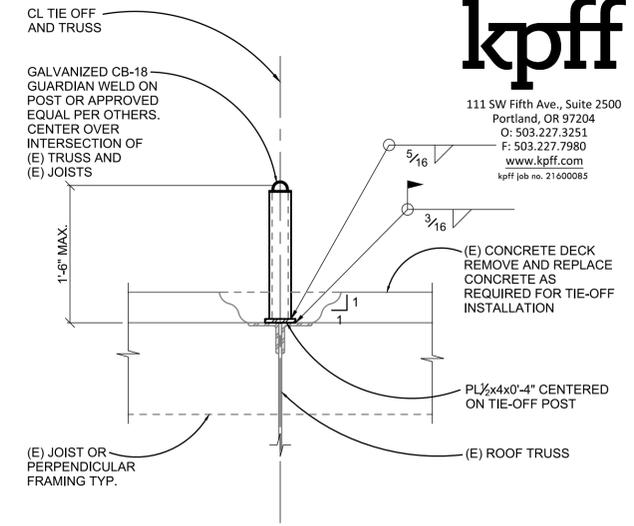
111 SW Fifth Ave., Suite 2500  
 Portland, OR 97204  
 O: 503.227.3251  
 F: 503.227.7980  
 www.kpff.com  
 kpff job no. 21600085



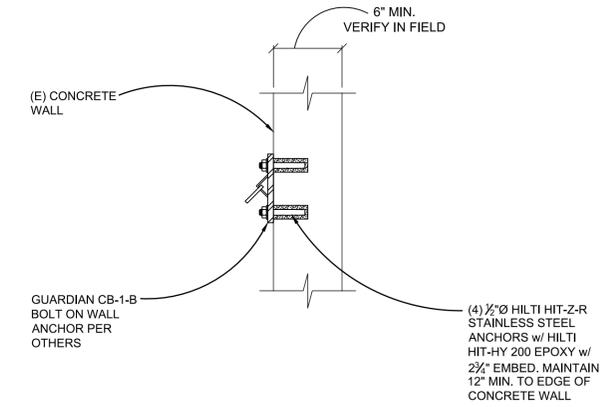
EXPIRES 12-31-16



CARLETON HART ARCHITECTURE P.C.  
 830 SW 10th Avenue #200 Portland Oregon 97205  
 503.243.2252  
 www.carletonhart.com



**1** OSHA ROOF TIE - OFF AT (E) TRUSS  
 1"=1'-0"



**2** OSHA ROOF TIE - OFF AT (E) CONCRETE WALL  
 1 1/2"=1'-0"

**KELLER ROOF**  
 METROPOLITAN EXPOSITION RECREATION COMMISSION  
 222 SW CLAY STREET - PORTLAND, OREGON

CD SET

FRAMING DETAILS

PROJ NO.  
 201467

04.22.2016

**S6.02**

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# SPECIFICATIONS

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## METRO KELLER AUDITORIUM ROOF REPLACEMENT Portland, Oregon

**04.22.2016**  
**Permit Set**

CHA Job # 201467



**CARLETON HART ARCHITECTURE P.C.**  
830 sw 10th avenue #200 portland oregon 97205  
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KELLER AUDITORIUM – ROOF REPLACEMENT

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CLIENT

METRO

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Portland, Oregon 97232

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Ph: 503-797-1929

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Carleton Hart Architecture

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ROOF CONSULTANT

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Contact: Jose Ponce

Ph: 503-280-8759

STRUCTURAL ENGINEER

KPFF

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Suite 2500

Portland, Oregon 97204

Contact: Erik Kabusreiter

Ph: 503- 764-0522

END OF PROJECT DIRECTORY

## SECTION 02 41 19 - SELECTIVE DEMOLITION

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

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

## 1.2 SUMMARY

- A. This Section includes the following:
  - 1. General provisions for demolition and removal of selected portions of building or structure.
- B. Related Sections include the following:
  - 1. Section 06 10 53 "Miscellaneous Rough Carpentry" for installation of wood curbs, nailers, and wall sheathing.
  - 2. Section 07 01 50 "Preparation for Re-Roofing" for methods of existing roof tear-off procedures and requirements.
  - 3. Section 07 54 19 "Polyvinyl-Chloride (PVC) Roofing" for installation of fully adhered PVC membrane roofing system.
  - 4. Section 07 62 00 "Sheet Metal Flashing and Trim" for installing sheet metal flashing and trim integral with roofing.
  - 5. Section 22 14 23 "Storm Drainage Piping Specialties" for installation of roof drains and related storm drainage piping.

## 1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner ready for reuse.
- C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.
- D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

## 1.4 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.

## 1.5 PREINSTALLATION MEETING

- A. Comply with requirements as specified in Section 075419 "Polyvinyl-Chloride (PVC) Roofing" for installation of fully adhered PVC membrane roofing system.

## 1.6 SUBMITTALS

- A. Proposed Protection Measures: Submit report, including layout drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection, for dust control and, for noise control. Indicate proposed locations and construction of barriers.
- B. Schedule of Selective Demolition Activities: Indicate the following:
  - 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's and other tenants' on-site operations are uninterrupted.
  - 2. Locations of proposed dust and noise-control temporary partitions and means of egress, including for other tenants affected by selective demolition operations.
  - 3. Interruption of utility services. Indicate how long utility services will be interrupted.
  - 4. Coordination for shutoff, capping, and continuation of utility services.
  - 5. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
  - 6. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
  - 7. Means of protection for items to remain and items in path of waste removal from building.
- C. Inventory: Submit a list of items to be removed and salvaged and deliver to Owner prior to start of demolition.
- D. Pre-demolition Photographs or Video: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by selective demolition operations.
- E. Warranties: Documentation indicated that existing warranties are still in effect after completion of selective demolition, if applicable.

## 1.7 CLOSEOUT SUBMITTALS

- A. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

## 1.8 QUALITY ASSURANCE

- A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.

## 1.9 PROJECT CONDITIONS

- A. Owner will occupy building during time of demolition. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- C. Notify Owner Representative of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
  - 1. Maintain fire-protection facilities in service during selective demolition operations.
- E. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
  - 1. Hazardous materials will be removed by Owner before start of the Work.
  - 2. If suspected hazardous materials are encountered, do not disturb; immediately notify Consultant and Owner. Hazardous materials will be removed by Owner under a separate contract.

## 1.10 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

## 1.11 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.
- B. Notify warrantor on completion of selective demolition, and obtain documentation verifying that existing system has been inspected and warranty remains in effect. Submit documentation at Project closeout.

## 1.12 PRODUCTS (Not Used)

## PART 2 - EXECUTION

## 2.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Consultant.
- E. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs.
  - 1. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.
- F. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

## 2.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage during selective demolition operations.
- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
  - 1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
  - 2. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.

## 2.3 PREPARATION

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

- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
  - 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
  - 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
  - 3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
  
- C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
  - 1. Strengthen or add new supports when required during progress of selective demolition.

#### 2.4 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
  - 1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
  - 2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
  - 3. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
  - 4. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
  - 5. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
  - 6. Dispose of demolished items and materials promptly.
  
- B. Reuse of Building Elements: Do not demolish building elements beyond what is indicated on Drawings without Owner's Representative approval.
  
- C. Removed, Salvaged, and Reinstalled Items:
  - 1. Transport salvaged items to off-site storage area unless otherwise indicated by the Owner.
  - 2. Clean and repair items intended for reinstallation to functional condition adequate for intended reuse. Paint equipment to match new equipment.
  - 3. Pack or crate items after cleaning and repairing. Identify contents of containers.
  - 4. Protect items from damage during transport and storage.
  - 5. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

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

## 2.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Roofing: Remove no more existing roofing than can be covered in one day by new roofing and so that building interior remains watertight and weathertight.
  - 1. Comply with Section 07 01 50 "Preparation for Re-Roofing" for methods of existing roof tear-off procedures and requirements.
  - 2. Comply with Section 07 54 19 "Polyvinyl-Chloride (PVC) Roofing" for installation of fully adhered PVC membrane roofing system.
- B. Insulation: All insulation must be removed and replaced with new insulation.
- C. Sheet Metal Flashings: All roof related sheet metal flashing and trim must be completely removed and replaced with new as indicated in the Drawings.
  - 1. Comply with Section 07 62 00 "Sheet Metal Flashing and Trim" for installing sheet metal flashing and trim integral with roofing.
- D. Storm Drainage: Removal of existing roof drains and replacement with new including related piping, hangers and accessories at select locations indicated on Drawings.
  - 1. Comply with Section 22 14 23 "Storm Drainage Piping Specialties" for installation of roof drains and related storm drainage piping.
- E. Cement Plastering: Removal of existing cement plaster (stucco) at select locations and replacement with new to match.
  - 1. Comply with Section 09 24 00 Cement Plastering for repair of exterior plasterwork (stucco).

## 2.6 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them.
  - 1. Do not allow demolished materials to accumulate on-site.
  - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
  - 3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

2.7 CLEANING

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

END OF SECTION 02 41 19

SECTION 04 01 10 – PRE-CAST PANEL CLEANING

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes cleaning the following:
  - 1. Cleaning Existing Precast Panels: Cleaning uppermost existing pre-cast exterior panels. From top of coping to first horizontal joint, approximately 4 feet vertically, at all perimeter walls omitting the front portico area.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
  - 1. Review methods and procedures related to cleaning masonry including, but not limited to, the following:
    - a. Verify cleaning equipment and facilities needed to make progress and avoid delays.
    - b. Materials, material application, and sequencing.
    - c. Cleaning program.
    - d. Coordination with building occupants.

1.4 SEQUENCING AND SCHEDULING

- A. Work Sequence: Perform cleaning work in the following sequence:
  - 1. Remove plant growth and clean and rinse surfaces.

1.5 SUBMITTALS

- A. Product Data: For each type of product.
  - 1. Include material descriptions and application instructions.
- B. Cleaning program.

## 1.6 QUALITY ASSURANCE

- A. Cleaning Program: Prepare a written cleaning program that describes cleaning process in detail, including materials, methods, and equipment to be used; protection of surrounding materials; and control of runoff during operations. Include provisions for supervising worker performance and preventing damage.
  - 1. If materials and methods other than those indicated are proposed for any phase of cleaning work, add a written description of such materials and methods, including evidence of successful use on comparable projects and demonstrations to show their effectiveness for this Project.
- B. Mockups: Prepare mockups of cleaning on existing surfaces to demonstrate aesthetic effects and to set quality standards for materials and execution.
  - 1. Cleaning: Clean an area approximately 16 sq. ft.
  - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

## 1.7 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit cleaning work to be performed according to product manufacturers' written instructions and specified requirements.
- B. Clean surfaces only when air temperature is 40 deg F (4 deg C) and above and is predicted to remain so for at least seven days after completion of cleaning.

## PART 2 - PRODUCTS

## 2.1 CLEANING MATERIALS

- A. Water: Potable.
- B. Hot Water: Water heated to a temperature of 140 to 160 deg F (60 to 71 deg C).
- C. Brushes: Soft

## PART 3 - EXECUTION

## 3.1 PROTECTION

- A. Protect building and other surfaces against damage. Prevent cleaning solutions from coming into contact with people, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.
  - 1. Cover adjacent surfaces with appropriate materials to prevent damage to surfaces. Use protective materials that are waterproof and UV resistant. Apply masking agents according to manufacturer's written instructions. When no longer needed, promptly remove masking to prevent adhesive staining.
  - 2. Dispose of runoff from operations by legal means and in a manner that prevents soil erosion, undermining of paving and foundations, damage to landscaping, and water penetration into building interiors.

## 3.2 CLEANING MASONRY, GENERAL

- A. Cleaning Appearance Standard: Cleaned surfaces are to have a uniform appearance as viewed from 60 feet away by Architect.
- B. Proceed with cleaning in an orderly manner; work from one end of each elevation to the other. Ensure that dirty residues and rinse water do not wash over dry, cleaned surfaces.
- C. Use only those cleaning methods indicated for material and location.
  - 1. Brushes: Do not use wire brushes or brushes that are not resistant to chemical cleaner being used.
- D. Perform each cleaning method indicated in a manner that results in uniform coverage of all surfaces, including corners, moldings, and interstices, and that produces an even effect without streaking or damaging masonry surfaces.
- E. Perform additional general cleaning, paint and stain removal, and spot cleaning of small areas that are noticeably different when viewed according to the "Cleaning Appearance Standard" Paragraph, so that cleaned surfaces blend smoothly into surrounding areas.
- F. After cleaning is complete, remove protection no longer required. Remove tape and adhesive marks.

## 3.3 CLEANING MASONRY

- A. Hot-Water Wash: Use hot water applied by brush.
  - 1. Do not use pressure washing equipment.
- B. Removing Plant Growth: Completely remove visible plant and moss from masonry surfaces

C. Mold, Mildew, and Algae Removal:

1. Rinse with hot water applied by brush to remove mold, mildew, algae and soil.
2. Repeat cleaning procedure above where required to produce cleaning effect established by mockup.

3.4 FINAL CLEANING

- A. Clean adjacent non-masonry surfaces of spillage and debris. Use soft brushes or cloths.
- B. Remove debris from adjacent roof areas and from roof drains. Rinse off and flush roof drains in roof areas below areas being cleaned.
- C. Remove masking materials, leaving no residues that could trap dirt.

END OF SECTION 04 01 10

## SECTION 05 50 00 - METAL FABRICATIONS

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

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

## 1.2 SUMMARY

## A. Section Includes:

1. Pit ladders.
2. Pit cover grating and supports.
3. Equipment stanchions.
4. Masonry wall bracing at pits.
5. Roof to wall connection.
6. Guardrails
7. Modification of existing stair access ladder.
8. Alternate fly loft access ladder.

## B. Related Sections:

1. Section 02 41 19 "Selective Structure Demolition" for removal and partial reuse of selected building elements.
2. Section 07 01 50 "Preparation for Re-Roofing" for methods of existing roof tear-off procedures and requirements.
3. Section 07 22 70 "Fall Protection Devices" for fall protection components.
4. Section 07 54 19 "Polyvinyl Chloride (PVC) Roofing
5. Section 07 62 00 "Sheet Metal Flashing and Trim" for installing sheet metal flashing and trim integral with roofing.
6. Section 07 72 00 "Roof Accessories" for ladder hatch safety post extension.

## 1.3 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design ladders and equipment support stands, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.
  1. Temperature Change: 120 deg F

#### 1.4 SUBMITTALS

- A. Product Data: Manufacturer's data sheets on each product to be used, including:
  - 1. Preparation instructions and recommendations
  - 2. Storage and handling requirements and recommendations
  - 3. Installation methods.
  - 4. Shop Drawings: Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.
    - a. Show fabrication and installation details for fixed vertical ladders and landings.
    - b. Show fabrication and installation details for pipe stands for roof top equipment.
- B. Delegated-Design Submittal: For installed products indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- C. Qualification Data: For qualified professional engineer.
- D. Welding certificates.

#### 1.5 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- B. Welding Qualifications: Qualify procedures and personnel according to the following:
  - 1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
  - 2. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum."
  - 3. AWS D1.6, "Structural Welding Code - Stainless Steel."

#### 1.6 PROJECT CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

### PART 2 - PRODUCTS

#### 2.1 METALS, GENERAL

- A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

## 2.2 FERROUS METALS

- A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- B. Steel Tubing: ASTM A 500, cold-formed steel tubing.
- C. Steel Pipe: ASTM A 53/A 53M, standard weight (Schedule 40) unless otherwise indicated.

## 2.3 NONFERROUS METALS

- A. Aluminum Plate and Sheet: ASTM B 209, Alloy 6061-T6.
- B. Aluminum Extrusions: ASTM B 221, Alloy 6063-T6.
- C. Aluminum Castings: ASTM B 26/B 26M, Alloy 443.0-F.

## 2.4 FASTENERS

- A. General: Unless otherwise indicated, provide Type 304, Type 316 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.
  - 1. Provide stainless-steel fasteners for fastening aluminum.
  - 2. Provide stainless-steel fasteners for fastening stainless steel.
- B. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A 307, Grade A; with hex nuts, ASTM A 563 and, where indicated, flat washers.
- C. Stainless-Steel Bolts and Nuts: Regular hexagon-head annealed stainless-steel bolts, ASTM F 593; with hex nuts, ASTM F 594; and, where indicated, flat washers;
- D. Anchor Bolts: ASTM F 1554, Grade 36, of dimensions indicated; with nuts, ASTM A 563; and, where indicated, flat washers.
  - 1. Hot-dip galvanize or provide mechanically deposited, zinc coating where item being fastened is indicated to be galvanized.
- E. Plain Washers: Round, ASME B18.22.1
- F. Anchors, General: Anchors capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.

## 2.5 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

## 2.6 FABRICATION, GENERAL

- A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
- B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32-inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- D. Form exposed work with accurate angles and surfaces and straight edges.
- E. Weld corners and seams continuously to comply with the following:
  - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  - 2. Obtain fusion without undercut or overlap.
  - 3. Remove welding flux immediately.
  - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing.
- F. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.
- G. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

## 2.7 METAL LADDERS

- A. General:
  - 1. Comply with ANSI A14.3 unless otherwise indicated.
- B. Steel Ladders:
  - 1. Space siderails 16-inches - 18-inches apart unless otherwise indicated on Drawings.
  - 2. Siderails: Continuous 1/2" x 1-1/2-inch steel bar.
  - 3. Rungs: 1-inch diameter rebar.
  - 4. Fit rungs in centerline of siderails; plug-weld and grind smooth on outer rail faces.
  - 5. Provide nonslip surfaces on top of each rung by coating with abrasive material metallically bonded to rung.

- a. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
  - 1) IKG Industries, a division of Harsco Corporation; Mebac.
  - 2) SlipNOT Metal Safety Flooring, a W. S. Molnar company; SlipNOT.
6. Support each ladder at top and bottom and not more than 48-inches o.c. with welded or bolted steel brackets.
7. Provide other ladder connections and components as indicated on Drawings.
8. Hot dip galvanize ladders, including brackets and fasteners.

## 2.8 EQUIPMENT STANCHIONS

- A. General: As detailed on Drawings.
  1. Hot dip galvanize components and fasteners.

## 2.9 PIT COVER GRATING

- A. General: Fabricate and install as detailed on Drawings.
- B. Grating:
  1. Welded steel, hot dip galvanize pit covers, grates, hinges, components and fasteners.
  2. Bar Grating: Fabricate per NAAMM Metal Bar Grating Manual.
  3. Where size and spacing of bars is not shown, determine size from NAAMM Metal Bar Grating Manual's Load Tables for safe uniform load of not less than 100 PSF and connected concentrated loads of 300 pounds.
  4. Designation: W-19-4.
  5. Provide grating hold downs that allow for grate removal (do not weld grates to structure).
  6. Provide hinged grate hatches as indicated on Drawings.
- C. Support Channels:
  1. Provide galvanized grating support as shown on Drawings.

## 2.10 GUARDRAILS

- A. General: As detailed on Drawings.
  1. Hot dip galvanize components and fasteners.

## 2.11 MODIFICATION OF EXISTING ACCESS LADDER

- A. General: Modify as required for reuse.
  1. Hot dip galvanize components and fasteners.

## 2.12 ALTERNATE FLY LOFT ACCESS LADDER

- A. Match existing ladder on opposite side of fly loft
  - 1. Hot dip galvanize components and fasteners.
  - 2. Paint to match existing ladder.

## 2.13 PARAPET WALL BRACING

- A. Provide wall bracing components as detailed on Drawings.
  - 1. Shop prime bracing components not exposed to weather.

## 2.14 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Finish metal fabrications after assembly.
- C. Finish exposed surfaces to remove tool and die marks and stretch lines, and to blend into surrounding surface.

## 2.15 STEEL AND IRON FINISHES

- A. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A 153/A 153M for steel and iron hardware and with ASTM A 123/A 123M for other steel and iron products.

## PART 3 - EXECUTION

## 3.1 INSTALLATION, GENERAL

- A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
- B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
- C. Field Welding: Comply with the following requirements:
  - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  - 2. Obtain fusion without undercut or overlap.
  - 3. Remove welding flux immediately.

4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, wood screws, and other connectors.

E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

### 3.2 ADJUSTING AND CLEANING

A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

END OF SECTION 05 50 00

## SECTION 06 10 53 - MISCELLANEOUS ROUGH CARPENTRY

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

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

## 1.2 SUMMARY

- A. This Section includes the following:
  - 1. Plywood sheathing.
  - 2. Wood blocking and nailers.
  - 3. Batt insulation at parapet bracing.
  - 4. Miscellaneous blocking, if necessary.
- B. Related Sections include the following:
  - 1. Section 02 41 19 "Selective Demolition" for removal and partial reuse of selected building elements.
  - 2. Section 07 01 50 "Preparation for Re-Roofing" for methods of existing roof tear-off procedures and requirements.
  - 3. Section 07 54 19 "Polyvinyl-Chloride (PVC) Roofing" for installation of fully adhered PVC membrane roofing system.
  - 4. Section 07 62 00 "Sheet Metal Flashing and Trim" for installing sheet metal flashing and trim integral with roofing and manufactured metal panels.

## 1.3 DEFINITIONS

- A. Dimension Lumber: Lumber of 2-inches nominal or greater but less than 5-inches nominal in least dimension.
- B. Lumber grading agencies, and the abbreviations used to reference them, include the following:
  - 1. NLGA: National Lumber Grades Authority.
  - 2. WCLIB: West Coast Lumber Inspection Bureau.
  - 3. WWPA: Western Wood Products Association.

## 1.4 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

## 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Stack lumber flat with spacers beneath and between each bundle to provide air circulation. Protect lumber from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

## 1.6 PROTECTION

- A. Protect interior surfaces during installation utilizing polyethylene sheeting or other suitable covering to limit debris accumulation within interior surfaces.

## PART 2 - PRODUCTS

## 2.1 WOOD PRODUCTS, GENERAL

- A. Certified Wood: Lumber and plywood shall be produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship."
- B. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
  - 1. Factory mark each piece of lumber with grade stamp of grading agency.
  - 2. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
  - 3. Provide dressed lumber, S4S, unless otherwise indicated.
- C. Maximum Moisture Content of Lumber: 15 percent for 2-inch nominal thickness or less, 19 percent for more than 2-inch nominal thickness unless otherwise indicated.

## 2.2 WOOD-PRESERVATIVE-TREATED MATERIALS

- A. Preservative Treatment by Pressure Process: AWWA U1; Use Category UC2
  - 1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.
- B. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
- C. Locations: Sill plates, and at locations indicated on Drawings.

### 2.3 FIRE-RETARDANT-TREATED MATERIALS

- A. General: Where fire-retardant-treated materials are indicated, materials shall comply with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.
- B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet (3.2 m) beyond the centerline of the burners at any time during the test.
  - 1. Treatment shall not promote corrosion of metal fasteners.
  - 2. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated lumber and plywood by pressure process after being subjected to accelerated weathering according to ASTM D 2898. Use for exterior locations and where indicated.
  - 3. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D 3201 at 92 percent relative humidity. Use where exterior type is not indicated.
  - 4. Design Value Adjustment Factors: Treated lumber shall be tested according to ASTM D 5664, and design value adjustment factors shall be calculated according to ASTM D 6841. For enclosed roof framing, framing in attic spaces, and where high-temperature fire-retardant treatment is indicated, provide material with adjustment factors of not less than 0.85 modulus of elasticity and 0.75 for extreme fiber in bending for Project's climatological zone.
- C. Identify fire-retardant-treated wood with appropriate classification marking of qualified testing agency.
- D. Locations: At locations indicated on Drawings.

### 2.4 GRADING

- A. Provide structural wood materials with grade stamps of WCLIB, WWPA, as required and modified herein.
- B. Lumber shall be free of noticeable warp or twist with less than five (5) percent showing “very light” warp, twist, bow, cup, or crook per WCLIB Rule 16.
- C. Seal end grain of material prior to delivery.

## 2.5 MISCELLANEOUS LUMBER

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
1. Blocking.
  2. Nailers.
  3. Rooftop equipment bases and support curbs.
- B. For items of dimension lumber size, provide Construction or No. 2 grade lumber with 19 percent maximum moisture content and any of the following species:
1. Hem-fir (north); NLGA.
  2. Spruce-pine-fir; NLGA.
  3. Hem-fir; WCLIB or WWPA.
  4. Western woods; WCLIB or WWPA.
- C. For concealed boards, provide lumber with 15 percent maximum moisture content and any of the following species and grades:
1. Mixed southern pine, No. 3 grade; SPIB.
  2. Hem-fir or hem-fir (north), Construction or No. 2 Common grade; NLGA, WCLIB, or WWPA.
  3. Spruce-pine-fir (south) or spruce-pine-fir, Construction or No. 2 Common grade; NeLMA, NLGA, WCLIB, or WWPA.
  4. Western woods, Construction or No. 2 Common grade; WCLIB or WWPA.
- D. For blocking not used for attachment of other construction Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.
- E. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.
- F. Custom cut (rip) wood blocking and nailers as required to accommodate existing wall widths as indicated on Drawings.
- G. Custom taper cut (rip) wood blocking and nailers as required to provide sloped conditions indicated on Drawings.

## 2.6 PLYWOOD SHEATHING:

- A. Wall Substrate Board: CDX Plywood Sheathing, exterior 5-ply laminated wood panels, x 4-(foot) x 8-(foot) panels.
1. At concrete walls as shown on Drawings.
  2. Thickness as shown on Drawings.

## 2.7 BATT INSULATION

- A. Unfaced, Glass-Fiber Blanket Insulation: ASTM C 665, Type I; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E 84; passing ASTM E 136 for combustion characteristics.

## 2.8 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture. Unless otherwise noted on Structural Drawings.
- B. ASTM A307 diameter as shown, hot dip galvanized. Provide cut washers ANSI B27.2.
- C. Self-Drilling Screws: Zinc coated wood screw with low profile Phillips flat head and self-drilling reamer tip; 1/4-inch x length as required to penetrate substrate a minimum of 1-inch, but not more than 1 1/4-inch.
- D. Masonry and Concrete Screw Anchors: Carbon steel, fluoropolymer coated, one-piece screw anchor, sized to achieve required loading capacity. Tested in accordance with ACI 355.2 and ICC-ES AC 193 (including ASTM E 488) for use in structural concrete, ICC - ES AC 106 for use in masonry, ICC E-ES AC233 for use in wood.
  - 1. Unexposed Fasteners:
    - a. Head: Flat Phillips
    - b. Size: As required to achieve loading capacity

## 2.9 NAILS

- A. FF-N-1-1 common wire and spiral or drive screw type galvanized of sufficient length to penetrate wood framing a minimum of 1-inch.

## 2.10 MISCELLANEOUS MATERIALS

- A. Provide all miscellaneous rough hardware and material items required for complete and proper fabrication and installation of Work.

## PART 3 - EXECUTION

## 3.1 INSTALLATION, GENERAL

- A. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry to other construction; scribe and cope as needed for accurate fit. Locate furring, nailers, blocking, and similar supports to comply with requirements for attaching other construction.

- B. Framing Standard: Comply with AF&PA's "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- C. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.
- D. Sort and select lumber so that natural characteristics will not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
- E. Comply with AWWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.
  - 1. Use inorganic boron for items that are continuously protected from liquid water.
  - 2. Use copper naphthenate for items not continuously protected from liquid water.
- F. Securely attach carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
  - 1. NES NER-272 for power-driven fasteners.
  - 2. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.
  - 3. FM Global Data Sheet 1-49
- G. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood; do not countersink fastener heads, unless otherwise indicated.

### 3.2 PLYWOOD SHEATHING –WALLS

- A. Install as indicated on the Drawings and in compliance with Article 3.2 of this specification.
- B. Cut to widths indicated on the Drawings from full sized plywood panels of indicated thicknesses.
- C. Secure over substrate using screw anchors engaged into existing concrete and masonry substrates; Anchors are inserted into pre-drilled holes in existing concrete and masonry walls.

### 3.3 INSULATION AT PARAPET BRACING

- A. Fill void space of parapet bracing with unfaced batt insulation as shown on Drawings.
- B. Cut to fit snugly with slight compression.

## 3.4 PROTECTION

- A. Verify that all substrates are in sound condition and ready to receive Work.
- B. Verify that related Work of other trades has been properly completed prior to starting Work. Beginning of installation means acceptance of existing conditions.

## 3.5 WOOD BLOCKING AND NAILER INSTALLATION

- A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.
- B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated.
- C. Provide solid wood blocking between framing members where required to support edges of curbs or other load-bearing items.
- D. Perimeter wood nailers: spike together; assure anchorage into existing structure the first layer - 12-inches on center minimum unless otherwise noted.

## 3.6 MISCELLANEOUS INSTALLATION

- A. Install miscellaneous wood materials as required to conform to IBC and SFM requirements.

## 3.7 CLEANING

- A. Clean up Work and leave site in clean, finished condition.

END OF SECTION 06 10 53

## SECTION 07 01 50 - PREPARATION FOR REROOFING

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and General Provisions for Public Improvement Contracts apply to this Section.

## 1.2 SUMMARY

## A. Section Includes:

1. Roof tear-off.
2. Removal of base flashings.
3. Removal of existing sheet metal flashings.

## B. Related Sections:

1. Section 02 41 19 "Selective Demolition" for removal building elements.
2. Section 06 10 53 "Miscellaneous Rough Carpentry" for installation of wood curbs, nailers, and wall sheathing.
3. Section 07 54 19 "Polyvinyl-Chloride (PVC) Roofing" for installation of fully adhered PVC membrane roofing system.
4. Section 07 62 00 "Sheet Metal Flashing and Trim" for installing sheet metal flashing and trim integral with roofing.
5. Section 22 14 23 "Storm Drainage Piping Specialties" for installation of roof drains and related storm drainage piping.

## 1.3 MATERIALS OWNERSHIP

- A. Except for items or materials indicated to be reused, reinstalled, or otherwise indicated to remain Owner's property, demolished materials shall become Contractor's property and shall be removed from Project site.

## 1.4 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.
- B. Existing Membrane Roofing System: Ballasted EPDM roofing membrane, base flashings, roof insulation, substrate board / thermal barrier and components and accessories between deck and roofing membrane.
- C. Temporary removal: Removal and reinstallation of select building and existing roof system elements as required to perform roofing repairs.
- D. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and reinstalled.

- E. Existing to Remain: Existing items of construction that are not indicated to be removed.

## 1.5 SUBMITTALS

- A. Photographs: Show existing conditions of adjoining construction and site improvements, including exterior and interior finish surfaces that might be misconstrued as having been damaged by reroofing operations. Submit before Work begins.
- B. Landfill Records: Indicate receipt and acceptance of demolished materials, including hazardous wastes (such as asbestos-containing material) by a landfill facility licensed to accept hazardous wastes.
- C. Recycling Records: Indicate receipt and acceptance of recycled construction materials by a qualified recycling center.

## 1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Installer of new membrane roofing system approved by warrantor of existing roofing system to work on existing roofing.
- B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning membrane roofing removal. Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Reroofing Conference: Conduct conference at Project site.
  - 1. Meet with Owner; Consultant; Owner's insurer if applicable; testing and inspecting agency representative; roofing system manufacturer's representative; deck Installer; roofing Installer including project manager, superintendent, and foreman; and installers whose work interfaces with or affects reroofing including installers of roof accessories and roof-mounted equipment.
  - 2. Review methods and procedures related to roofing system tear-off and replacement including, but not limited to, the following:
    - a. Reroofing preparation, including membrane roofing system manufacturer's written instructions.
    - b. Temporary protection requirements for existing roofing system that is to remain during and after installation.
    - c. Existing roof drains and roof drainage during each stage of reroofing, and roof drain plugging and plug removal requirements.
    - d. Construction schedule and availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
    - e. Condition and acceptance of existing roof deck and base flashing substrate for reuse.
    - f. Structural loading limitations of deck during reroofing.
    - g. Base flashings, special roofing details, drainage, penetrations, equipment curbs, and condition of other construction that will affect reroofing.
    - h. HVAC shutdown and sealing of air intakes.
    - i. Governing regulations and requirements for insurance and certificates if applicable.
    - j. Existing conditions that may require notification of Consultant before proceeding.

- k. Review and coordinate noise making roof work and roof work locations with Owner's schedule and location of activities and events in spaces below. Avoid noise making work that will disrupt use of areas below.

## 1.7 PROJECT CONDITIONS

- A. Owner will occupy portions of building immediately below reroofing area. Conduct reroofing so Owner's operations will not be disrupted. Provide Owner with not less than 48 hours' notice of activities that may affect Owner's operations.
  1. Coordinate work activities daily with Owner so Owner can place protective dust or water leakage covers over sensitive equipment or furnishings, shut down HVAC and fire-alarm or -detection equipment if needed, and evacuate occupants from below the work area.
  2. Before working over structurally impaired areas of deck, if any are discovered, notify Owner to evacuate occupants from below the affected area. Verify that occupants below the work area have been evacuated before proceeding with work over the impaired deck area.
- B. Protect building to be reroofed, adjacent buildings, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from reroofing and other scope operations.
- C. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.
- D. Conditions existing at time of inspection for bidding will be maintained by Owner as far as practical.
- E. Weather Limitations: Proceed with reroofing preparation only when existing and forecasted weather conditions permit Work to proceed without water entering existing roofing system or building.
- F. Hazardous Materials: It is not expected that hazardous materials such as asbestos-containing materials will be encountered in the Work.
  1. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Consultant and Owner. Hazardous materials will be removed by Owner under a separate contract.

## 1.8 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during reroofing, by methods and with materials so as not to void existing roofing system warranty. Notify warrantor before proceeding.
  1. Notify warrantor of existing roofing system on completion of reroofing, and obtain documentation verifying that existing roofing system has been inspected and warranty remains in effect. Submit documentation at Project closeout.

## PART 2 - PRODUCTS

### 2.1 AUXILIARY REROOFING MATERIALS

- A. General: Auxiliary reroofing preparation materials recommended by roofing system manufacturer for intended use and compatible with components of new membrane roofing system.
- B. Protection: Provide plastic sheets, tarps, and/or other appropriate products to use as protective coverings at roof repair and replacement locations exposed during work.
  - 1. Use protective coverings as necessary as temporary means to prevent moisture intrusion into building interior.
  - 2. Comply with requirement specified in Section 02 41 19 "Selective Structure Demolition" for removal and partial reuse of selected building elements.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Protect existing roofing system that is indicated not to be reroofed.
  - 1. Limit traffic and material storage to areas of existing roofing membrane that have been protected.
  - 2. Maintain temporary protection and leave in place until replacement roofing has been completed. Remove temporary protection on completion of reroofing.
- B. Coordinate with Owner to shut down air-intake equipment in the vicinity of the Work. Cover air-intake louvers before proceeding with reroofing work that could affect indoor air quality or activate smoke detectors in the ductwork.
- C. During removal operations, have sufficient and suitable materials on-site to facilitate rapid installation of temporary protection in the event of unexpected rain.
- D. Maintain roof drainage in functioning condition to ensure roof drainage at end of each workday. Prevent debris from entering or blocking roof drains and conductors. Use roof-drain plugs specifically designed for this purpose. Remove roof-drain plugs at end of each workday, when no work is taking place, or when rain is forecast.
  - 1. If roof drains are temporarily blocked or unserviceable due to roofing system removal or partial installation of new membrane roofing system, provide alternative drainage method to remove water and eliminate ponding. Do not permit water to enter into or under existing membrane roofing system components that are to remain.

### 3.2 ROOF TEAR-OFF

- A. General: Notify Owner each day of extent of roof tear-off proposed for that day.
- B. Catwalk, ceiling, and other attachments take place from the interior through the existing concrete deck. Carefully remove existing roofing assembly to ensure existing catwalk and ceiling attachment locations are not damaged or disturbed by roof tear-off activities.

- C. Comply with requirements as specified in Section 024119 "Selective Structure Demolition" for removal and partial reuse of selected building elements.
- D. Completely remove all existing roofing, asphalt, adhesive, mastic and any other materials from existing substrates as required to establish an acceptable substrate for new roofing assembly.
- E. Sheet Metal Removal: Detach and discard existing sheet metal flashings where new flashings are to be installed, as shown on the Drawings.
  - 1. Take care to avoid damaging existing sheet metal flashings that are to remain.
  - 2. Existing flashings or metal elements that will remain and that are damaged beyond acceptable use are to be replaced with new that match.
  - 3. Immediately offload and transport to remove flashings to location indicated by the Owner as conditions allow until permanent disposal is performed.

### 3.3 REMOVAL OF EXISTING DRAIN ASSEMBLIES

- A. At locations indicated on Drawings remove existing drain assemblies and replace with new drain assemblies including related piping, hangers and accessories at select locations as indicated on Drawings.
  - 1. Comply with Section 22 14 23 "Storm Drainage Piping Specialties" for installation of roof drains and related storm drainage piping.

### 3.4 RESTORATION OF EXISTING DRAIN AND CLAMPING RINGS

- A. At locations indicated on Drawings restore existing drain assembly and clamping rings. Restoration shall include removal of loose rust, application of rust inhibiting primer and painting with elastomeric paint finish compatible with roof membrane.

### 3.5 ROOF SYSTEM INSTALLATION

- A. Comply with requirements specified in Section 07 54 19 "Polyvinyl-Chloride (PVC) Roofing" for installation of fully adhered PVC membrane roofing system.
- B. Comply with requirements specified in Section 07 41 13 "Standing Seam Metal Roof Panels".

### 3.6 DISPOSAL

- A. Collect demolished materials and place in containers. Promptly dispose of demolished materials not indicated to be recycled. Do not allow demolished materials to accumulate on-site. Transport and legally dispose of demolished materials off Owner's property.

END OF SECTION 07 01 50

## SECTION 07 22 70 – FALL PROTECTION DEVICES

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and General Provisions for Public Improvement Contracts apply to this Section.

## 1.2 SUMMARY

- A. Roof tie-down system of fall restraint and fall arrest for worker safety.
- B. Related Sections:
  - 1. Section 02 41 19 "Selective Demolition" for removal and partial reuse of selected building elements.
  - 2. Section 07 01 50 "Preparation for Re-Roofing" for methods of existing roof tear-off procedures and requirements.
  - 3. Section 07 01 50 "Preparation for Reroofing." For methods of existing roof tear-off procedures and requirements.
  - 4. Section 07 54 19 "Polyvinyl-Chloride (PVC) Roofing." for adhered PVC membrane roof system and roof level insulation.
  - 1. Section 07 62 00 "Sheet Metal Flashing and Trim" for installing sheet metal flashing and trim integral with roofing.

## 1.3 SYSTEM DESCRIPTION

- A. General: Provide structural fall restraint and fall arrest system capable of withstanding loads and stresses within limits and under conditions specified in OSHA and other applicable safety codes. Provide fall protection anchors permanently attached to roof structure.
- B. Design Requirements: Anchors and accessories comprising system of following types:
  - 1. Roof anchors, as indicated, for safety snap connection by individual workers capable of withstanding a 1,800 pound load with a safety factor of 2 meeting the requirements of OSHA 1926.502(d)(8).
- C. Performance Requirements: System and components tested for resistance of following loads:
  - 1. Fall Arrest: 1 persons
  - 2. Provide engineered system designed to meet the requirements of OSHA 1926.502(d)(8).

## 1.4 SUBMITTALS

- A. Product Data: For each type of fall prevention device specified, including manufacturer's standard fabrication details and installation instructions.
- B. Shop Drawings: Show layout, profiles and anchorage details. Include structural analysis data. Shop drawings and calculations to be stamped by a Professional Engineer licensed in the State of Oregon.

- C. Maintenance Data: Written instructions for maintenance of fall prevention safety devices to be included in the operation and maintenance manual.
- D. Test Reports: Indicate compliance with required performance requirements.
- E. Welding certificates.

#### 1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Firm having at least 10 years continuous experience in manufacturing fall safety equipment similar to systems specified and exhibiting records of successful ins-service acceptability and performance.
- B. OSHA Standards: Comply with Occupational Safety and Health Administration Standards for the Construction Industry 29 CFR 1926.500 Subpart M (Fall Protection) and with applicable State Administrative Code Safety Standards and Amendments for Fall Restraint and Fall Arrest.
- C. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- D. Welding Qualifications: Qualify procedures and personnel according to the following:
  - 1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- E. Testing: Perform quality control tests for each system per manufacturer's requirements.

#### 1.6 COORDINATION

- A. Coordinate engineering requirements with fall protection manufacturer and structural engineer as required for complete system engineering.
- B. Coordinate installation of anchors with roofing contractors, mechanical contractors, steel erectors, and others, as required for full system performance.
- C. Coordinate installation of structural deck reinforcements and anchorages to receive fall protection anchors.
- D. Coordinate placement of roofing system insulation and flashings to ensure water-tight integrity to roof.

#### 1.7 WARRANTY

- A. Special Project Warranty: Submit Fall Arrest System Installer Warranty, covering the work of this section, including all components of the system with regard to defects related to installation for the following period:
  - 1. Warranty Period: Two (2) years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 PRODUCTS

- A. Available Products: Subject to compliance with requirements provide products listed:
  - 1. Fall Protection Tie-Offs:
    - a. Vertical post anchor with round pipe stanchion, welded rod eye loop, for welded attachment, HDG steel.
      - 1) Manufacturer: Model CB-18, Single Anchor Point by Guardian Fall Protection.
      - 2) Or approved substitution.
    - b. Wall mounted plate with connection loop.
      - 1) Manufacturer: Model CB-1-B, Single Anchor Point by Guardian Fall Protection.
      - 2) Or approved substitution.
- B. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for exterior applications.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine framing and substrate and verify conditions comply with structural requirements for proper system performance.
- B. Proceed with installation of roof anchors only after verifying conditions are satisfactory.

### 3.2 INSTALLATION

- A. General: Installation of Anchor Posts to be performed by contractor according to manufacturer's instructions and recommendations. System to be installed by a factory trained certified installer.
- B. Remove concrete at areas indication on Drawings for access to top of roof trusses. Do not disturb fire protection coatings on trusses.
- C. Weld stanchion type anchors to top of roof trusses as indicated on Drawings.
- D. Infill slab openings with grout.
- E. Provide on-site inspection and supervision of installation by factory-trained representative.

### 3.3 EQUIPMENT AND TRAINING

- A. Provide minimum of one (1) complete set of specialized and required Personal Protection Equipment, as needed to full employ the fall protection assemblies.
- B. Provide Owner with one (1) rescue kit suitable for rescue of workers using the installed systems.
- C. Instruct Owner's designated safety engineer in proper use of fall protection safety devices intended for use by installed systems.
- D. Test and adjust system devices. Replace damaged or malfunctioning items.

END OF SECTION 07 22 70

## SECTION 07 54 19 - POLYVINYL-CHLORIDE (PVC) ROOFING

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 01 Specifications Sections, apply to this Section.

## 1.2 SUMMARY

- A. Section Includes:
  - 1. Adhered PVC membrane roofing system.
  - 2. Roof level rigid insulation.
  - 3. Roof walk pads.
- B. Related Sections:
  - 1. Section 02 41 19 "Selective Demolition" for removal and partial reuse of selected building elements.
  - 2. Section 06 10 53 "Miscellaneous Rough Carpentry" for installation of wood curbs, nailers, and wall sheathing.
  - 3. Section 07 01 50 "Preparation for Re-Roofing" for methods of existing roof tear-off procedures and requirements.
  - 4. Section 07 62 00 "Sheet Metal Flashing and Trim" for installing sheet metal flashing and trim integral with roofing.
  - 5. Section 22 14 23 "Storm Drainage Piping Specialties" for installation of roof drains and related storm drainage piping.

## 1.3 DEFINITIONS

- A. Roofing Terminology: See ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.

## 1.4 PERFORMANCE REQUIREMENTS

- A. General Performance: Installed membrane roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Membrane roofing and base flashings shall remain watertight.
- B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by membrane roofing manufacturer based on testing and field experience.
- C. Roofing System Design: Provide membrane roofing system that is similar to systems that have been successfully tested by a qualified testing and inspecting agency to resist uplift pressure calculated according to ASCE/SEI 07.

1. Low Roof
  - a. Field Uplift Pressure: -31 psf.
  - b. Perimeter Uplift Pressure: -48 psf.
  - c. Corner Uplift Pressure: -67 psf.
2. Fly Loft Roof
  - a. Field Uplift Pressure: -34 psf.
  - b. Perimeter Uplift Pressure: -56 psf.
  - c. Corner Uplift Pressure: -89 psf.

## 1.5 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other work.
  1. Base flashings and membrane terminations.
  2. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.
- C. Samples for Verification: For the following products:
  1. Sheet roofing, of color specified, including T-shaped side and end lap seam.
  2. Roof insulation.
  3. Six insulation fasteners of each type, length, and finish.
- D. Qualification Data: For qualified Installer and manufacturer.
- E. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.
  1. Submit evidence of compliance with performance requirements.
- F. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for components of membrane roofing system.
- G. Research/Evaluation Reports: For components of membrane roofing system, from the ICC-ES.
- H. Field quality-control reports.
- I. Warranties: Sample of special warranties shall clearly indicate 90 miles per hour wind speed coverage.

## 1.6 CLOSEOUT SUBMITTALS

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

## 1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum twenty (20) years of demonstrated performance history.

1. The roofing membrane manufacturer must be an actual manufacturer of products used, no "Private Label" material, in which one company's name goes on a product manufactured by others, is acceptable for this project.
  2. Only true PVC membranes will be considered. Hybrids shall not be allowed.
  3. Membrane shall be certified by the manufacturer to be within 3mils of the specified membrane thickness.
  4. Membrane warranty shall be provided directly by the membrane manufacturer. Manufacturer must submit proof of Warranty Reserve Fund. No third party insurance backed warranties will be allowed.
- B. Installer Qualifications: Company authorized and trained by the membrane manufacturer to install the specified roof system and acquire the specified warranty. Manufacturer to provide documentation stating that bidding contractors meet this qualification.
1. The installer shall be thoroughly experienced and be able to provide evidence of having at least ten (10) years successful experience installing single ply PVC roofing systems similar to the specified system.
  2. Installer shall, upon request, provide a reference list with owner contact information of at least five (5) projects of comparable size and scope within a 50 mile radius of this project, having been completed within the last 12 months, which may be observed by representatives of the owner.
  3. Installing contractor must have installed a minimum one million square feet of warranted roof systems by the submitted manufacturer. Manufacturer to provide documentation that bidding contractors meet this qualification.
  4. Crew Experience and Supervision: Provide adequate number of experienced workmen regularly engaged in this type of work who are skilled in the application techniques of the materials specified. Provide at least one thoroughly trained and experienced foreman/superintendent on the job at all times roofing work is in progress.
- C. Perform Work in accordance with NRCA Roofing and Waterproofing Manual, manufacturer's instructions and Factory Mutual Global standards for approved roof assemblies.
- D. Membrane manufacturer's technical representative shall make site inspections before, during and after installation of Work and at frequency as required to enable manufacturer to issue specified warranty.
1. Perform and document inspections by designated and properly qualified technical representative of membrane manufacturer.
  2. Verify that materials and Work meet specified requirements.
  3. Should Work and/or materials not meet specified requirements, promptly advise Consultant with recommended course of action.
- E. Source Limitations: Obtain components including roof insulation fasteners for membrane roofing system from same manufacturer as membrane roofing.
- F. Exterior Fire-Test Exposure: ASTM E 108, Class A; for application and roof slopes indicated, as determined by testing identical membrane roofing materials by a qualified testing agency. Materials shall be identified with appropriate markings of applicable testing agency.
- G. Fire-Resistance Ratings: Where indicated, provide fire-resistance-rated roof assemblies identical to those of assemblies tested for fire resistance per ASTM E 119 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

- H. Preinstallation Roofing Conference: Conduct conference at Project site.
1. Meet with Owner, Architect, Consultant, Owner's insurer if applicable, testing and inspecting agency representative, roofing installer, roofing system manufacturer's representative, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
  2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
  3. Review and finalize construction schedule and verify availability of materials, installer's personnel, equipment, and facilities needed to make progress and avoid delays.
  4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
  5. Review structural loading limitations of roof deck during and after roofing.
  6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
  7. Review governing regulations and requirements for insurance and certificates if applicable.
  8. Review temporary protection requirements for roofing system during and after installation.
  9. Review roof observation and repair procedures after roofing installation.

#### 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.
- B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.
- C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.
- D. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.
- E. Store all adhesives and sealants at temperatures above 40 degrees F and less than 100 degrees F.

#### 1.9 PROJECT CONDITIONS

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

## 1.10 WARRANTY

- A. System Warranty: Provide manufacturer's standard or customized form of system warranty without monetary limitation, agreeing to repair or replace components of membrane roofing system that fail in materials or workmanship within specified warranty period.
1. The warranty shall contain no exclusion or limitation for damage caused by wind or gale. Minimum wind speed limitation under warranty shall be 90 miles per hour measured at 10 meters above ground level.
  2. The warranty shall include all components of membrane roofing system such as membrane, vapor barrier, insulation, cover board, substrate board, fasteners and plates, accessories, adhesives, sealants, term bars, pre-fabricated roof edge and coping systems, walkways and other components of membrane roofing system.
  3. The warranty shall contain no exclusion or limitation for improper installation, or damage from environmental contaminants, or damage from water those ponds, or does not drain freely.
  4. Pro-Rated System Warranties shall not be accepted.
  5. Warranty Term: Twenty (20) years, "No Dollar Limit."
- A. Special Installer's Warranty: Submit roofing Installer's warranty, signed by Installer, covering Work of this Section.
1. Include all components of roofing system such as roofing membrane, base flashing, fasteners, overlay boards, walkway products, and other components of the roofing systems.
  2. Warranty Period: Two (2) years from date of Final Acceptance.

## PART 2 - PRODUCTS

### 2.1 PVC MEMBRANE ROOFING

- A. PVC Sheet: ASTM D 4434/D4434M, Type II, fabric reinforced.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Carlisle SynTec, Incorporated; Sure-Flex Reinforced FRS.
    - b. Sika Sarnafil Inc.; G410 Roof Membrane
    - c. Approved substitution
  2. Thickness: 80-mils, nominal.
  3. Exposed Face Color: **Light Gray**
  4. Reinforcing: Internal fabric fiberglass mat.
  5. Location of Use: Roof Areas A, A1, A2, A3, A4, B1, B2, D1, D2, E1, E2, E3, E4, E5, E6, E7, E8
- B. PVC Sheet: ASTM D 4434/D4434M, Type II, fabric reinforced.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Carlisle SynTec, Incorporated; Sure-Flex Reinforced FRS.
    - b. Sika Sarnafil Inc.; G410 Roof Membrane
    - c. Approved substitution.
  2. Thickness: 80-mils, nominal.
  3. Exposed Face Color: **Copper Brown**
  4. Reinforcing: Internal fabric fiberglass mat.

5. Location of Use: Roof Areas C1 and C2 only.

## 2.2 AUXILIARY MEMBRANE ROOFING MATERIALS

- A. General: Auxiliary membrane roofing materials recommended by roofing system manufacturer for intended use, and compatible with membrane roofing.
  1. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.
- B. Flashing Sheet: Manufacturer's standard sheet flashing of same material, type, reinforcement, and color as PVC sheet membrane.
  1. Thickness: 60-mils nominal.
- C. PVC Coated Metal: Galvanized steel sheet coated with a layer of non-reinforced PVC membrane intended for direct welding of roof membrane.
  1. Thickness: 24 gauge.
  2. Color: To match membrane color.
  3. Fabrication: Reference Section 076200 "Sheet Metal Flashing and Trim."
- D. Bonding Adhesive: Manufacturer's standard solvent-based adhesive.
- E. Metal Termination Bars: Manufacturer's standard, predrilled stainless-steel or aluminum bars, approximately 1 by 1/8-inch thick; with anchors.
- F. Metal Battens: Manufacturer's standard, aluminum-zinc-alloy-coated or zinc-coated steel sheet, approximately 1-inch wide by 0.05-inch thick, prepunched.
- ~~G. Profile Ribs: Manufacturer's standard, heat weldable, PVC extrusion ribs 1 1/2 inch to 1 1/4 inch high by 1/2 inch wide.
  1. Location of Use: Roof Area C1 and C2 only.~~
- H. Fasteners:
  1. Factory-coated steel fasteners and barbed metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening membrane to substrate, and acceptable to membrane roofing system manufacturer.
- I. Miscellaneous Accessories: Preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, lap sealants, termination reglets, PVC safety strip, and other accessories.

## 2.3 ROOF INSULATION

- A. General: Preformed roof insulation boards manufactured or approved by PVC membrane roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses indicated and that produce FM Approvals-approved roof insulation.
- B. Polyisocyanurate Board Insulation: Rigid cellular foam, complying with ASTM C1289, Type II, Class1, cellulose felt or glass fiber mat both faces; Grade 2 and with the following characteristics: - at all roof areas.

1. Compressive Strength: 20 psi.
  2. Board Size:
    - a. Provide 48-inches x 48-inches sheets for adhered applications
  3. Thickness of base layer flat board stock shall be 2-inches
  4. Thickness of top layer flat board stock shall be 2-inches
  5. Board Edges: Square.
  6. Provide tapered insulation systems and tapered cricket materials where indicated on Drawings.
  7. Units shall be installed in low rise foam polyurethane insulation adhesive.
- C. Expanded-Polystyrene Board Insulation (Flute Fill): ASTM C 578, Type IV, 1.6-lb/cu. ft. minimum density, custom profile cut.
1. Type: Square Cut Flute Fill
  2. Thickness: 2-inch as required to match depth of existing standing seam metal panel roof system.
  3. Location of Use: Roof Area C2 only

#### 2.4 TAPERED INSULATION CRICKETS

- A. General: Provide preformed roof level rigid insulation tapered boards that comply with requirements and referenced standards, selected from manufacturer's standard sizes and of thicknesses indicated.
- B. Tapered Insulation Crickets: ASTM C 1289, Type II; Rigid closed-cell polyisocyanurate foam board, felt or glass-fiber mat facer on both major surfaces.
1. Units shall be 4-foot by 4-foot, ½-inch minimum thickness at the start-point of the tapered insulation system.
  2. Units shall be tapered to provide a finish slope of no less than ½-inch per foot at locations indicated on Drawings.
  3. Units shall be installed in low rise foam polyurethane insulation adhesive.

#### 2.5 INSULATION ACCESSORIES

- A. General: Furnish roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with membrane roofing.
- B. Insulation and Cover Board Adhesive: Two (2) component low rise polyurethane adhesive applied in bead form from either dual cartridges or specialized dispensing machine.
1. Available products that may be incorporated into the Work include:
    - a. OMG Roofing Products; OlyBond 500.
    - b. Or approved.
- C. Cover Board: ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum substrate, 1/2-inch thick, factory primed.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Georgia-Pacific Corporation; Dens Deck Prime.
    - b. USG Securock Roof Board.

c. Or approved.

- D. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Global 4470, designed for fastening roof insulation to substrate, and acceptable to roofing system manufacturer.
1. Location of Use: Roof Area C2 for attachment of flute fill insulation only.

## 2.6 WALKWAYS

- A. Flexible Walkways: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway pads or rolls, approximately 3/16-inch thick, and acceptable to membrane roofing system manufacturer.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:
1. Verify that roof openings and penetrations are in place and curbs are set and braced.
  2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and those nailers match thicknesses of insulation.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.
- B. Prevent materials from entering and obstructing roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.
- C. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.
- D. Restore existing drain clamping rings or replace with new of matching size to fit tightly onto existing drain assembly. Restoration shall include removal of loose rust, application of rust inhibiting primer and painting with elastomeric paint finish compatible with roof membrane.

### 3.3 INSULATION INSTALLATION

- A. Coordinate installing membrane roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.

- B. Comply with membrane roofing system and insulation manufacturer's written instructions for installing roof insulation.
- C. Install tapered insulation under area of roofing to conform to slopes indicated on Drawings.
- D. Install insulation under area of roofing to achieve required thickness. Where overall insulation thickness is greater than 2.5-inches, install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6-inches in each direction. Individual insulation layers shall not exceed 2.5-inches in thickness.
- E. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.
- F. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4-inch with insulation.
  - 1. Cut and fit insulation within 1/4-inch of nailers, projections, and penetrations.
- G. Adhered Insulation: Set insulation layers in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place. Use temporarily ballast to weight down individual boards of insulation until adhesive has cured. Do not set insulation over adhesive until appropriate string time is allowed to develop, unless otherwise directed by manufacturer.
  - 1. Adhere according to requirements in FM's "Approval Guide" for specified Windstorm Resistance Classification.
- H. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6-inches in each direction. Loosely butt cover boards together and adhere in ribbons of bead applied insulation adhesive.
  - 1. Adhere cover boards to resist uplift pressure at corners, perimeter, and field of roof.

### 3.4 ADHERED MEMBRANE ROOFING INSTALLATION

- A. Adhere membrane roofing over area to receive roofing and install according to membrane roofing system manufacturer's written instructions.
  - 1. Install sheet according to ASTM D 5036.
- B. Start installation of membrane roofing in presence of membrane roofing system manufacturer's technical personnel.
- C. Roll out membrane, free from wrinkles or tears. Please sheet into place without stretching and allow sheet to relax a minimum of 20 minutes prior to applying adhesive.
- D. Shingle joints on sloped substrate in direction of drainage.
- E. Fully Adhered Application: Apply adhesive to substrate at rate recommended by membrane manufacturer. Fully embed membrane in adhesive except in areas directly over or within 3-inches of expansion joints. Fully adhere one roll before proceeding to adjacent rolls.

- F. Accurately align membrane roofing and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.
- G. Bonding Adhesive: Apply to substrate and underside of membrane roofing at rate required by manufacturer and allow to partially dry before installing membrane roofing. Do not apply to splice area of membrane roofing.
- H. In addition to adhering, mechanically fasten membrane roofing securely at terminations, penetrations, and perimeter of roofing and as required by the manufacturer for the specified wind uplift resistance.
- I. Apply membrane roofing with side laps shingled with slope of roof deck where possible.
- J. Seams: Prepare membrane that has been exposed to the elements for approximately seven (7) days with membrane cleaner. Wipe the surface where cleaner has been applied with a clean, dry, splice wipe or other white rag to remove cleaner residue prior to hot air welding.
  - 1. Overlap side laps a minimum of 3-inches and end laps a minimum of 6-inches and seal seams by heat welding. Seal permanently waterproof.
  - 2. Test lap edges with probe tool to verify seam weld continuity. Apply lap sealant to seal cut edges of sheet membrane if required by the manufacturer.
  - 3. Field verify strength of seams in accordance with membrane manufacturer's recommended frequency and repair seam sample areas.
  - 4. Repair tears, voids, and lapped seams in roofing that does not comply with requirements.
- K. Spread sealant bed over deck drain flange at roof drains and securely seal membrane roofing in place with clamping ring.
- L. At intersections with vertical surfaces:
  - 1. Extend membrane up a minimum of 12-inches onto vertical surfaces and, where applicable, over the top of the parapet under copings as indicated on Drawings.
  - 2. Fully adhere flexible flashing over membrane and up to nailing strips as indicated on Drawings.
- M. Around roof penetrations, seal penetrations with pre-molded/prefabricated accessories where practical.
- N. Coordinate installation of roof drains and related flashings.
- O. Install membrane roofing and auxiliary materials to tie in to existing roofing to maintain weathertightness of transition.
- P. Install PVC extruded profile ribs spaced 16-inches on center in accordance with manufacturer's published installation instructions.

### 3.5 BASE FLASHING INSTALLATION

- A. Install sheet flashings and preformed flashing accessories and adhere to substrates according to membrane roofing system manufacturer's written instructions.

- B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate and allow to partially dry. Do not apply to seam area of flashing.
- C. Flash penetrations and inside and outside corners with cured or uncured sheet flashing. Use pre-molded accessories at all locations where physically permissible, limit field fabricated flashings.
- D. Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to ensure a watertight seam installation.
- E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

### 3.6 WALKWAY INSTALLATION

- A. Flexible Walkways: Heat weld to substrate or adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.
  - 1. Provide weep holes 4-inches long spaced at 3-feet on center at all low side edges.
  - 2. Install walkway products along paths and in locations indicated.
  - 3. Install walkway products at the base of all ladders.

### 3.7 FIELD QUALITY CONTROL

- A. Owner will engage a qualified Consultant to perform tests and inspections.
- B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.
- C. Repair or remove and replace components of membrane roofing system where inspections indicate that they do not comply with specified requirements.
- D. Additional inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

### 3.8 PROTECTING AND CLEANING

- A. Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.
- B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements; repair substrates; and repair or reinstall membrane roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
- C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 07 54 19

## SECTION 07 62 00 - SHEET METAL FLASHING AND TRIM

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and General Provisions for Public Improvement Contracts apply to this Section.

## 1.2 SUMMARY

## A. Section Includes:

## 1. Formed Products:

- a. Formed low and steep slope roof sheet metal fabrications including edge metal, copings, and counter-flashings.
- b. Formed equipment support flashing.
- c. Exterior door drip edges.
- d. Alternate - Custom color at pre-cast coping.

## B. Related Sections:

- 1. Section 02 41 19 "Selective Demolition" for removal and partial reuse of selected building elements.
- 2. Section 06 10 53 "Miscellaneous Rough Carpentry" for installation of wood curbs, nailers, and wall sheathing.
- 3. Section 07 01 50 "Preparation for Re-Roofing" for methods of existing roof tear-off procedures and requirements.
- 4. Section 07 54 19 "Polyvinyl-Chloride (PVC) Roofing" for installation of fully adhered PVC membrane roofing system.
- 5. Section 22 14 23 "Storm Drainage Piping Specialties" for installation of roof drains and related storm drainage piping.

## 1.3 PERFORMANCE REQUIREMENTS

- A. General: Sheet metal flashing and trim assemblies as indicated shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.
- B. Fabricate and install roof edge flashing and copings capable of resisting the forces calculated in accordance with ASCE/SEI 07 according to recommendations in FMG Loss Prevention Data Sheet 1-49:
- C. Thermal Movements: Provide sheet metal flashing and trim that allows for thermal movements from ambient and surface temperature changes.
  - 1. Temperature Change (Range): 120 deg F, ambient; 200 deg F, material surfaces.

#### 1.4 REFERENCES

- A. National Association of Architectural Metal Manufacturers (NAAMM) - Metal Finishes Handbook; Metal Finishes Manual for Architectural and Metal Products.
- B. National Roofing Contractors Association (NRCA) Roofing Manual, Membrane Roof Systems, 2011.
- C. Sheet Metal and Air Conditioning Contractors National Association (SMACNA) - Architectural Sheet Metal Manual, Sixth Edition.
- D. ASTM A 653 (formerly A 525) - Steel Sheet, Zinc-coated (Galvanized) by the Hot-Dip Process for Roofing and Siding.
- E. FM - Factory Mutual.

#### 1.5 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each manufactured product and accessory.
- B. Shop Drawings: Show fabrication and installation layouts of sheet metal flashing and trim, including plans, elevations, expansion-joint locations, and keyed details. Distinguish between shop- and field-assembled Work. Include the following:
  - 1. Identification of material, thickness, weight, and finish for each item and location in Project.
  - 2. Roof plan indicating layout of radius coping including lengths between individual pieces.
  - 3. Details for forming sheet metal flashing and trim, including profiles, shapes, seams, and dimensions.
  - 4. Details for joining, supporting, and securing sheet metal flashing and trim, including layout of fasteners, cleats, clips, saddles and other attachments. Include pattern of seams.
  - 5. Details of termination points and assemblies, including fixed points.
  - 6. Details of special conditions.
  - 7. Details of connections to adjoining work.
  - 8. Detail formed flashing and trim at a scale of not less than 3-inches per 12-inches.
- C. Samples for Initial Selection: For each type of sheet metal flashing, trim, and accessory indicated with full range of factory-applied color finishes involving color selection. Where custom color is required to match existing finishes, provide three samples representing color variation within the material to be matched.
- D. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below:
  - 1. Sheet Metal Flashing: 12-inches long by actual width of unit, including finished seam and in required profile. Include fasteners, cleats, clips, closures, and other attachments.
  - 2. Accessories and Miscellaneous Materials: Full-size Sample.
- E. Qualification Data: For qualified fabricator.

- F. Warranty: Sample of special warranty.

## 1.6 CLOSEOUT SUBMITTALS

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

## 1.7 QUALITY ASSURANCE

- A. Fabricator Qualifications: Shop that employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.
- B. Sheet Metal Flashing and Trim Standard: Comply with SMACNA's "Architectural Sheet Metal Manual" unless more stringent requirements are specified or shown on Drawings.
- C. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.
  - 1. Build mockup of typical coping and counterflashings, including supporting construction cleats, seams, attachments, underlayment, and accessories.
  - 2. Mockup to include separation wall transition at pitch change where indicated on Drawings.
  - 3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
  - 4. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- D. Preinstallation Conference: Conduct conference at Project site.
  - 1. Meet with Owner, Consultant, Owner's insurer if applicable, Installer, and installers whose work interfaces with or affects sheet metal flashing and trim including installers of roofing materials, roof accessories, unit skylights, and roof-mounted equipment.
  - 2. Review methods and procedures related to sheet metal flashing and trim.
  - 3. Examine substrate conditions for compliance with requirements, including flatness and attachment to structural members.
  - 4. Review special roof details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect sheet metal flashing.
  - 5. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

## 1.8 DELIVERY, STORAGE, AND HANDLING

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

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

## 1.9 COORDINATION

- A. Coordinate installation of sheet metal flashing and trim with interfacing and adjoining construction to provide a leakproof, secure, and noncorrosive installation.

## 1.10 WARRANTY

### A. Manufacturer's Warranty:

- 1. Manufacturers standard warranty for 20 years, following Final Acceptance by Owner, that metal will not fail structurally, perforate, rupture, or leak due to corrosion. Warranty shall include performance of paint / coating system.

### B. Contractor's Quality of Work Warranty:

- 1. Warrant that all sheet metal flashings are installed in accordance with the Contract Documents and will be free from defective quality of Work and or remain watertight and weatherproof with normal usage for a period of Five (5) years following Final Acceptance.

## PART 2 - PRODUCTS

### 2.1 SHEET METALS

- A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying a strippable, temporary protective film before shipping.
- B. Stainless-Steel Sheet: ASTM A 240/A 240M or ASTM A 666, Type 304, dead soft, fully annealed.
  - 1. Finish: 2B (bright, cold rolled).
  - 2. Surface: Smooth, flat.
- C. Pre-painted, Metallic-Coated Steel Sheet (roof flashings): ASTM A6531 A653M G90 coating designation. Steel sheet metallic coated by the hot-dip process and pre-painted by the coil-coating process to comply with ASTM A 755/A 755M.
  - 1. High-Performance Organic Finish: Two-coat thermocured system containing not less than 70 percent polyvinylidene fluoride resin by weight; complying with physical properties and coating performance requirements of AAMA 2604, except as modified for below:
    - a. Humidity and Salt Spray Resistance: 1000 hours.
    - 2. Thickness: 24 Gauge
    - 3. Color #1:
      - a. As selected by Owner from manufacturer's standard range of colors.
      - b. At portico and flyloft.

4. Color #2:
    - a. As selected by Owner from manufacturer's standard range of colors.
    - b. At pits and non-precast panel copings.
  5. Color #3:
    - a. As selected by Owner from manufacturer's standard range of colors.
    - b. At pre-cast panel coping.
  6. Color #3- Alternate:
    - a. Provide custom color to match existing pre-cast panels, as approved by owner from submitted samples.
    - b. At precast panel coping.
- D. Zinc-Coated (Galvanized) Steel Sheet (concealed cleats): ASTM A 653/A 653M, G90 coating designation; structural quality.
1. Mill Finish
  2. Thickness: 22 Gauge

## 2.2 MISCELLANEOUS MATERIALS

- A. General: Provide materials and types of fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and recommended by manufacturer of primary sheet metal unless otherwise indicated.
- B. Fasteners:
1. Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal.
  2. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.
    - a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating.
    - b. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.
  3. Fasteners for Stainless-Steel Sheet: Series 300 stainless steel.
  4. Masonry and Concrete Screw Anchors: Carbon steel, fluoropolymer coated, one-piece screw anchor, sized to achieve required loading capacity. Tested in accordance with ACI 355.2 and ICC-ES AC 193 (including ASTM E 488) for use in structural concrete, ICC - ES AC 106 for use in masonry, ICC E-ES AC233 for use in wood.
    - a. Unexposed Fasteners:
      - 1) Head: Flat Phillips
      - 2) Size: As required to achieve loading capacity
    - b. Exposed Fasteners:
      - 1) Head: Hex
      - 2) Size: As required to achieve loading capacity
      - 3) Washer: EPDM bonded washers
      - 4) Color: Pre-coated fluoropolymer coating matching sheet metal color
- C. Exterior Door Drip Edges:
1. Pemko; Aluminum Drip Edge #346. 2 ½ inch x 5/8 inch, mill finish.
- D. Solder:

1. For Stainless Steel: ASTM B 32, Grade Sn60, with an acid flux of type recommended by stainless-steel sheet manufacturer.
  2. For Zinc-Coated (Galvanized) Steel: ASTM B 32, Grade Sn50, 50 percent tin and 50 percent lead or Grade Sn60, 60 percent tin and 40 percent lead.
- E. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2-inch wide and 1/8-inch thick.
- F. Elastomeric Joint Sealant: Single component, Nonsag, Fast Curing, Silyl-Terminated Polyether or Polyurethane Sealant: ASTM C920, Type S, Grade NS, Class 50 for Use NT, M, A, G and O.
1. Products:
    - a. BASF Building Systems; Sonolastic 150 VLM.
    - b. Tremco Incorporated; Dymonic FC.
    - c. Or approved.
  2. Location of Use:
    - a. Exposed joint in sheet metal flashing and trim.
- G. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant, polyisobutylene plasticized, heavy bodied for hooked-type expansion joints with limited movement.
1. Products:
    - a. Pecora Corporation; BC-158
    - b. Tremco Incorporated; Butyl Sealant.
    - c. Or approved.
  2. Location of Use:
    - a. As indicated on the drawings.

### 2.3 UNDERLAYMENT MATERIALS:

- A. Water Resistive Barrier (vertical surfaces): Water resistive air barrier membrane; nominal 23-mil minimum thickness, maximum permanence rating of 50 perm; self-adhering sheet.
1. Products:
    - a. Henry Company, Blueskin VP 160
    - b. VaproShield, WrapShield SA.
    - c. Cosella Dorcken, Delta-Vent SA
    - d. Or approved.
- B. Self-adhering High Temp (SAHT) Flashing: Minimum 30 to 40 mils thick, consisting of slip-resisting polyethylene-film top surface laminated to layer of SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by manufacturer.
1. Products:
    - a. Henry Company, Blueskin PE200 HT.
    - b. Grace Construction Products; Grace Ice & Water Shield HT
    - c. Carlisle Coatings & Waterproofing Inc.; CCW WIP 300HT
    - d. Or approved.

## 2.4 FABRICATION, GENERAL

- A. General: Custom fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, geometry, metal thickness, and other characteristics of item indicated. Fabricate items at the shop to greatest extent possible.
1. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
  2. Obtain field measurements for accurate fit before shop fabrication.
  3. Form sheet metal flashing and trim without excessive oil canning, buckling, and tool marks and true to line and levels indicated, with exposed edges folded back to form hems.
  4. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces exposed to view.
- B. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4-inch in 20-feet on slope and location lines as indicated and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.
- C. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to tolerances specified in MCA's "Guide Specification for Residential Metal Roofing."
- D. Sealed Joints: Form nonexpansion but movable joints in metal to accommodate elastomeric sealant.
- E. Expansion Provisions: Where lapped expansion provisions cannot be used, form expansion joints of intermeshing hooked flanges, not less than 1-inch deep, filled with butyl sealant concealed within joints.
- F. Fabricate concealed cleats from Zinc-Coated Galvanized Steel Sheet: ASTM A 653/A 653M, G90 coating designation; structural quality; 22 gauge.
- G. Fabricate cleats and attachment devices of sizes as recommended by SMACNA's "Architectural Sheet Metal Manual" and by FMG Loss Prevention Data Sheet 1-49 for application, but not less than thickness of metal being secured.
- H. Seams: Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder.
- I. Seams: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use.
- J. Do not use graphite pencils to mark metal surfaces.

## 2.5 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

- A. Coping: Fabricate in minimum 96-inch long, but not exceeding 10-foot long, sections. Furnish with continuous cleats to support edge of external leg. Miter corners and seal watertight.
1. Fabricate from the following materials:
    - a. Prefinished Galvanized Steel: 0.028-inch 24 gauge thick.

2. Coping Profile: As shown on Drawings.
  3. Joint Style: 1-inch standing seam.
- B. Surface Mounted Counterflashing:
1. Fabricate from the following materials:
    - a. Stainless Steel: 0.025-inch 24 gauge thick.
  2. Joint Style: Lapped and sealed
- C. Reglet Counterflashing:
1. Fabricate from the following materials:
    - a. Stainless Steel: 0.025-inch 24 gauge thick.
  2. Joint Style: Lapped and sealed.
- D. Wall Panels: Fabricate with profiles as shown on the Drawings.
1. Joint Style: S-locks at 48-inches on center.
  2. Sheet Metal: Prefinished Galvanized Steel: 0.028-inch 24 gauge thick.
  3. Provide vertically oriented breaks in sheet metal panels to control oil-canning.
- E. Saddles:
1. Fabricate from the following materials:
    - a. Stainless Steel: 0.025-inch 24 gauge thick.
  2. Joint style: Soldered.
- F. PVC Metal Flashings:
1. Fabricate from the following materials:
    - a. PVC Coated Galvanized Steel: 0.028-inch 24 gauge thick.
  2. Joint Style: Lapped and sealed.
- G. Drip & Rake Edge Metal: Fabricate with profiles as shown on the Drawings.
1. Fabricate from the following materials:
    - a. PVC Coated Galvanized Steel: 0.028-inch 24 gauge thick.
  2. Joint Style: Lapped and Sealed
- H. Through Wall Overflow Scuppers:
1. Fabricate from the following materials:
    - a. PVC Coated Galvanized Steel: 0.028-inch 24 gauge thick.
  2. Joint Style: Lapped and sealed.
- I. Miscellaneous Flashings: Fabricate with profiles as shown on the Drawings and from sheet metal materials indicated.

## 2.6 PREFABRICATED FLASHINGS

- A. One or Two Piece Storm Collar Flashings w. Hose Clamp:
1. Stainless Steel: 0.018-inch 26 gauge thick
  2. Joint Style: Soldered
  3. Basis of Design:
    - a. SBC Industries: Model UMB or UMB-BELL
    - b. Or approved.

## PART 3 - EXECUTION

## 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions and other conditions affecting performance of the Work.
  - 1. Verify compliance with requirements for installation tolerances of substrates.
  - 2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
- B. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

## 3.2 INSTALLATION, GENERAL

- A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
  - 1. Install sheet metal flashing and trim true to line and levels indicated. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
  - 2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
  - 3. Space cleats not more than 1-inches apart. Anchor each cleat as required to meet performance requirements and as shown on Drawings.
  - 4. Install exposed sheet metal flashing and trim without excessive oil canning, buckling, and tool marks.
  - 5. Install sealant tape where indicated.
  - 6. Torch cutting of sheet metal flashing and trim is not permitted.
  - 7. Do not use graphite pencils to mark unpainted metal surfaces.
- B. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating or by other permanent separation as recommended by SMACNA.
  - 1. Coat back side of sheet metal flashing and trim with bituminous coating where flashing and trim will contact wood, ferrous metal, or cementitious construction.
  - 2. Underlayment: Where installing metal flashing directly on cementitious or wood substrates, install a course of felt underlayment and cover with a slip sheet or install a course of polyethylene sheet.
- C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10-feet with no joints allowed within 24-inches of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently watertight, form expansion joints of intermeshing hooked flanges, not less than 1-inch deep, filled with sealant concealed within joints.

- D. Fastener Sizes: Use fasteners of sizes that will penetrate wood sheathing not less than 1-1/4-inches for nails and not less than 3/4-inch for wood screws metal decking not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.
- E. Seal joints as shown and as required for watertight construction.
1. Where sealant-filled joints are used, embed hooked flanges of joint members not less than 1-inch into sealant. Form joints to completely conceal sealant. When ambient temperature at time of installation is moderate, between 40 and 70 deg F, set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures. Do not install sealant-type joints at temperatures below 40 deg F.
  2. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."
- F. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets to be soldered to a width of 1-1/2-inches, except reduce pre-tinning where pre-tinned surface would show in completed Work.
1. Do not use torches for soldering. Heat surfaces to receive solder and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.
  2. Stainless-Steel Soldering: Tin edges of uncoated sheets using solder recommended for stainless steel and acid flux. Promptly remove acid flux residue from metal after tinning and soldering. Comply with solder manufacturer's recommended methods for cleaning and neutralization.
- G. Rivets: Rivet joints where indicated and where necessary for strength.

### 3.3 ROOF FLASHING INSTALLATION

- A. General: Install sheet metal flashing and trim to comply with performance requirements and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, set units true to line, and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.
- B. Copings: Anchor to resist uplift and outward forces according to recommendations in FM Global Loss Prevention Data Sheet 1049 for specified wind zone and as indicated.
1. Interlock exterior bottom edge of coping with continuous cleat anchored to substrate at minimum 6-inch centers.
- C. Pipe or Post Counterflashing: Install counterflashing umbrella set in urethane sealant with close-fitting collar, extending a minimum of 4-inches over base flashing. Install stainless-steel draw band and tighten.
- D. Counterflashing: Coordinate installation of counterflashing with installation of base flashing. Where indicated on Drawings insert counterflashing in reglets or surface mount with EPDM gasketed fasteners. Fit tightly to base flashing. Extend counterflashing 4-inches over base flashing. Lap counterflashing joints a minimum of 4-inches and bed with sealant.
- E. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Seal with elastomeric sealant and clamp flashing to pipes that penetrate roof.

### 3.4 MANUFACTURED DRIP EDGES FOR DOORS

- A. Provide two (2) for each door opening, at head and sill.

### 3.5 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Clean and neutralize flux materials. Clean off excess solder.
- C. Clean off excess sealants.
- D. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of installation, remove unused materials and clean finished surfaces. Maintain in a clean condition during construction.
- E. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 07 62 00

## SECTION 07 72 00 - ROOF ACCESSORIES

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and General Provisions for Public Improvement Contracts apply to this Section.

## 1.2 SUMMARY

- A. Section Includes:
  - 1. Factory fabricated ladder safety post.
- B. Related Sections:
  - 1. Section 06 10 53 "Miscellaneous Rough Carpentry" for installation of wood curbs, nailers, and wall sheathing.
  - 2. Section 07 01 50 "Preparation for Re-Roofing" for methods of existing roof tear-off procedures and requirements.
  - 3. Section 07 62 00 "Sheet Metal Flashing and Trim" for installing sheet metal flashing and trim integral with roofing.

## 1.3 PERFORMANCE REQUIREMENTS

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

## 1.4 ACTION SUBMITTALS

- A. Product Data: For each type of roof accessory indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Shop Drawings: For roof accessories. Include plans, elevations, keyed details, and attachments to other work. Indicate dimensions, loadings, and special conditions. Distinguish between plant- and field-assembled work.

## 1.5 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Roof plans, drawn to scale, and coordinating penetrations and roof-mounted items. Show the following:
  - 1. Size and location of roof accessories specified in this Section.
  - 2. Method of attaching roof accessories to roof or building structure.
  - 3. Other roof-mounted items including mechanical and electrical equipment, ductwork, piping, and conduit.

4. Required clearances.

B. Delivery, Storage, and Handling:

1. Pack, handle and ship accessories properly labeled on Heavy-Duty packaging to prevent damage.

## 1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For roof accessories to include in operation and maintenance manuals.

## 1.7 COORDINATION

A. Coordinate layout and installation of roof accessories with roof system interfacing and adjoining construction to provide a leakproof, weathertight, secure, and noncorrosive installation.

B. Coordinate dimensions with rough-in information or Shop Drawings of equipment to be supported.

## 1.8 WARRANTY

A. Manufacturer Warranty: Manufacturer to warrant material to be free of defects in material and workmanship for a period of twenty-five (25) years from the date of purchase. Should a part fail to function in normal use within this period, manufacturer shall furnish a new part at no charge. Electrical motors, special finishes, and other special equipment (if applicable) shall be warranted separately by the manufacturers of those products.

B. Special Installer Warranty: Submit Roof Hatch Railing System Installer Warranty, covering the work of this section, including all components of the system with regard to defects related to installation for the following period:

1. Warranty Period: Two (2) years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 LADDER SAFETY POST

A. Pre-manufactured safety post for ladders as indicated on Drawings.

1. Steel, telescoping tubular section; automatic locking device.
2. Stainless steel spring balancing mechanism for up and down movement.
3. Finish: Yellow powdercoat.
4. Manufacturer: "Model LU-1 LadderUp" by Bilco Company, or approved.

## PART 3 - EXECUTION

## 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions, and other conditions affecting performance of the Work.
- B. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
- C. Verify dimensions of roof openings for roof accessories.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

## 3.2 INSTALLATION

- A. General: Install roof accessories according to manufacturer's written instructions.
  - 1. Install roof accessories level, plumb, true to line and elevation, and without warping, jogs in alignment, excessive oil canning, buckling, or tool marks.
  - 2. Anchor roof accessories securely in place so they are capable of resisting indicated loads.
  - 3. Use fasteners, separators, sealants, and other miscellaneous items as required to complete installation of roof accessories and fit them to substrates.
  - 4. Install roof accessories to resist exposure to weather without failing, rattling, leaking, or loosening of fasteners and seals.
  - 5. Verify dimensions of opening of existing roof hatch for roof accessories.
  - 6. Proceed with installation after unsatisfactory conditions have been corrected.
- B. Roof-Hatch Maintenance:
  - 1. Verify that roof grating hatches operate properly. Clean, lubricate, and adjust operating mechanism and hardware.

END OF SECTION 07 72 00

## SECTION 08 31 13 - ACCESS DOORS AND FRAMES

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

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

## 1.2 SUMMARY

- A. Section Includes but is not limited to:
  - 1. Access doors and frames for walls and ceilings.
  - 2. Provide new access doors at locations where existing finishes are removed to access roof drains above.
  - 3. Replace existing roof drain access doors with new access doors.
- B. Related Requirements:
  - 1. Section 07 72 00 "Roof Accessories" for roof hatches.
  - 2. Section 09 29 00 "Gypsum Board" for repairing finishes as required.
  - 3. Section 09 91 93 "Painting" for field painting access doors to match existing adjacent finishes.

## 1.3 SUBMITTALS

- A. Product Data: For each type of product.
  - 1. Include construction details, fire ratings, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Product Schedule: For access doors and frames.
- C. Samples: For each door face material, in specified finish.

## PART 2 - PRODUCTS

## 2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Rated Access Doors and Frames: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection and temperature-rise limit ratings indicated, according to NFPA 252 or UL 10B.

## 2.2 ACCESS DOORS AND FRAMES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
- a. Babcock-Davis.
  - b. JL Industries, Inc.; a division of the Activar Construction Products Group.
  - c. Milcor; Commercial Products Group of Hart & Cooley, Inc.
  - d. Approved substitution.
- B. Source Limitations: Obtain each type of access door and frame from single source from single manufacturer.
- C. Flush Access Doors with Concealed Flanges:
1. Description: Face of door flush with frame; with concealed flange for gypsum board installation and concealed hinge.
  2. Locations: Wall and ceiling.
  3. Door Size: As required for access.
  4. Uncoated Steel Sheet for Door: Nominal 0.060 inch (1.52 mm), 16 gage, factory primed.
  5. Frame Material: Same material and thickness as door.
  6. Latch and Lock: Cam latch, screwdriver operated.
- D. Fire-Rated, Flush Access Doors with Concealed Flanges:
1. Description: Door face flush with frame, with a core of mineral-fiber insulation enclosed in sheet metal; with concealed flange for gypsum board installation, self-closing door, and concealed hinge.
  2. Locations: Wall and ceiling.
  3. Door Size: As required for access.
  4. Fire-Resistance Rating: Not less than that of adjacent construction.
  5. Temperature-Rise Rating: 250 deg F (139 deg C) at the end of 30 minutes.
  6. Uncoated Steel Sheet for Door: Nominal 0.036 inch (0.91 mm), 20 gage, factory primed.
  7. Frame Material: Same material, thickness, and finish as door.
  8. Latch and Lock: Self-closing, self-latching door hardware, screwdriver operated.
- E. Size: 24 x 24 inches.

## 2.3 MATERIALS

- A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- B. Steel Sheet: Uncoated or electrolytic zinc coated, ASTM A 879/A 879M, with cold-rolled steel sheet substrate complying with ASTM A 1008/A 1008M, Commercial Steel (CS), exposed.
- C. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.
- D. Frame Anchors: Same material as door face.

- E. Inserts, Bolts, and Anchor Fasteners: Hot-dip galvanized steel according to ASTM A 153/A 153M or ASTM F 2329.

## 2.4 FABRICATION

- A. General: Provide access door and frame assemblies manufactured as integral units ready for installation.
- B. Metal Surfaces: For metal surfaces exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.
- C. Doors and Frames: Grind exposed welds smooth and flush with adjacent surfaces. Furnish mounting holes, attachment devices and fasteners of type required to secure access doors to types of supports indicated.
  - 1. For concealed flanges with drywall bead, provide edge trim for gypsum panels securely attached to perimeter of frames.
  - 2. For concealed flanges with plaster bead for full-bed plaster applications, provide zinc-coated expanded-metal lath and exposed casing bead welded to perimeter of frames.
- D. Recessed Access Doors: Form face of panel to provide recess for application of applied finish. Reinforce panel as required to prevent buckling. Provide access sleeves for each latch operator and install in holes cut through finish.
  - 1. For recessed doors with plaster infill, provide self-furring expanded-metal lath attached to door panel.
- E. Latch and Lock Hardware:
  - 1. Quantity: Furnish number of latches and locks required to hold doors tightly closed.

## 2.5 FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- D. Painted Finishes: Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.
  - 1. Factory Primed: Apply manufacturer's standard, lead- and chromate-free, universal primer immediately after surface preparation and pretreatment.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's written instructions for installing access doors and frames.
- B. Install fire-rated doors in fire-rated assemblies.

3.3 ADJUSTING

- A. Adjust doors and hardware, after installation, for proper operation.

END OF SECTION 08 31 13

SECTION 09 24 00 – EXTERIOR CEMENT PLASTERING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Repair of exterior vertical plasterwork (stucco).

1.2 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.3 SUBMITTALS

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

1.4 QUALITY ASSURANCE

- A. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.

1. Build mockups for each finish texture indicated for cement plastering, including accessories.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store materials inside under cover, and keep them dry and protected against damage from weather, moisture, direct sunlight, surface contamination, corrosion, construction traffic, and other causes.

1.6 FIELD CONDITIONS

- A. Comply with ASTM C 926 requirements.
- B. Exterior Plasterwork:

1. Apply and cure plaster to prevent plaster drying out during curing period. Use procedures required by climatic conditions, including moist curing, providing coverings, and providing barriers to deflect sunlight and wind.
  2. Apply plaster when ambient temperature is greater than 40 deg F (4.4 deg C).
  3. Protect plaster coats from freezing for not less than 48 hours after set of plaster coat has occurred.
- C. Factory-Prepared Finishes: Comply with manufacturer's written recommendations for environmental conditions for applying finishes.

## PART 2 - PRODUCTS

### 2.1 METAL LATH

- A. Expanded or Wire-Metal Lath: ASTM C 847, cold-rolled carbon-steel sheet with ASTM A 653/A 653M, G60 (Z180), hot-dip galvanized-zinc coating.
1. Match existing configuration.

### 2.2 ACCESSORIES

- A. General: Comply with ASTM C 1063, and coordinate depth of trim and accessories with thicknesses and number of plaster coats required.
- B. Metal Accessories:
1. Base Weep Screenshot: Fabricated from hot-dip galvanized-steel sheet, ASTM A 653/A 653M, G60 (Z180) zinc coating.
  2. External- (Outside-) Corner Reinforcement: Fabricated from metal lath with ASTM A 653/A 653M, G60 (Z180), hot-dip galvanized-zinc coating.
  3. Casing Beads: Fabricated from zinc-coated (galvanized) steel; square-edged style; with expanded flanges.
  4. Control Joints: Fabricated from zinc-coated (galvanized) steel; one-piece-type, folded pair of unperforated screeds in M-shaped configuration; with perforated flanges and removable protective tape on plaster face of control joint.
  5. Expansion Joints: Fabricated from zinc-coated (galvanized) steel; folded pair of unperforated screeds in M-shaped configuration; with expanded flanges.

### 2.3 MISCELLANEOUS MATERIALS

- A. Water for Mixing and Finishing Plaster: Potable and free of substances capable of affecting plaster set or of damaging plaster, lath, or accessories.
- B. Fiber for Base Coat: Alkaline-resistant glass or polypropylene fibers, 1/2 inch (13 mm) long, free of contaminants, manufactured for use in cement plaster.
- C. Bonding Compound: ASTM C 932.

- D. Fasteners for Attaching Metal Lath to Substrates: ASTM C 1063.
- E. Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, not less than 0.0475-inch (1.21-mm) diameter unless otherwise indicated.

## 2.4 PLASTER MATERIALS

- A. Portland Cement: ASTM C 150/C 150M, Type I.
  - 1. Color for Finish Coats: Gray.
- B. Masonry Cement: ASTM C 91, Type N.
  - 1. Color for Finish Coats: Gray.
- C. Lime: ASTM C 206, Type S; or ASTM C 207, Type S.
- D. Sand Aggregate: ASTM C 897.
- E. Ready-Mixed Finish-Coat Plaster: Mill-mixed portland cement, aggregates, coloring agents, and proprietary ingredients.
- F. Acrylic-Based Finish Coatings: Factory-mixed acrylic-emulsion coating systems formulated with colorfast mineral pigments and fine aggregates; for use over cement plaster base coats. Include manufacturer's recommended primers and sealing topcoats for acrylic-based finishes.

## 2.5 PLASTER MIXES

- A. General: Comply with ASTM C 926 for applications indicated.
  - 1. Fiber Content: Add fiber to base-coat mixes after ingredients have mixed at least two minutes. Comply with fiber manufacturer's written instructions for fiber quantities in mixes, but do not exceed 1 lb of fiber/cu. yd. (0.6 kg of fiber/cu. m) of cementitious materials.
- B. Base-Coat Mixes for Use over Metal Lath: Scratch and brown coats for three-coat plasterwork as follows:
  - 1. Portland Cement Mixes:
    - a. Scratch Coat: For cementitious material, mix 1 part portland cement and 3/4 to 1-1/2 parts lime. Use 2-1/2 to 4 parts aggregate per part of cementitious material.
    - b. Brown Coat: For cementitious material, mix 1 part portland cement and 3/4 to 1-1/2 parts lime. Use 3 to 5 parts aggregate per part of cementitious material, but not less than volume of aggregate used in scratch coat.
- C. Job-Mixed Finish-Coat Mixes:

1. Portland Cement Mix: For cementitious materials, mix 1 part portland cement and 1-1/2 to 2 parts lime. Use 1-1/2 to 3 parts aggregate per part of cementitious material.
- D. Factory-Prepared Finish-Coat Mixes: For acrylic-based finish coatings, comply with manufacturer's written instructions.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

#### 3.2 PREPARATION

- A. Protect adjacent work from soiling, spattering, moisture deterioration, and other harmful effects caused by plastering.
- B. Prepare smooth, solid substrates for plaster according to ASTM C 926.

#### 3.3 INSTALLING METAL LATH

- A. Metal Lath: Install according to ASTM C 1063.

#### 3.4 INSTALLING ACCESSORIES

- A. Install according to ASTM C 1063 and at locations indicated on Drawings.
- B. Reinforcement for External (Outside) Corners:
  1. Install lath-type, external-corner reinforcement at exterior locations.
- C. Control Joints: Locate as approved by Architect for visual effect and as follows:
  1. As required to delineate plasterwork into areas (panels) of the following maximum sizes:
    - a. Vertical Surfaces: 144 sq. ft. (13.4 sq. m).
    - b. Horizontal and Other Nonvertical Surfaces: 100 sq. ft. (9.3 sq. m).
  2. At distances between control joints of not greater than 18 feet (5.5 m) o.c.
  3. As required to delineate plasterwork into areas (panels) with length-to-width ratios of not greater than 2-1/2:1.
  4. Where control joints occur in surface of construction directly behind plaster.

5. Where plasterwork areas change dimensions, to delineate rectangular-shaped areas (panels) and to relieve the stress that occurs at the corner formed by the dimension change.

### 3.5 PLASTER APPLICATION

- A. General: Comply with ASTM C 926.
  1. Do not deviate more than plus or minus 1/4 inch in 10 feet (6 mm in 3 m) from a true plane in finished plaster surfaces when measured by a 10-foot (3-m) straightedge placed on surface.
  2. Finish plaster flush with metal frames and other built-in metal items or accessories that act as a plaster ground unless otherwise indicated. Where casing bead does not terminate plaster at metal frame, cut base coat free from metal frame before plaster sets and groove finish coat at junctures with metal.
  3. Provide plaster surfaces that are ready to receive field-applied finishes indicated.
- B. Base-Coat Mixes for Use over Metal Lath: For scratch and brown coats, for three-coat plasterwork with 3/4-inch (19-mm) total thickness, as follows:
  1. Portland cement mixes.
- C. Plaster Finish Coats: Apply to provide finish to match existing.
- D. Acrylic-Based Finish Coatings: Apply coating system, including primers, finish coats, and sealing topcoats, according to manufacturer's written instructions.
- E. Concealed Exterior Plasterwork: Where plaster application is used as a base for adhered finishes, omit finish coat.

### 3.6 PLASTER REPAIRS

- A. Repair or replace work to eliminate cracks, dents, blisters, buckles, crazing and check cracking, dry outs, efflorescence, sweat outs, and similar defects and where bond to substrate has failed.

### 3.7 CLEANING AND PROTECTION

- A. Remove temporary protection and enclosure of other work after plastering is complete. Promptly remove plaster from door frames, windows, and other surfaces not indicated to be plastered. Repair floors, walls, and other surfaces stained, marred, or otherwise damaged during plastering.

END OF SECTION 09 24 00

## SECTION 09 29 00 – INTERIOR GYPSUM BOARD AND PLASTER REPAIR

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

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

## 1.2 SUMMARY

- A. Section Includes:
  - 1. Interior gypsum board and plaster repair.
- B. Related Requirements:
  - 1. Section 09 91 13 "Painting"

## 1.3 SUBMITTALS

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

## 1.4 QUALITY ASSURANCE

- A. Mockups: Build mockups of sufficient area to demonstrate aesthetic effects and to set quality standards for materials and execution.
  - 1. Simulate finished lighting conditions for review of mockups.
  - 2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

## 1.5 DELIVERY, STORAGE AND HANDLING

- A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

## 1.6 FIELD CONDITIONS

- A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written instructions, whichever are more stringent.
- B. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.

- C. Do not install panels that are wet, moisture damaged, and mold damaged.
  - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
  - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.
- B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

### 2.2 GYPSUM BOARD, GENERAL

- A. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

### 2.3 INTERIOR GYPSUM BOARD

- A. Gypsum Board, Type X: ASTM C 1396/C 1396M.
  - 1. Thickness: to match existing.
- B. Mold-Resistant Gypsum Board, Type X: ASTM C 1396/C 1396M. With moisture- and mold-resistant core and paper surfaces. ASTM D 3273, score of 10 as rated according to ASTM D 3274.
  - 1. Thickness: to match existing.

### 2.4 TRIM ACCESSORIES

- A. Interior Trim: ASTM C 1047.
  - 1. Material: Galvanized or aluminum-coated steel sheet or plastic.

### 2.5 JOINT TREATMENT MATERIALS

- A. General: Comply with ASTM C 475/C 475M.

- B. Joint Tape: Paper or glass mesh.
- C. Joint Compound for Interior Gypsum Board: For each coat, use formulation that is compatible with other compounds applied on previous or for successive coats.
  - 1. Prefilling: At open joints and damaged surface areas, use setting-type taping compound.
  - 2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping compound
  - 3. Fill Coat: For second coat, use setting-type, sandable topping or drying-type, all-purpose compound.
  - 4. Finish Coat: For third coat, use setting-type, sandable topping or drying-type, all-purpose compound.

## 2.6 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written instructions.
- B. Steel Drill Screws: ASTM C 1002 unless otherwise indicated.
  - 1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch (0.84 to 2.84 mm) thick.
  - 2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.
- C. Acoustical Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.

## 2.7 TEXTURE FINISHES

- A. Primer: As recommended by textured finish manufacturer.
- B. Non-Aggregate Finish: If required to match existing.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine areas and substrates including welded hollow-metal frames and support framing, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.
- B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 APPLYING AND FINISHING PANELS, GENERAL

- A. Comply with ASTM C 840.
- B. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

### 3.3 APPLYING INTERIOR GYPSUM BOARD

- A. Install interior gypsum board to patch damaged areas.
  - 1. Mold-Resistant Type: In bathrooms, toilet rooms, laundry rooms.
- B. Single-Layer Application:
  - 1. On ceilings, apply gypsum panels at right angles to framing unless otherwise indicated.
  - 2. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

### 3.4 INSTALLING TRIM ACCESSORIES

- A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
- B. Interior Trim / Control Joints: Install at previous locations.

### 3.5 FINISHING GYPSUM BOARD

- A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.
- B. Prefill open joints and damaged surface areas.
- C. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.
- D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:
  - 1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
  - 2. Level 2: Panels that are substrate for tile and panels that are substrate for acoustical tile.
  - 3. Level 3: Mechanical, electrical and sprinkler rooms.

4. Level 4: At smooth and textured panel surfaces that will be exposed to view.

### 3.6 APPLYING TEXTURE FINISHES

- A. Surface Preparation and Primer: Prepare and apply primer to gypsum panels and other surfaces receiving texture finishes. Apply primer to surfaces that are clean, dry, and smooth.
- B. Prevent texture finishes from coming into contact with surfaces not indicated to receive texture finish by covering them with masking agents, polyethylene film, or other means. If, despite these precautions, texture finishes contact these surfaces, immediately remove droppings and overspray to prevent damage according to texture-finish manufacturer's written instructions.

### 3.7 PROTECTION

- A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.
- B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- C. Remove and replace panels that are wet, moisture damaged, and mold damaged.
  1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
  2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 09 29 00

## SECTION 09 91 13 — PAINTING

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

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

## 1.2 SUMMARY

- A. Section includes but is not limited to:
  - 1. Surface preparation and the application of paint systems on exterior and interior substrates.
    - a. Interior gypsum board / interior plaster patching.
    - b. Exterior metal components noted as field painted.
    - c. Interior fabricated components field painted.
    - d. Alternate: Exterior portland cement plaster (stucco) at fly loft.
- B. Related Requirements:
  - 1. Section 05 50 00 "Metal Fabrications" for painting items noted as field painted.
  - 2. Section 08 31 13 "Access Doors and Frames" for painting pre-primed components.
  - 3. Section 09 29 00 "Gypsum Board" for painting to match existing.

## 1.3 DEFINITIONS

- A. Gloss Level 1 (Flat): Not more than 5 units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.
- B. Gloss Level 2 (Velvet): Not more than 10 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523
- C. Gloss Level 3 (Egg Shell): 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.
- D. Gloss Level 4 (Satin): 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.
- E. Gloss Level 5 (Semi-Gloss): 35 to 70 units at 60 degrees, according to ASTM D 523.
- F. Gloss Level 6 (Gloss): 70 to 85 units at 60 degrees, according to ASTM D 523.
- G. Gloss Level 7 (High Gloss): More than 85 units at 60 degrees, according to ASTM D 523.

#### 1.4 SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
- B. Samples: For each type of paint system and each color and gloss of topcoat.
  - 1. Submit Samples on rigid backing, 8 inches (200 mm) square.
  - 2. Step coats on Samples to show each coat required for system.
  - 3. Label each coat of each Sample.
  - 4. Label each Sample for location and application area.
- C. Product List: For each product indicated, include the following:
  - 1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
  - 2. Printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
  - 3. VOC content.
- D. Warranty: Submit sample copy of proposed warranty stating obligations, remedies, limitations and exclusions.

#### 1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Paint: 5 percent, but not less than 1 gal. (3.8 L) of each material and color applied.

#### 1.6 CLOSEOUT SUBMITTALS

- A. Color Schedule: Identity locations, colors, sheens and manufacturers. For inclusion in Project Record Document Manual.

#### 1.7 QUALITY ASSURANCE

- A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
  - 1. Final approval of color selections will be based on mockups.
  - 2. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.

3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

B. Manufacturer's Qualifications and Requirements:

1. A technical representative of paint manufacturer shall periodically observe work in progress.
2. Technical representative shall at a minimum shall be present to observe surface preparation, general application procedures and final completion and submit documentation of manufacturer's final acceptance and warranty.
3. Work shall not proceed until such observations have been made and conditions have been approved in writing by the manufacturer.
4. Technical representative shall perform a punch list inspection upon substantial completion of the project indicating all items in need of attention, including conformance to manufacturer published installation instructions and these contract documents; provide documentation.

C. Source limitations: obtain primary products from a single manufacturer Provide secondary products as specified or as recommended and approved by the primary manufacturer.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).
1. Maintain containers in clean condition, free of foreign materials and residue.
  2. Remove rags and waste from storage areas daily.

1.9 FIELD CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).
- B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

1.10 WARRANTY

- A. Special Warranty: Standard form in which manufacturer agrees to replace exterior paint products that fail under normal wear within specified warranty period.

1. Failures include: fading, chipping, and cracking peeling and blistering.
2. Warranty period: 5 years.

## PART 2 - PRODUCTS

### 2.1 PRODUCTS

- A. Products: Subject to compliance with requirements, provide one of the following systems for substrates listed. Provide all coating products by same manufacturer unless otherwise noted or approved by Architect.

### 2.2 PAINT, GENERAL

- A. Material Compatibility:

1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

- B. VOC Content: Products shall comply with VOC limits of authorities having jurisdiction and, for interior paints and coatings applied at Project site, the following VOC limits, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

1. Flat Paints and Coatings: 50 g/L. (Including colorant added at point-of-sale: 100 g/L)
2. Nonfat Paints and Coatings: 50 g/L.(Including colorant added at point-of-sale 100 g/L)
3. Dry-Fog Coatings: 400 g/L.
4. Primers, Sealers, and Undercoaters: 100 g/L.
5. Anticorrosive and Antirust Paints Applied to Ferrous Metals: 250 g/L. (Including colorant added at point-of-sale: 250 g/L)
6. Zinc-Rich Industrial Maintenance Primers: 340 g/L.
7. Pretreatment Wash Primers: 420 g/L.
8. Floor Coatings: 100 g/L.
9. Shellacs, Clear: 730 g/L.
10. Shellacs, Pigmented: 550 g/L.
11. Stains: 250g/L.

- C. Low-Emitting Materials: Interior paints and coatings shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

- D. Colors: As selected by Architect from manufacturer's full range.

## PART 3 - EXECUTION

## 3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
  - 1. Concrete: 12 percent.
  - 2. Masonry (Clay and CMU): 12 percent.
  - 3. Wood: 15 percent. (including pressure treated wood)
  - 4. Portland cement Plaster: 12 percent.
  - 5. Gypsum Board: 12 percent.
- C. Plaster Substrates: Verify that plaster is fully cured.
- D. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.
- E. Spray-Textured Ceiling Substrates: Verify that surfaces are dry.
- F. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- G. Proceed with coating application only after unsatisfactory conditions have been corrected.
  - 1. Application of coating indicates acceptance of surfaces and conditions.
- H. Pressure treated wood: Verify the moisture content is within acceptable limits.

## 3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Manual" applicable to substrates and paint systems indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
  - 1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.
- C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulates.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
- D. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.
- E. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceeds that permitted in manufacturer's written instructions.
- F. Existing Paint: Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease.
1. Perform existing paint adhesion test per ASTM D3359, Adhesion by Tape Test, Method A.
- G. Steel Substrates:
1. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.
  2. Galvanized-Steel Substrates: Remove grease and oil residue from galvanized metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied coatings. Clean using methods recommended in writing by paint manufacturer but not less than the following:
    - a. ASTM D-6386-10 "Specification for Preparation of Surface for Painting Over Galvanizing"
    - b. Abrasive blast to an SSPC-SP10 near white blast.
  3. Bare Steel - If steel is not galvanized or shop primed, remove rust, loose mill scale and prepare surface as noted below. Clean using methods recommended in writing by paint manufacturer but not less than the following:
    - a. SSPC-SP1, "Solvent Cleaning" Remove all oil and grease from surface.
    - b. SSPC-SP11, "Power Tool Cleaning to bare Metal"
- H. Aluminum Substrates: Remove loose surface oxidation.
- I. Wood Substrates:
1. Scrape and clean knots. Before applying primer, apply coat of knot sealer recommended in writing by topcoat manufacturer for exterior use in paint system indicated.
  2. Sand surfaces that will be exposed to view, and dust off.
  3. Prime edges, ends, faces, undersides, and backsides of wood.
  4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

5. Prepare weathered surfaces according to MPI recommended procedures until a sound surface is obtained (loose or damaged wood fibers removed).
- J. Plastic Trim Fabrication Substrates: Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.
- K. Substrates with Clear Coatings: Remove all construction lines, layout lines, alignment marks and notations before applying clear coatings.

### 3.3 APPLICATION

- A. Apply paints according to manufacturer's written instructions and recommendations in "MPI Manual."
  1. Use applicators and techniques suited for paint and substrate indicated.
  2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.
  3. Paint both sides and edges of exterior doors and entire exposed surface of exterior door frames.
  4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
  5. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
- B. Tint undercoats same color as topcoat, but tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Provide sufficient difference in shade of undercoats to distinguish each separate coat.
- C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
- E. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:
  1. Paint the following work where exposed to view:
    - a. Equipment, including panel boards and switch gear.
    - b. Uninsulated metal piping.
    - c. Uninsulated plastic piping.
    - d. Pipe hangers and supports.
    - e. Metal conduit.
    - f. Plastic conduit.

- F. Exterior Soffits and Underside of Roof Eaves: Paint exterior soffits and the underside of roof eaves to match the trim color unless otherwise noted.
- G. Apply stains and sealers according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.
- H. Vapor retarder paint, apply at the minimum dry film thickness indicated or per manufacturer's instructions to achieve a Class II perm rating of greater than 0.1 and less than or equal to 1.0, (vapor semi-impermeable). Apply at interior of exterior walls and ceilings.
- I. Dry film (dft) thicknesses indicated are per coat.
- J. Do not apply coatings to weathered surfaces.

#### 3.4 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

#### 3.5 EXTERIOR PAINTING

- A. Substrate: Galvanized-Steel - Latex exterior, satin. (As noted on drawings)
  - 1. Miller:
    - a. Prime Coat: Manufacturer's recommended
    - b. Second Coat: Acrimetal DTM. 1.5 mils dft
    - c. Finish Coat: Acrimetal DTM. 1.5 mils dft
  - 2. Sherwin Williams:
    - a. Primer: Pro-Cryl Universal Primer , or DTM Bonding Primer, 2.0 mils dft.
    - b. Second Coat: Pro Industrial Zero VOC Acrylic, B66 Series, 3.0 mils dft.
    - c. Finish Coat: Pro Industrial Zero VOC Acrylic, B66 Series, 3.0 mils dft.
  - 3. Coronado:
    - a. Primer: V110 Acrylic Metal Primer, 1.5-2.0 mils dft.
    - b. Second Coat: Corotech Acrylic DTM, 2.0-2.2 mils dft.
    - c. Finish Coat: Corotech Acrylic DTM, 2.0-2.2 mils dft.
  - 4. Benjamin Moore:

- a. Primer: P04 Super Spec HP Acrylic Metal Primer, 1.7-2.3 mils dft
  - b. Second Coat: Super Spec HP Acrylic DTM , 1.5-2.5 mils dft.
  - c. Finish Coat: Super Spec HP Acrylic DTM , 1.5-2.5 mils dft.
5. Rodda Paint Company:
- a. Primer: Metal Master Primer 508901 1.5 mil dft.
  - b. Second Coat: Second Coat: MultiMaster DTM Satin 528901 1.5 mils dft.
  - c. Finish Coat: MultiMaster DTM Satin 528901 1.5 mils dft.
6. PPG Paints
- a. Primer: Pitt-Tech Int/Ext Primer Finish DTM 90-712
  - b. Second and Finish Coats: Pitt-Tech Int/Ext Satin DTM 90-474
- B. Substrate: Metal (existing or new, not previously painted) - Epoxy and Acrylic, Satin.
1. Miller:
    - a. Primer: Manufacturer's Epoxy penetrating sealer.
    - b. Acrimetal DTM. 1.5 mils dft
    - c. Acrimetal DTM. 1.5 mils dft
  2. Sherwin Williams:
    - a. Primer: Manufacturer's epoxy penetrating sealer.
    - b. Pro Industrial Zero VOC Acrylic, 3.0 mils dft.
    - c. Pro Industrial Zero VOC Acrylic, 3.0 mils dft.
  3. Coronado:
    - a. Primer: Manufacturer's epoxy penetrating sealer.
    - b. First Coat: Corotech Acrylic DTM, 2.0-2.2 mils dft.
    - c. Finish Coat: Corotech Acrylic DTM, 2.0-2.2 mils dft.
  4. Benjamin Moore:
    - a. Primer: Manufacturer's epoxy penetrating sealer.
    - b. First Coat: Super Spec HP Acrylic DTM, 1.5-2.5 mils dft.
    - c. Finish Coat: Super Spec HP Acrylic DTM, 1.5-2.5 mils dft.
  5. Rodda:
    - a. Primer: Cloverdale Preptech Epoxy Penetrating Sealer.
    - b. First Coat: Multi Master DTM, 2.0 mils dft.
    - c. Finish Coat: Multi Master DTM, 2.0 mils dft.
  6. PPG Paints
    - a. Primer: Amerlock Sealer
    - b. Second and Finish Coats: Pitt-Tech Int/Ext Satin DTM 90-474
- C. Substrate: Metal (existing, previously painted) - Epoxy and Acrylic, Satin.
1. Miller:
    - a. Primer: Manufacturer's Epoxy penetrating sealer.
    - b. Acrimetal DTM. 1.5 mils dft
  2. Sherwin Williams:
    - a. Primer: Manufacturer's epoxy penetrating sealer.
    - b. Pro Industrial Zero VOC Acrylic, 3.0 mils dft.

3. Coronado:
  - a. Primer: Manufacturer's epoxy penetrating sealer.
  - b. Finish Coat: Corotech Acrylic DTM, 2.0-2.2 mils dft.
4. Benjamin Moore:
  - a. Primer: Manufacturer's epoxy penetrating sealer.
  - b. Finish Coat: Super Spec HP Acrylic DTM, 1.5-2.5 mils dft.
5. Rodda:
  - a. Primer: Cloverdale Preptech Epoxy Penetrating Sealer.
  - b. Finish Coat: Multi Master DTM, 2.0 mils dft.
6. PPG Paints
  - a. Primer: Amerlock Sealer
  - b. Finish Coat: Pitt-Tech Int/Ext Satin DTM 90-474

D.

E. Substrate: Stucco:

1. Miller:
  - a. Prime Coat: 6040 Kril Primer/Sealer (Alkali Resistant)
  - b. First Coat: Acri-Lite Velvet (7000)
  - c. Second Coat: Acri-Lite Velvet (7000)
2. Sherwin Williams:
  - a. Prime Coat: Loxon Concrete and Masonry Primer Sealer, A24W8300 (Alkali Resistant)
  - b. First Coat: SuperPaint Exterior Latex Satin A86 Series.
  - c. Second Coat: SuperPaint Exterior Latex Satin A86 Series.
3. Benjamin Moore:
  - a. Prime Coat: Super Spec N066 Acrylic Masonry Sealer, 1.0 mils dft.
  - b. First Coat: Regal Select HB Low Lustre (N401) or Flat (N400), 2.3 mils dft
  - c. Second Coat: Regal Select HB Low Lustre (N401) or Flat (N400), 2.3 mils dft
4. PPG Paints
  - a. Primer: Perma-Crete Concrete and Stucco Primer 4-503
  - b. Second Coat: Speedhide Ext. 100% Acrylic Satin 6-2045
  - c. Finish Coat: Speedhide Ext. 100% Acrylic Satin 6-2045

### 3.6 INTERIOR PAINTING SCHEDULE

A. Substrate: Interior Gypsum Board / Plaster / Pre-primed metal fabrications - Latex, Interior, sheen to match existing. (Omit primer at pre-primed conditions).

1. Miller:
  - a. Prime Coat: Acri-Lite Primer, 1.5 mil dft.
  - b. First Coat: Acro Pure, 1.5 mils dft.
  - c. Second Coat: Acro Pure, 1.5 mils dft.
2. Sherwin Williams:

- a. Prime Coat: ProMar Zero VOC B28W02600.
  - b. First Coat: ProMar 200 Zero VOC, 1.6 mils dft.
  - c. Second Coat: ProMar 200 Zero VOC, 1.6 mils dft.
3. Coronado:
- a. Prime Coat: Super Kote 5000 Interior Latex Primer, 1.1-1.5 mils dft.
  - b. First Coat: Super Kote 5000, 1.3-1.7 mils dft
  - c. Second Coat: Super Kote 5000, 1.3-1.7 mils dft
4. Benjamin Moore:
- a. Primer: Super Spec 253 Latex Primer Sealer and Enamel Undercoater, 1.1 mils dft.
  - b. First Coat: Ultra Spec 500 N538, 1.8 mils dft.
  - c. Second Coat: Ultra Spec 500 N538, 1.8 mils dft.
5. Rodda Paint Company:
- a. Primer: Roseal II 502701 1.5 mils dft.
  - b. First Coat: Master Paint Ultra low VOC Satin 523601 1.5 mils dft.
  - c. Second Coat: Master Paint Ultra low VOC Satin 523601 1.5 mils dft.
6. PPG Paints
- a. Primer: PG Speedhide Zero VOC Interior Sealer 6-4900
  - b. Second Coat: Speedhide Zero VOC Latex 6-4310
  - c. Finish Coat: Speedhide Zero VOC Latex 6-4310

END OF SECTION 09 91 13

## SECTION 22 14 23 STORM DRAINAGE PIPING and SPECIALTIES

## PART 1 - GENERAL

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

## 1.2 SUMMARY

- A. Section Includes:
  - 1. Roof drains and piping to be replaced.
  - 2. Miscellaneous storm drainage piping specialties.
- B. Related Sections:
  - 1. Section 07 54 19 "Polyvinyl-Chloride (PVC) Roofing"
  - 2. Section 08 31 13 "Access Doors and Frames"

## 1.3 SUBMITTALS

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

## 1.4 REFERENCES

- A. ASME B16.3 - Malleable Iron Threaded Fittings; The American Society of Mechanical Engineers; 1998 (R2006).
- B. AWWA C151/A21.51 - Ductile-Iron Pipe, Centrifugally Cast, for Water; American Water Works Association; 2002 (ANSI/AWWA C151/A21.51).
- C. CISPI 301 - Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste and Vent Piping Applications; Cast Iron Soil Pipe Institute; 2005.
- D. CISPI 310 - Specification for Coupling for Use in Connection with Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications; Cast Iron Soil Pipe Institute; 2004.

## 1.5 QUALITY ASSURANCE

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

## 1.6 REGULATORY REQUIREMENTS

- A. Perform Work in accordance with State of Oregon plumbing code.

## PART 2 - PRODUCTS

## 2.1 METAL ROOF DRAINS

## A. Cast-Iron, Medium-Sump, General-Purpose Roof Drains:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Josam Company.
  - b. Smith, Jay R. Mfg. Co.
  - c. Zurn Plumbing Products Group.
2. Standard: ASME A112.6.4, for general-purpose roof drains.
3. Body Material: Cast iron.
4. Dimension of Body: match existing
5. Combination Flashing Ring and Gravel Stop: Required.

## 2.2 HUBLESS CAST-IRON SOIL PIPE AND FITTINGS

## A. Pipe and Fittings: ASTM A 888 or CISPI 301.

1. Fittings: Cast iron.
2. Joints: Neoprene gaskets and stainless steel clamp-and-shield assemblies.

## 2.3 GALVANIZED-STEEL PIPE

## A. Galvanized-Steel Pipe: ASTM A 53/A 53M, Type E, Standard Weight.

## 2.4 FITTINGS

## A. Shield Couplings: ASTM C 1277 assembly of metal shield or housing, corrosion-resistant fasteners, and rubber sleeve with integral, center pipe stop.

1. Standard, Shielded, Stainless-Steel Couplings: CISPI 310, with stainless-steel corrugated shield; stainless-steel bands and tightening devices; and ASTM C 564, rubber sleeve.
2. Manufacturers:
  - a. ANACO.
  - b. Fernco, Inc.
  - c. Or Approved.

## B. PIPE HANGERS AND SUPPORTS

1. Conform to ASME B31.9.
2. Hangers for Pipe Sizes 2 Inches and Over: Carbon steel, adjustable, clevis.

## PART 3 - EXECUTION

## 3.1 INSTALLATION

- A. Access: Contractor to confirm piping layouts and access via below-deck inspection prior to bidding and commencement of drain installation. New plumbing access points will need to be created in existing ceiling areas.
- B. Install roof drains where indicated on Drawings.
  - 1. Install flashing collar or flange of roof drain to prevent leakage between drain and adjoining roofing. Maintain integrity of waterproof membranes where penetrated.
- C. Install drain piping under-deck with no-hub connectors. Hang and support piping from structural members in accordance with manufacturer's recommended installation instructions. Insulate all piping.

## 3.2 CONNECTIONS

- A. Comply with code requirements and manufacturer's installation instructions. Drawings indicate general arrangement of piping, fittings, and specialties.

## 3.3 PROTECTION

- A. Protect drains during remainder of construction period to avoid clogging with dirt or debris and to prevent damage from traffic or construction work.
- B. Place plugs in ends of uncompleted piping at end of each day or when work stops.

END OF SECTION

## SECTION 23 05 00 - BASIC MECHANICAL MATERIALS AND METHODS

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Requirements and Summary of Work and Division 1 Specification Sections, apply to this Section.

## 1.2 SUMMARY

- A. This Section includes the following:
  - 1. Temporary removal of existing rooftop fan units and associated exposed ductwork, as required for new roof Work.
  - 2. Reinstallation of existing equipment.
- B. Related Sections include the following:
  - 1. Section 02 41 19 "Selective Structure Demolition" for removal and partial reuse of selected building elements.
  - 2. Section 06 10 53 "Miscellaneous Rough Carpentry" for installation of wood curbs, nailers, and wall sheathing.
  - 3. Section 07 01 50 "Preparation for Re-Roofing" for methods of existing roof tear-off procedures and requirements.
  - 4. Section 07 54 19 "Polyvinyl-Chloride (PVC) Roofing." for adhered PVC membrane roof system and roof level insulation.
  - 5. Section 07 62 00 "Sheet Metal Flashing and Trim" for installing sheet metal flashing and trim integral with roofing.

## 1.3 DEFINITIONS

- A. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe and duct shafts, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawlspaces, and tunnels.
- B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.
- C. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.
- D. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and in duct shafts.

- E. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.

#### 1.4 CODES

- A. Make installation of items in complete accordance with Codes or regulations set forth by the governing authorities. In case Drawings or Specifications conflict with Code requirements, the Code governs; however, the Specification are to be considered as minimum.

#### 1.5 PERMITS, LICENSES AND TAXES

- A. Obtain and pay for permits, licenses and taxes applicable to this Work.

#### 1.6 GUARANTEE

- A. Guarantee replacement, at no cost to Owner, of faulty materials and quality of Work and pay for any damage to other Work resulting there from. Period of guarantee to extend five (5) years from date of acceptance of installation by Owner. Owner will give notice of observed defects with reasonable promptness.

#### 1.7 QUALITY ASSURANCE

- A. Materials and methods specified are to be considered as minimum, indicative of quality required to satisfy intent of drawings and specifications.
- B. Materials shall be new, standard, full weight, identical to apparatus or equipment in successful operation for a minimum of two (2) years.
- C. Supply materials of similar class by same manufacturer. Materials omitted here, but necessary to complete the Work, are to be of comparable quality.
- D. Electrical Characteristics for Mechanical Equipment: Equipment of higher electrical characteristics may be furnished provided such proposed equipment is approved in writing and connecting electrical services, circuit breakers, and conduit sizes are appropriately modified. If minimum energy ratings or efficiencies are specified, equipment shall comply with requirements.

#### 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver pipes and tubes with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe end damage and to prevent entrance of dirt, debris, and moisture.
- B. Store plastic pipes protected from direct sunlight. Support to prevent sagging and bending.

## 1.9 COORDINATION

- A. Arrange for pipe spaces, chases, slots, and openings in building structure during progress of construction, to allow for mechanical installations.
- B. Coordinate installation of required supporting devices and other structural components as they are constructed.

## PART 2 - PRODUCTS

## 2.1 MANUFACTURERS

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

## 2.2 MISCELLANEOUS STEEL

- A. Provide steel as required for adequate support of all mechanical equipment, use angle or channel, I or H sections as required by application.
- B. Provide suitable base plates for stands. Provide shop drawings of supports especially constructed for this project.

## 2.3 SHEET METAL

- A. Zinc-Coated (Galvanized) Steel Sheet ASTM A 653/A 653M, G90 (Z275) coating designation; structural quality, 22 gauge galvanized core steel.

## 2.4 RELATED MATERIALS

- A. Provide misc. accessories, components, and materials required for a complete and proper installation.

## PART 3 - EXECUTION

## 3.1 MATERIALS STORAGE AND HANDLING

- A. Deliver materials to the Project site with Manufacturer's labels intact and legible. Handle materials with care to avoid damage. Store materials inside, protected from weather, dirt and construction dust.

## 3.2 LOCATING AND POSITIONING EQUIPMENT

- A. Observe all safety codes and regulations and good common practice in locating and installing mechanical equipment and material so that completed installation presents the least possible hazard.
- B. Maintain adequate clearances for repair and service to all equipment. Installation of any equipment with less than minimum clearances indicated by Manufacturer as required for proper maintenance will not be accepted.
- C. Set equipment to provide for ready access to any parts requiring inspection and service.

## 3.3 PROTECTION

- A. Protect all Work and materials against loss or damage. Close all pipe openings with caps or plugs. At final completion, thoroughly clean and deliver all Work and equipment in an unblemished new condition.
- B. Protect existing wiring, circuits, piping, conduits, etc., from damage during course of Work.
- C. Contractor shall be responsible for damage to adjacent and/or related components of Work, including control systems, due to improper disconnection/reconnection.

## 3.4 SAFETY

- A. Drawings and specifications do not include design or construction details or instructions relating to contractor's safety precautions or to means, methods, techniques, sequences or procedures required for contractor to perform Work.
- B. Contractor shall provide necessary shoring, railing, barricades, protective devices, safety instructions and procedures to perform Work safely and to comply with safety requirements of the governing authorities.

## 3.5 CLEANING

- A. General: Clean all dirt and construction dust and debris from all mechanical facilities and equipment. Touch up paint where finish has been damaged by this Work.

## 3.6 OPERATION TEST

- A. Prior to acceptance of completed project, operate all mechanical systems modified for a period of at least five days of eight hours each to demonstrate fulfillment of the requirements of the contract.

END OF SECTION 23 05 00

## SECTION 26 05 00 - BASIC ELECTRICAL MATERIALS AND METHODS

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Requirements and Summary of Work and Division 1 Specification Sections, apply to this Section.

## 1.2 SUMMARY

- A. This Section includes the following:
  - 1. Disconnection, re-connection, repair, replacement, or relocation of existing electrical conditions at mechanical units, and all areas requiring upgrades as a result of roof replacement activities.
  - 2. Investigation of existing wiring, fixtures, and materials to confirm code compliance and condition.
- B. Related Sections include the following:
  - 1. Section 02 41 19 "Selective Structure Demolition" for removal and partial reuse of selected building elements.
  - 2. Section 06 10 53 "Miscellaneous Rough Carpentry" for installation of wood curbs, nailers, and wall sheathing.
  - 3. Section 07 01 50 "Preparation for Re-Roofing" for methods of existing roof tear-off procedures and requirements.
  - 4. Section 07 54 19 "Polyvinyl-Chloride (PVC) Roofing." for adhered PVC membrane roof system and roof level insulation.
  - 5. Section 07 62 00 "Sheet Metal Flashing and Trim" for installing sheet metal flashing and trim integral with roofing.

## 1.3 QUALITY ASSURANCE

- A. Meet requirements of State of Oregon Electrical Specialty Code, Oregon Administrative Rules Chapter 437, National Electrical Safety Code, all rules and regulations of the local serving utility, National Board of Fire Underwriters and 2011 International Building Code as adopted by the State of Oregon.
- B. Qualifications:
  - 1. Use personnel with appropriate experience to perform work on energized equipment and circuits.
  - 2. All materials shall be installed according to manufacturer's published instructions and Contract Documents.

## 1.4 SUBMITTALS

- A. Submit Shop Drawings and Product Data.

## 1.5 WIRING METHODS

- A. Wiring methods shall match existing electrical installation method and be installed to local codes.

## PART 2 - PRODUCTS

## 2.1 CONDUIT AND FITTINGS

- A. Zinc coated steel EMT may be employed in all dry, protected locations. Flexible steel conduit will be permitted only where flexibility is necessary. Assemble conduits and secure to boxes, panels, etc., with appropriate fittings to maintain electrical continuity. Size conduit for the quantity of type THW conductors installed, per code requirements. All conduits shall be securely supported and fastened.
- B. Galvanized steel conduits and like fittings utilized at exterior applications.

## 2.2 BOXES

- A. Outlet and junction boxes shall be code gauge galvanized steel of code-required size to accommodate all wire, fittings and devices.

## 2.3 WIRE AND CONNECTORS

- A. Feeder and branch circuit wire shall be soft drawn copper, number 12 minimum size, with 600-volt type THW, THWN or THHN insulation. Wire shall conform to the latest specifications. Wire shall be suitably protected from weather and damage during storage and handling and in first class condition when installed. Splices shall be made using Scotchlok, Ideal wire nut, or equal.

## 2.4 DEVICES

- A. Wiring devices shall match existing electrical installation or approved, prior to installation, unless existing devices do comply with current code requirements. Notify Owner in the event that non-compliant devices are present that require upgrade.

## PART 3 - EXECUTION

## 3.1 PREPARATION

- A. Inspect condition of existing fixtures, wiring, and conduit. Notify Owner of any damaged or unsatisfactory materials. Upgrade materials to conform to local codes as instructed by Owner.
- B. Locate all electrical services and disconnect prior to work performed in accordance with this section.

## 3.2 OUTAGES

- A. Keep outages to occupied areas to a minimum and pre-arrange all outages with Owner. Requests for outages shall state the specific dates and hours and the maximum duration, with the outages kept to these specific times. The Contractor will be liable for any damages resulting from unscheduled outages or for those not confined to the pre-approved times.
- B. Temporary wiring and facilities, if used, shall be removed and the site left clean before final acceptance.

## 3.3 SUPPORT

- A. Properly and adequately support all electrical equipment, fixtures, panels, outlets, etc. Each fastening device and support shall be capable of supporting not less than four times the ultimate weight of the object or objects fastened to our suspended from the building structure. Supports shall provide proper alignment and leveling of fixtures and equipment.

## 3.4 INSTALLATION

- A. Disconnect existing power supply and extend conduits as required for appropriate height and proper flashing installation.
- B. Mount all conduits and junction boxes to solid surfaces, using proper fasteners and clamping devices that have been approved. Junction boxes shall be in accessible locations.
- C. Install materials per manufacturer's instructions. Connect to existing wiring as required. All components exposed to weather shall be weatherproof.

## 3.5 CLEANING

- A. General: Clean all dirt and construction dust and debris from all electrical facilities and equipment. Touch up paint where finish has been damaged by this work.

3.6 OPERATION TEST

- A. Prior to acceptance of completed project, operate all electrical systems for a period of at least five days of eight hours each to demonstrate fulfillment of the requirements of the contract.

END OF SECTION 26 05 00