



Oregon State University

REQUEST FOR PROPOSAL (RFP) #2020-000573

UNIVERSITY HOUSING & DINING SERVICES (UHDS) ROOF REPLACEMENT CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CM/GC)

ISSUE DATE: September 27, 2019

RFP DUE DATE/TIME: October 25, 2019 at 2:00
PM Pacific Time

***Office is closed Noon to 1:00 PM Daily**

MANDATORY PRE-PROPOSAL CONFERENCE:
October 11, 2019 at 2:00 PM Pacific Time at the
West Hall Main Lounge – entrance off of 30th
St. (391 SW 30th St. Corvallis, OR 97331).

QUESTION DEADLINE: October 16, 2019 at 3:00 PM Pacific Time

CONTRACT ADMINISTRATOR:

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AWARD DECISION APPEALS:

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It is the Respondents responsibility to continue to monitor the [OSU Business and Bid Opportunities](#) website for Addenda. Failure to acknowledge any Addenda in the Transmittal Letter may cause your Bid to be considered non-responsive.

OSU standards and policies govern this solicitation ([Procurement Thresholds and Methods, Procurement Solicitations and Contracts](#)) unless otherwise referenced or stated.

1.0 INTRODUCTION

Oregon State University (“OSU” and “Owner”) is conducting a competitive **TWO-STEP** process to retain ONE (1) Construction Manager / General Contractor (CM/GC) for the **UNIVERSITY HOUSING & DINING SERVICES (UHDS) ROOF REPLACEMENT**.

OSU will be accepting sealed proposals at Construction Contracts Administration, Oregon State University, 644 SW 13th Street, Corvallis, Oregon, until 2:00 PM Pacific Time, October 25, 2019 for the project located on the campus of Oregon State University, Corvallis, Oregon. Solicitation documents are available at the [OSU Business and Bid Opportunities](#) website.

A MANDATORY PRE-SUBMITTAL CONFERENCE will be held on October 11, 2019 at 2:00 PM Pacific Time at the West Hall Main Lounge – entrance off of 30th St. (391 SW 30th St. Corvallis, OR 97331). Proposals will not be accepted from those firms who have not had a representative attend the mandatory pre-proposal site visit/walk through. Attendance will be documented through a sign-in sheet prepared by OSU. Representatives who arrive more than five (5) minutes after the start time of the meeting (as stated in this solicitation and by the Owner’s Authorized Representative’s watch) or after the discussion portion of the meeting (whichever comes first) shall not be permitted to sign in and will not be permitted to submit a response to this RFP.

The attached “Sample CM/GC Contract” contains contract terms and conditions applicable to the work, and will form the basis of the final CM/GC contract.

The Oregon Bureau of Labor and Industries Prevailing Wage Rates applicable to this Project will be identified at the time the initial set of construction specifications are made available and are incorporated into the CM/GC sub-bidding efforts for the first Early Work Amendment, or, if no Early Work Amendment occurs, then at the time of the Guaranteed Maximum Price (“GMP”) Amendment. Those rates will then apply throughout the Project.

All proposers must be registered and licensed with the Oregon Construction Contractors Board and have on file with the Construction Contractors Board the required public works bond prior to submitting proposals. Failure to be licensed and have the bond in place will be sufficient cause to reject proposals as non-responsive.

When selected, the CM/GC firm will be a part of a construction team composed of OSU, the architect and other Project consultants through the completion of the Project. The CM/GC firm must be skilled in construction, developing schedules, preparing construction estimates, performing value engineering, analyzing the constructability of alternative designs, studying labor conditions, understanding construction methods and techniques, selecting subcontractors, coordinating gift-in-kind work and materials, coordinating construction processes, managing construction activities in an occupied building, and be capable of providing assistance to OSU in procuring long lead equipment and materials. The CM/GC will be expected to communicate the construction-related aspects of the Project to all team members throughout the design and construction phases. In addition, the CM/GC will be familiar with the local labor and sub-contracting market and be capable of working and contracting directly with sub-contractors to generate viable pricing.

OSU will require the successful CM/GC to comply with OSU Standards, policies, rules and procedures requiring good faith efforts in subcontracting with minority, women, emerging small business or service-disabled veteran owned business enterprises.

Compensation will be based upon certain fees and reimbursable costs, as set forth in the Sample CM/GC Contract attached, including use of a GMP and the form of GMP Amendment included with the Sample CM/GC Contract. The successful CM/GC will provide "Preconstruction Services." Preconstruction Services include, but are not necessarily limited to, constructability reviews, value engineering, cost estimating, development of phasing programs and development of the GMP. Related contracting provisions, which will serve as the basis for the final agreement, are contained in Exhibits A through E as detailed in Section 19.0 of this RFP entitled "Enclosures."

The sample contract may contain certain notes or alternative provisions. Those alternative provisions will be included at the sole discretion of OSU. OSU will use the current OSU General Conditions for Public Improvement Contracts (the "OSU General Conditions") as the basis for the final agreement. The OSU General Conditions, and the Supplemental General Conditions contained in the Enclosures, shall apply to the work of all subcontractors and to the work of the CM/GC to the extent that they do not conflict with the CM/GC Contract.

If OSU is unable to successfully agree upon a GMP or contract terms or conditions for the Project with the highest scoring proposer, OSU may terminate discussions and enter into discussions with the next highest scoring proposer. If for any reason the parties are not able to reach agreement on a GMP or contract terms or conditions, OSU will be entitled to obtain services from any other source available to it under the relevant contracting laws and OSU Standards and policies, including negotiating with the next highest scoring proposer to enter into a CM/GC Contract specifying a mutually agreed upon GMP.

If OSU chooses not to continue the CM/GC Contract beyond the completion of Preconstruction Services, the CM/GC's compensation will be limited to the costs of the Preconstruction Services, not exceeding the maximum not-to-exceed fee stated in the Contract.

The prospective CM/GC should note that OSU will also require as a part of CM/GC Preconstruction Services a full description of items that will be contained in the proposed GMP and the activities that make up the proposed GMP. After preparation, a complete copy of the GMP estimate will be provided to OSU.

OSU will monitor the competitive processes used to award subcontracts by the CM/GC in accordance with the Sample CM/GC Contract. The following minimum requirements will be used:

- a. The CM/GC will solicit sealed bids or quotes from subcontractors according to the terms of the Sample CM/GC Contract in a manner consistent with the open and competitive nature of public procurement, taking into account industry practice, and make award decisions based on cost or, if not cost, on another identified alternative competitive basis as approved in advance by OSU. When there are single fabricators of materials or special packaging requirements for subcontractor work other than low price, advance approval of the alternative selection criteria by OSU will be required.
- b. The CM/GC will use its best efforts to obtain at least three bids or quotes for the particular work to be subcontracted. OSU may make exceptions to this practice in advance of the procurement.

2.0 PROJECT DESCRIPTION

OSU is seeking a CM/GC to complete three roofing projects during the summer of 2020 as project schedules, budgets, and labor availability allows. OSU retains the right to prioritize, add, and remove building projects after schedule and budget information is provided for individual projects by the successful proposer.

The roofs to be replaced are:

1. Buxton Hall
2. Hawley Hall
3. West Hall

The project will include:

1. The installation of a new flat roof system as specified by the architect
2. The installation of life-safety and access improvements; to include railings and ladders.
3. Any modifications or accommodations to the mechanical and electrical systems.

Work on these roofs may begin as early as late-spring 2020 and must be completed during the summer and fall during the appropriate weather seasons. During construction, the contractor will be required to provide protection of OSU building assets and operations during abnormal weather fluctuations. The CM/GC will also be expected to accommodate the presence of occupants in the facilities during construction.

3.0 DESIGN TEAM

McBride Architecture will be the project architect.

3.0 ENERGY EFFICIENCY

The project will be designed and constructed to meet OSU's requirements for sustainable development and must meet the state building code for energy efficiency.

5.0 BUDGET

The construction budget for this Project is currently estimated to be \$3 Million. This budget will include all materials and labor costs, a design estimating contingency, escalation, the CM/GC fee, general conditions costs, limited CM/GC reimbursable expenses, payment and performance bonds and the CM/GC contingency.

6.0 SCHEDULE

The submittals for this RFP will be evaluated/scored by a qualified committee which may include other non-scoring members who serve as advisors but do not score qualifications statements or interviews.

Interviews of short-listed finalists will occur following the receipt, review and scoring of the proposals. In addition, further investigation of references may occur following the committee scoring in a one-step selection process or interviews of the short listed finalists in two-step selection process.

Schedule is as follows:

September 27, 2019	Issue RFP
October 11, 2019 at 2:00 PM Pacific Time	Mandatory Pre-Submittal Conference West Hall West Entrance
October 16, 2019 at 3:00 PM Pacific Time	Question Deadline
October 22, 2019	Issuance of Final Addenda (if necessary)
October 25, 2019 at 2:00 PM Pacific Time	Submittal Due Date/Time
Week of November 4, 2019	Notification of Finalists (short list)
Week of November 11, 2019	Interviews (TENTATIVE)
Week of November 18, 2019	Estimated Notice of Intent to Award
December 13, 2019	Estimated Contract execution
March 6, 2019	Estimated Date of GMP

7.0 INSTRUCTIONS TO OFFERORS

Your proposal must be contained in a document not to exceed **twenty (20) pages (double sided preferred on hard copy)** including pictures, charts, graphs, tables and text you deem appropriate to be part of OSU's review of your proposal. Resumes of key individuals proposed to be involved in this Project are exempted from the twenty (20) page limit and must be appended to the end of your proposal. No supplemental information to the twenty (20) page limit will be allowed. Appended resumes of the proposed key individuals, along with a Transmittal letter, table of contents, front and back covers, references and blank section dividers will not be counted in the twenty (20) page limit.

Your proposal must follow the format outlined below and include a Transmittal/Cover Letter signed by an officer of your firm with the authority to commit the firm. Make sure to include contact information including email for communication purposes and acknowledge your receipt of all solicitation addenda.

The proposal must be submitted in a soft-bound (no three-ring binders) format with page size of 8 ½ x 11 inches. No fold-outs other than one fold out Project schedule and one site logistics plan (not to exceed 11 x 17 inches each) may be included. The basic text information should be presented in standard business font size, and reasonable (no less than one-inch) margins.

OSU may reject any proposal not in compliance with all applicable OSU solicitation procedures and requirements, and may cancel this solicitation or reject for good cause, all proposals upon a finding by OSU that it is in the public interest to do so.

Note that throughout this procurement, OSU will not accept proposals that require OSU to pay the cost of production or delivery.

OSU is an AA/EEO employer.

Telephone, facsimile, or electronically transmitted submittals will not be accepted. Proposals received after the closing date and time will not be considered.

8.0 PROPOSAL EVALUATION

The written response to this RFP is the first step in a two-step process in the selection of a Construction Manager/General Contractor for this Project. The proposals received in response to this RFP will be evaluated by the selection committee with the top scoring firms being invited to participate in on-site interviews.

Interviews will include a **TWENTY-FIVE (25) minute** presentation period, immediately followed by a separate **TWENTY-FIVE (25) minute** Q&A session.

After all of the interviews are completed, the members of the selection committee will discuss the strengths and weaknesses of the interviewed finalists. The members of the selection committee will then score the interviewed finalists based on all information received, presented and heard during the interviews. Final scoring will be based on finalist's response to questions during the interview stage, and through that response, how well each firm can meet the Project and University needs. The firm that has the highest overall interview score will be deemed the Apparent Successful Proposer and enter into negotiations for a contract.

Final scoring of the Interviews will be **separate and not cumulative** from the short-listing.

9.0 EVALUATION CRITERIA

The following questions constitute the evaluation criteria for the selection committee to score proposals. Respond to each criterion in numerical order. For ease in scoring, provide tabs keyed to each of the following criteria numbers. Indicate in writing the following information about your firm's ability and desire to perform this work.

1. Project Management – 30 points

Describe your firm's processes for managing multiple projects including how you will manage construction teams in order to ensure that the projects are completed safely, on schedule and within the contract budget and with the high quality expected by OSU. Provide a description of your processes for managing changes in construction, including your proposed methods that will mitigate construction change orders and construction claims.

Weather factors and the return of students for fall term are large incentives for OSU to have this work substantially completed as soon as possible. Describe your firm's ability and approach to complete the selected roofing projects within a reasonable schedule that will minimize negative impacts to our building assets and campus community. Specifically, speak to your firm's mitigation plan for inclement weather and for the increase in campus occupants expected with the start of fall term on September 23, 2020.

Describe your firm's approach to the management and administration of on-site construction activities for this Project. Considering the work will be at numerous campus locations, address your approach to mobilization, construction staging, site access, vehicular circulation, pedestrian circulation, noise, material storage, on site offices, trash/recycling, security, temporary toilet facilities and utilities and other related factors. Also, describe how your firm will work on the OSU campus to mitigate construction delivery, and construction activities on our students, faculty, staff, and visitors.

2. Proposed Work Plan/Schedule – 25 points

Describe your firm's planning, scheduling, phasing, and project monitoring skills and processes, including how the Project schedule will be monitored and time optimized for this Project. Describe your firm's planned approach to the procurement and construction for multiple sites included in this Project. Include a one page (20-30 activities) proposed Project schedule indicating procurement, mobilization, and construction.

3. Key Personnel – 20 points

Identify the personnel in your firm assigned to this Project. Provide concise descriptions of their experience that you believe will be relevant to this Project. OSU is particularly interested in experience relative to managing multiple construction sites simultaneously on a university campus. Use specific examples, including the role of your key proposed personnel on past projects and explain their responsibilities for this Project. Describe each key person's knowledge of regional/local subcontractors/material suppliers specific to roofing replacement and associated work, and how this knowledge will be beneficial to OSU and this Project. For all proposed personnel, identify the length of their employment with your firm, their responsibilities proposed for this Project, and their primary office location during the construction phase of the Project. Indicate the percentage of individual personnel time commitment for this Project during the preconstruction and construction phases. Include your proposed management organization chart for the Project.

4. Specific Project Experience – 20 points

This project consists of multiple roof replacements that will include MEP and structural work. Identify your firm's experience managing multiple campus locations and buildings that are to remain occupied during construction and how you have addressed the associated challenges. Also identify experience specific to the following work types: roofing replacement, coordination of extensive MEP work, and work on buildings within a historic district.

5. Cost Control/Risk Management Methods - 20 points

Describe your firm's methodology and experience with cost and constructability risk management and risk mitigation evaluations/analyses. Identify successful experiences or unique services you offer in these areas. Describe how your firm will work with the design team to successfully implement the construction documents and specifications throughout the project. Describe in detail how your firm will manage and communicate ongoing regular construction costs and budget status with the Owner and the Owner's design team. Describe in detail your processes to develop project budgets, and the specific project controls you will employ to control costs during construction.

6. CM/GC Fee/Preconstruction Services Fee (10 Points)

Provide your firm's **CM/GC Fee as a percentage of the Estimated Cost of the Work** for this Project. This fee shall cover, at a minimum, the Construction Management elements and Costs Excluded from Cost of the Work, as specified in the CM/GC Contract and specifically identified in the Direct Costs/ General Conditions Work Costs Matrix at Exhibit C ("**Matrix**"). Items identified in the Matrix as applicable to the CM/GC Fee shall not be reimbursed as General Conditions Work ("**GC Work**"). GC Work means (i) that portion of the Work required to support construction operations that is not included within overhead or general expense but is specifically identified as GC Work as identified in the Matrix, and (ii) any other specific categories of Work approved in writing by OSU as forming a part of the GC Work. See the attached Sample CM/GC Contract for details.

- i. The Matrix is included in the RFP as guidance in developing the CM/GC Fee and understanding which items will be considered a direct cost of the work or GC Work costs and which items are not reimbursable, but which will be recovered through the CM/GC Fee. After contract award and prior to construction work being performed under the first Early Work Amendment or the GMP Amendment, as applicable, the maximum not-to-exceed amount for General Conditions Work items for the Project will be established and set forth in the applicable amendment. **(Maximum of 5 of the 10 Points available)**

Provide a **separate Fee Proposal for Preconstruction Services** on a time and materials cost reimbursement basis up to a maximum not-to-exceed amount. **(Maximum of 5 of the 10 Points available)**

NOTE: Formula for scoring Fee Points will be as follows: Lowest Fee for each of the price related items will receive full points with higher cost price related items receiving proportionally lower points according to this formula:

$$\text{(Low Fee or Fee\%/ Fee or Fee\%)} \times \text{Points Available}$$

7. Firm Background – 10 points

Provide a brief description of your firm, your firm's history, and your firm's business philosophy including the fundamentals that you believe have been key to your success. Include your firm's business management organizational chart (as distinguished from a proposed organizational chart specific to this Project). List the major projects (>\$5M) currently under contract with your firm, your personnel for those projects if the personnel are also proposed for this Project, and the stage of completion for those projects if they include firm personnel proposed for this Project.

8. Workforce Diversity Plan – 10 points

Provide a description and identification of Minority Business Enterprise (MBE), Women Business Enterprise (WBE) or Emerging Small Business (ESB) certifications for your firm and a description of your nondiscrimination practices. Provide historical information on MBE, WBE or ESB Joint Ventures, subcontracting or mentoring plan, and utilization history for projects completed by your firm within the past three (3) years.

Provide a narrative description of your current workforce diversity program/plan, and the plan for obtaining subcontracting, consulting, and supplier diversity for this Project. Include a description of the outreach program or plan, including a schedule of events and specific steps that will be taken to maximize broad based and inclusive participation and the plan to provide mentoring, technical or other business development services to subcontractors needing or requesting such services. The contractor will perform the Work with respect to diversity according to the means and methods described in the workforce plan described in the response, unless changes are requested and approved in writing in advance by OSU or are required by applicable laws, ordinances, codes, regulations, rules or standards.

9. Sustainability - 10 points

Describe your firm’s regular sustainable construction practices. Include information on previous projects where LEED sustainability measures were important to the client. The projects that constitute this RFQ will not be required to be LEED certified, but will need to demonstrate sustainable practice.

10. Safety – 10 points

Provide the following safety information relative to Oregon or Pacific Northwest work experience. If you are a division of a larger corporation doing business outside the Pacific Northwest, your response should reflect only Pacific Northwest or Oregon experience.

- a) Experience Modification Rate (EMR) for each of the last five years.
- b) Lost Time and Recordable Incident Rates for each of the last five years.
- c) OSHA fines for each of the last five years (including any fines initially imposed, but later rescinded). Include a brief summary and amount of each fine.
- d) Your corporate safety philosophy and approach including a description of how this philosophy is implemented from senior management to all building trades workers.

10.0 INTERVIEWS AND OPTIONAL REFERENCE CHECKS

INTERVIEWS (50 POINTS)

- Interviews will be conducted to aid in determining the Apparent Successful Proposer. Information regarding the Interviews will be provided to the short-listed firms following the initial review and scoring. Final scoring of the Interviews will be **separate and not cumulative** from the short-listing.

OPTIONAL REFERENCE CHECKS (10 POINTS)

- Provide three (3) professional references from similar projects, including the project name, the name of the design team, key personnel for whom this reference is relevant, and contact name and phone number. Information from references may be utilized for the evaluation of any of the above criteria. References shall only be checked and scored for interviewed firms.

OSU may check with these references or other references associated with past work of your firm.

11.0 FINANCIAL RESPONSIBILITY

OSU reserves the right to investigate and evaluate, at any time prior to award and execution of the contract, the submitting firms financial responsibility to perform the anticipated contract. Submission of a proposal will constitute approval for OSU to obtain any credit report information OSU deems necessary to conduct the evaluation. OSU will notify the firms, in writing, of any other documentation required, which may include, but need not be limited to: recent profit-and-loss history; current balance statements; assets-to-liabilities ratio, including number and amount of secured versus unsecured creditor claims; availability of short and long-term financing; bonding capacity and credit information. Failure to promptly provide this information may result in rejection of the submission.

OSU may postpone the award or execution of a contract or selection of finalists in order to complete its investigation and evaluation. Failure of a firm to demonstrate financial responsibility may render it non-responsible and constitute grounds for rejection.

12.0 SUBMISSION

Submit **ONE (1)** copy of your written proposal, along with an electronic version on a thumb drive, to be received by the Due Date/Time listed in this document to:

Shoshana Shabazz
Construction Contracts Administration
Oregon State University
644 SW 13th Street
Corvallis, OR 97333

Telephone, facsimile, or electronically transmitted submittals will not be accepted.

The electronic copy must be sized appropriately for transfer (under 8 mb).

Proposals received after the closing date and time will not be considered.

13.0 REQUEST FOR CLARIFICATION OR CHANGE

All requests for clarification and/or change regarding any information in this RFP must be addressed either in writing or email to Shoshana Shabazz at the address or email listed in this document no later than 3:00 PM Pacific Time on October 3, 2019. If you are unclear about any information contained in this document or its exhibits (Project, scope, format, agreement terms, etc.), you are urged to submit those requests for formal clarification.

14.0 UNIVERSITY SOLICITATION PROCESS OR ACTION APPEALS

Proposers may submit a written appeal of a University solicitation process or action in accordance with OSU Standard 03-015 ([*Procurement Thresholds and Methods, Procurement Solicitations and Contracts*](#)).

15.0 CHANGE OR MODIFICATION

Any change or modification to the specifications or the procurement process will be in the form of an addendum to the RFP and will be made available to all firms by publication on the [OSU Business and Bid Opportunities](#) web site. It is the responsibility of each firm to visit the website and download any addenda. No information received in any manner different than as described herein shall serve to change the RFP in any way, regardless of the source of the information.

16.0 PROPRIETARY INFORMATION

OSU will retain this RFP and one copy of each original proposal received, together with copies of all documents pertaining to the award of a contract. These documents will be made a part of a file or record, which shall be open to public inspection after OSU has announced its intent to award a contract. If a proposal contains any information that is considered a trade secret under ORS 192.345(2), you must mark each trade secret with the following legend: **“This data constitutes a trade secret under ORS 192.345(2), and shall not be disclosed except in accordance with the Oregon Public Records Law, ORS Chapter 192.”**

The Oregon Public Records Law exempts from disclosure only bona fide trade secrets, and the exemption from disclosure applies only “unless the public interest requires disclosure in the particular instance.”

Therefore, non-disclosure of documents or any portion of a document submitted as part of a proposal may depend upon official or judicial determination made pursuant to the Public Records Law.

In order to facilitate public inspection of the non-confidential portion of the proposal, material designated as confidential shall accompany the proposal, but shall be readily separable from it. Prices, makes, model or catalog numbers of items offered, scheduled delivery dates, and terms of payment shall be publicly available regardless of any designation to the contrary. Any proposal marked as a trade secret in its entirety shall be considered non-responsive and shall be rejected.

17.0 PROJECT TERMINATION

OSU is seeking to award a contract to a CMGC for all phases; however, OSU reserves the right to terminate the Project or contract during any phase in the Project.

18.0 CERTIFICATION OF NONDISCRIMINATION

By submission of a proposal, the proposer certifies under penalty of perjury that the proposer has not discriminated against minority, women, emerging small business or service-disabled veteran owned business enterprises in obtaining any required subcontracts.

19.0 ENCLOSURES

1. 95% Review Buxton Hall Reroofing Project Manual
2. 95% Review Buxton Hall Reroofing Drawings
3. Hawley Hall Reroofing Project Manual
4. Hawley Hall Reroofing Drawings
5. 95% Review West International House Reroofing Project Manual
6. 95% Review West International House Reroofing Drawings

Documents can also be found at:

<https://oregonstate.box.com/s/usgyr1xmowkh5kjcw4384nyy0ohowlxu>

Sample CM/GC Agreement Form including the following:

Exhibit A – OSU General Conditions for Public Improvement Contracts

Exhibit B – Sample Form of GMP Amendment

Exhibit C – Direct Costs/General Conditions Work Costs Matrix

Exhibit D – OSU Supplemental General Conditions to the Public Improvement General Conditions

Exhibit E – Travel Reimbursement Policy

Attachment 1 - Sample Performance Bond

Attachment 2 - Sample Payment Bond

END OF RFP



PROJECT MANUAL

**OREGON STATE UNIVERSITY
UNIVERSITY HOUSING & DINING SERVICES
BUXTON HALL REROOFING PROJECT**

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January 2019

Project Number: 18016

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95% REVIEW

DIVISION 2 - SITE WORK

024110 Selective Demolition

DIVISION 3 – NOT USED

DIVISION 4 – NOT USED

DIVISION 5 – NOT USED

DIVISION 6 - WOOD AND PLASTIC

060573 Fire Treated Wood

061010 Rough Carpentry

DIVISION 7 - THERMAL AND MOISTURE PROTECTION

075215 SBS Modified Bitumen Roofing (Cold)

075225 SBS Modified Roofing (IRMA)

076200 Flashing and Sheet Metal

079200 Joint Sealers

DIVISION 8 – NOT USED

DIVISION 9 - FINISHES

099100 Painting

DIVISION 10 thru 21 - NOT USED

DIVISION 22 - MECHANICAL

220010 Basic Plumbing

221426 Roof Drains

230000 Basic Mechanical

DIVISION 26 - ELECTRICAL

260000 Basic Electrical

95% REVIEW

DRAWINGS - UNDER SEPARATE COVER

- G0.1 Cover Sheet
- A1.1 Site Plan
- A2.1 Demolition Plan
- A2.1 Roof Plan
- A2.2 Walkway Plan
- A3.1 Elevations
- A8.1 Details
- A8.2 Details
- A8.3 Details

END OF TABLE OF CONTENTS

95% REVIEW

PART 1 - GENERAL

1.01 SUMMARY OF WORK

- A. The Work Contract consists of Demolition, Carpentry, Fall Protection, Roofing, Sheet Metal Revisions, and Sealants, at Buxton Hall on the Oregon State University Campus, Corvallis, Oregon.
- B. Work shall be started on the **day after Commencement, 2019**. The Contract may not be signed prior to approval of the Contractor's Certificate of Insurance by Procurement and Construction Contracting, Oregon State University. Work shall be completed by **September 15, 2019**.

1.02 CONTRACTORS USE OF PREMISES

- A. Contractor shall limit use of the Premises for work and storage to allow for:
 - 1. Owner occupancy, day and night.
 - 2. Public use, day and night.
 - 3. Security.
 - 4. Safe entry and exit for vehicles and pedestrians.
 - 5. Fire egress.
- B. Coordinate all operations with the Owner's Authorized Representative during the construction period.
 - 1. Roofing contractor will access the main roof from the exterior of the building. Each worker shall provide a pair of clean shoes for to be worn whenever the stairs are used. These shoes must not be worn while working on the roof and kept inside the penthouse at the top of the stairs.
 - 2. Structural upgrade contractor will have access to the interior of the building as required to perform his work.
- C. Limit Contractor's employee parking to locations designated at the Pre-construction Conference.

1.03 OWNER OCCUPANCY

- A. The Owner will occupy the Premises during the entire period of construction for the conduct of normal operations. Cooperate with Owner's Authorized Representative in construction operations to minimize conflict and to facilitate the Owner's usage especially in the following areas:
 - 1. Restricted access and parking.
 - 2. Use of stairs.

95% REVIEW

3. Storage space availability.

- B. Conduct operations in such a way to ensure the least inconvenience to the general public, including:
1. Limitations and easements.
 2. Emergency vehicle access.
 3. Building access to the public, day and night

1.04 ASBESTOS AND OTHER HAZARDOUS MATERIAL

- A. The Owner has made a reasonable attempt to locate and identify asbestos or other hazardous material that may be encountered during the course of the Work. Core samples were taken and analyzed, no asbestos was found in the samples.
- B. Information has been included on the plans and specifications for the Work, or is available from the Owner's Authorized Representative.
- C. If the Contractor observes or suspects the existence of asbestos or other hazardous materials in the structure or components of the building, the Contractor shall immediately stop work and notify Facilities Services.
- D. The Owner will arrange for the removal of asbestos or other hazardous materials as required by Facilities Services personnel or by separate contract.
- E. Schedule ten (10) days of slack or "down" time for the removal of hazardous materials without penalty to Owner for the delay of the Contract.

1.05 LEAD BASED PAINT

- A. We do not anticipate the removal of lead based paint in this project. If lead base paint is encountered notify the Owner's Authorized Representative.

END OF SECTION

95% REVIEW

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Selective demolition, as indicated.
- B. Removal of existing roofing, flashing and related sheet metal components.
- C. Core samples were taken and tested.**
 - 1. Asbestos was detected in samples from the built-up roof under the EPDM system.**
 - 2. Comply with OSHA and DEQ rules and regulations regarding demolition of asbestos containing materials.
- D. Demolished Metals are the property of the General Contractor. Please consider the value when determining the bid price.

1.02 REFERENCES

- A. 29 CFR 1926.1101. OSHA Occupational Exposure to Asbestos, Construction Industry Standard.
- B. U.S. Environmental Protection Agency National Emissions Standards for Hazardous Air Pollutants (NESHAPS). (Code of Federal Regulations Title 40, Part 61, Subparts A and M.).
- C. AA guide for Meeting DEQ Requirements: Handling Asbestos-Containing Roofing Materials (December 1994).
- D. DOT Regulations 49 CFR 171 & 172.

1.03 SUBMITTAL

- A. Schedule: Detailed schedule of demolition and removal Work.
- B. Shop Drawings: Demolition procedures and removal sequence, locations and construction of barricade, fences and temporary Work.

1.04 SUBSTRATE

- A. Accurately record actual substrate make-up and condition after elements are removed.

95% REVIEW

- B. Document with drawings and photographs.

1.05 QUALIFICATIONS

- A. Demolition Firm: A company with commercial experienced in performing the Work of this section with minimum three years experience.

1.06 REGULATORY REQUIREMENTS

- A. Conform to applicable code for demolition of structures, safety of adjacent structures, dust control, and disposal.
- B. Obtain required permits from authorities.
- C. Conform to applicable regulatory procedures when discovering hazardous or contaminated materials.

PART 2 (Not Used)

PART 3 EXECUTION

3.01 PROTECTION

- A. Conduct Work with minimum interference to thoroughfares; maintain protected egress and access at all times; maintain disabled access.
- B. Do not close or obstruct sidewalks without authorization from the Owner's Authorized Representative.
- C. Protect adjacent building surfaces and property from damage during demolition operations.
- D. Provide and maintain suitable barricades, shelters, lights, and danger signals during the progress of the Work.
- E. If necessary, protect existing sidewalks and curbs with planking.
- F. Close pipe openings with caps or plugs.
- G. Protect existing wiring, circuits, piping, conduits, control systems, from damage during course of Work.

95% REVIEW

- H. Make determination of the existence, location and condition of related utility services.
- I. Arrange Work to minimize interruption of any services. When interruptions are unavoidable, consult Owner and utilities involved; agree in writing upon a mutually satisfactory time and duration.

3.02 PREPARATION

- A. Protect existing landscaping and structures.
- B. Owner will trim trees and shrubbery if required. Coordinate with Owner's Authorized Representative.

3.03 REQUIREMENTS

- A. Conduct demolition to minimize interference with adjacent occupancies.
- B. Dangerous Condition:
 - 1. Cease operations immediately if any structures appear to be in danger.
 - 2. Notify Owner's Authorized Representative.
 - 3. Do not resume operations until directed.

3.04 DEMOLITION

- A. Demolish indicated structures and appurtenances in an orderly and careful manner.
- B. Except where noted otherwise, immediately remove demolished material from site.
- C. Pollution Controls:
 - 3. Use temporary enclosures and other suitable methods to limit dust and dirt rising and scattering in air to lowest practical level.
 - 4. Comply with governing regulations pertaining to environmental protection.
 - 5. Do not use water when it may create hazardous or objectionable conditions.
- D. Clean adjacent structures and improvements of dust, dirt and debris caused by demolition operations.

95% REVIEW

3.05 REMOVAL

- A. Transport demolished materials and dispose of off-site in a legal manner and location.
- B. Cover vehicles used for removal of demolished materials, so as to prevent debris from littering along the disposal route. Retrieve any fallen debris.

3.06 ROOFING SYSTEMS REMOVAL

- A. Completely remove all existing roofing materials down to existing decks.
- B. Ensure that substrate is clean and dry, smooth, free of protruding or loose fasteners and free of foreign material.

3.07 SALVAGE SCHEDULE

- A. General: Demolished material and equipment not designated for salvage becomes Contractor's property; remove promptly from the project site.
- B. Metals: Stainless steel, copper, galvanized and per-coated metals are to be recycled, provide Owner documentation.
- C. Remove, store, and protect the following materials and equipment to be reused:
 - 1. Equipment indicated on drawings.

END OF SECTION

95% REVIEW

PART 1 GENERAL

1.01 SUMMARY

- A Section Includes: Fire retardant treatment for wood, including framing, decking, sheathing and other wood construction, not exposed to weather.
- B Related Sections:
 - 1. Section 061010 - Rough Carpentry.

1.02 REFERENCES

- A ASTM D5516 - Test Method for Evaluating the Flexural Properties of Fire-Retardant Treated Softwood Plywood Exposed to Elevated Temperatures.
- B ASTM D5664 - Test Method for Evaluating the Effects of Fire-Retardant Treatments and Elevated Temperatures on Strength Properties of Fire-Retardant Treated Lumber.
- C ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.
- D AWPA (American Wood-Preservers' Association) Standard C20 - Structural Lumber, Fire Retardant Treatment by Pressure Processes.
- E AWPA Standard C27 - Plywood, Fire Retardant Treatment by Pressure Processes.
- F AWPA Standard P25 - Waterborne Preservatives.
- G AWPA Standard P49 - Fire Retardant Formulations.
- H AWPA Use Category UC1.
- I MS (Military Specification) L-19140E - Lumber and Plywood, Fire-Retardant Treated.
- J NFPA (National Fire Protection Association) 255 - Test Method for Surface Burning Characteristics of Building Materials.
- K UL (Underwriters Laboratories) 723 - Test for Surface Burning Characteristics of Building Materials.

95% REVIEW

L UL Building Materials Directory.

1.03 SYSTEM DESCRIPTION

A Performance Requirements: Provide fire retardant treatment that will perform in accordance with manufacturer's stated performance criteria without defects, damage or failure.

1.04 SUBMITTALS

A Submit in accordance with Section 013300.

B Product Data: Include manufacturer's product sheets.

C Quality Assurance Submittals:

1. Certified test report showing compliance with specified performance characteristics and physical properties. Include in test report certification that fire retardant solution does not contain ammonium phosphate.
2. NER-303 or ICBO ER-5755 indicating flamespread, strength, corrosion and hygroscopic properties.
3. Certification from treatment plant certifying wood treatment applied complies with Dricon treatment.

D Closeout Submittals:

1. Warranty documents specified herein.

1.05 QUALITY ASSURANCE

A Source Quality: Obtain fire retardant treatment from a single manufacturer.

B Wood Treatment Plant Qualifications: Experienced in performing work of this section which has specialized in the treatment of wood similar to that required for this project. When requested, submit certificate indicating qualifications.

C Regulatory Requirements:

1. FHA Minimum Property Standard #2600.
2. HUD Materials Release 1261.

D Testing: Testing on fire performance, strength and corrosion properties of fire retardant treated wood; recognized by issuance of a National Evaluation Services Report.

95% REVIEW

E Lumber Treatment Standard: Comply with AWPA Standard C20, current edition and Commodity Specification H of AWPA Use Category System.

F Plywood Treatment Standard: Comply with AWPA Standard C27, current edition and Commodity Specification H of AWPA Use Category System.

1.06 DELIVERY, STORAGE & HANDLING

A Storage: Store materials protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.

1.07 WARRANTY

A Manufacturer's Warranty:

1. Manufacturer's standard warranty document executed by authorized company official.
2. Roof warranty against heat degradation.
3. Warranty Period: 40 years, commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURER[S]

A Arch Wood Protection, or approved equal.

2.02 FIRE RETARDANT TREATMENT

A Product Treatment:

1. Dricon fire retardant treatment, produced by licensed treatment plant.
2. Provide protection against termites and fungal decay, registered for use as wood preservative by EPA.
3. Comply with formulation AWPA P17 FR-1
4. Free of halogens, sulfates and ammonium phosphate.
5. Treated Wood: Flamespread of less than 25 in accordance with ASTM E84.
6. Corrosion Properties: Wood in contact with carbon steel, galvanized steel, aluminum, copper and red brass shall exhibit corrosion rates less than 1 mil per year, when tested in accordance with FS MIL-L-19140, paragraph 4.6.5.2.

95% REVIEW

2.03 RELATED WOOD MATERIALS

- A Wood Materials: Specified under Section 061010.
- B Moisture Content:
 - 1. Lumber: Kiln dried, maximum 19% after treatment.
 - 2. Plywood: Kiln dried, maximum 15% after treatment.

PART 3 EXECUTION

3.01 APPLICATION

- A Fire Retardant Treatment: Apply fire retardant treatment in accordance with applicable code requirements.
- B Compliance: Comply with manufacturer's product data, including product technical bulletins, for fire retardant treatment installation.

3.02 PROTECTION

- A Protect fire retardant treated wood from damage during construction.

END OF SECTION

95% REVIEW

GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Treated wood.
 - a. P.T. Blocking.
 - b. P.T. Plywood.
 - 2. See Section 060573 Fire Treated Wood
 - a. All new wood components must be Fire Treated.
- B. Related Sections:
 - 1. Section 060573 – Fire Treated Wood
 - 2. Section 075215 – SBS Modified Bitumen Roofing (Cold).
 - 3. Section 076200 – Flashing and Sheet Metal.

1.02 REFERENCES

- A. APA (American Plywood Association) - Product Standard PS-1.
- B. WCLIB (West Coast Lumber Inspection Bureau) - Standard Grading Rules No. 17.
- C. WWPA (Western Wood Products Association) - Lumber Standard PS-20.
- D. AWPA (American Wood Preservers' Association) - Book of Standards.

1.03 SYSTEM DESCRIPTION

- A. Design Requirements:
 - 1. PT Plywood at perimeters.
 - 2. Revised equipment curbs.
 - 3. Blocking.
- B. Performance Requirements: Provide products which have been manufactured, fabricated and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Minimum 5 years commercial experience in performing

95% REVIEW

this work, having specialized in installation of work similar to that required for this project. When requested, submit certificate indicating qualification.

- B. Regulatory Requirements: Comply with applicable Building Code requirements.
- C. Pre-Installation Meeting: Conduct meeting with Owner's Authorized Representative to verify project requirements, substrate conditions, manufacturer's installation instructions and warranty requirements.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Delivery:
 - 1. Comply with manufacturer's ordering instructions and lead time requirements; deliver products with identification labels intact.
 - 2. Protect wood from moisture absorption during transportation and storage.
- B. Storage:
 - 1. Store products protected from exposure to harmful weather.
 - 2. Store wood above grade, permit ventilation.
 - 3. Cover with secure, breathable, weather resistant covers.
- C. Handling: Avoid damage to products.

PART 2 PRODUCTS

2.01 LUMBER MATERIALS

- A. Blocking, Insulation Stops and Nailers: Coast Region Douglas Fir, WCLIB construction or No. 2, S4S, Moisture content maximum 19 percent.

2.02 SHEATHING MATERIALS

- A. Plywood Wall Sheathing: APA Rated, $\frac{3}{4}$ inch, Pressure Treated.

2.03 ACCESSORIES

- A. Fasteners: Galvanized steel for exterior, high humidity, and treated wood locations, plain finish elsewhere.
- B. Die Stamped Connectors: galvanized steel.

95% REVIEW

- C. Anchors: Expansion shield and lag bolt type for anchorage to solid masonry or concrete.

2.04 WOOD TREATMENT

- A. Wood Preservative (Pressure Treatment): AWWA Treatment C1 using water borne preservative with 0.25 percent retainage.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Inspection: Verify substrate conditions are acceptable for product installation.
- B. Report to the Owner's Authorized Representative any deviations between Contract Documents and site conditions.
- C. Do not proceed until unsatisfactory conditions have been corrected.

3.02 ADJUSTING

- A. Repair or replace damaged installed products.

3.03 CLEANING

- A. Remove construction debris from project site and legally dispose thereof.

3.04 PROTECTION

- A. Protect installed product and finish surfaces from damage during subsequent construction.

END OF SECTION

95% REVIEW

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Deck preparation.
2. Tapered insulation systems at Roof Areas C, D, E & F and the Raised Steam Pipe Chases in Area A.
3. Cold adhesive applied SBS modified bitumen roofing.
4. Granule surface cap sheet.
5. Splash Blocks (concrete).

B. Related Sections:

1. Section 024110 - Selective Demolition.
2. Section 060573 – Fire Treated Wood.
3. Section 061010 - Rough Carpentry.
4. Section 076200 - Flashing and Sheet Metal.
5. Section 221426 - Roof Drains.
6. Section 230000 - Basic Mechanical.
7. Section 260000 - Basic Electrical.

1.02 REFERENCES

- A. ASTM D41 - Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
- B. ASTM D2178 - Asphalt Glass Felt Used in Roofing and Waterproofing.
- C. ASTM D4586 - Asphalt Roof Cement, Asbestos-Free.
- D. ASTM D5147 - Test Methods for Sampling and Testing Modified Bituminous Sheet Material.
- E. ASTM D5849 - Test Method for Evaluating Resistance of Modified, Bituminous Roofing Membranes to Cyclic Joint Displacement.
- F. ASTM D6163 - Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements.
- G. ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.

95% REVIEW

- H. ASTM E108 - Test Methods for Fire Tests of Roof Coverings.
 - I. ASTM E119 - Test Methods for Fire Tests of Building Construction and Materials.
 - J. ASTM E136 - Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 degrees C.
 - K. NRCA (National Roofing Contractors Association) - Roofing and Waterproofing Manual.
 - L. FM (Factory Mutual) 1-90 for wind uplift and fastening.
 - M. ASHRAE (American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc.) for insulation R-values.
 - N. UL (Underwriters Laboratories) - Roofing Materials and Systems Directory.
- 1.03 SYSTEM DESCRIPTION
- A. Design Requirements: Fully Warranted Class A.
 - B. Performance Requirements: Provide products which have been manufactured, fabricated and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.
- 1.04 SUBMITTALS
- A. Submit in accordance with Section 013323.
 - B. Product Data:
 - 1. Manufacturer's product sheets and installation instructions.
 - 2. Manufacturer's published specifications.
 - 3. Manufacturer's product data sheets for related components.
 - 4. FM approved fastening pattern.
 - C. Shop Drawings:
 - 1. Show layout, profiles, and product components, including anchorage, accessories, finish colors and textures.
 - 2. Insulation and cricket system.

95% REVIEW

- D. Samples: Selection and verification samples for finishes, colors and textures.
- E. Quality Control:
 - 1. Certified independent test reports, showing compliance with specified performance characteristics and physical properties.
 - 2. Evidence of UL and FM approvals.
 - 3. Certificate of Analysis indicating; Product Identification, Date of manufacture, Lot Number, Dimensions & Mass and Physical Properties, typical of Sample in the Appendix at end of this section.
 - 4. Product certificates, signed by manufacturer, certifying products comply with specified performance characteristics and physical requirements.
 - 5. Manufacturer's field reports.
 - 6. Copy of warranty.
- F. Closeout:
 - 1. Project Record Documents:
 - 2. Operation and maintenance data for installed products, including methods for maintaining, and precautions against cleaning materials and methods detrimental to finishes and performance.
 - 3. Warranty documents specified herein.
 - 4. Per Section 017700, Contract Closeout.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: All products furnished by or approved by roofing manufacturer for entire roof assembly.
- B. Installer Qualifications:
 - 1. Minimum 5 years commercial experience in performing this work, having specialized in installation of work similar to that required for this project.
 - 2. Approved by and certified in writing by roofing Manufacturer.
 - 3. Been in continuous business for past 3 years.
 - 4. Completed at least three successful installations of specified materials and systems on projects of similar scope.
 - 5. Provide all personnel trained in application of materials and systems and maintain supervision as required.
 - 6. Foreman: Have at least five years experience supervising the installation of SBS Roof Systems of similar application and scope. Provide evidence in writing if requested by Owner.
 - 7. When requested, submit certificate indicating qualification.

95% REVIEW

- C. Standards: Comply with applicable requirements of NRCA Roofing and Waterproofing Manual.
- D. Regulatory Requirements: Comply with applicable Building Code requirements.
- E. Insulation Fire Performance Characteristics: Provide insulation materials which are identical to those whose fire performance characteristics, as listed for each material or assembly of which insulation is a part, have been determined by testing, per methods indicated below, by UL or other testing and inspecting agency acceptable to authorities having jurisdiction:
 - 1. Surface Burning Characteristics: ASTM E84.
 - 2. Fire Resistance Ratings: ASTM E119.
 - 3. Combustibility Characteristics: ASTM E136.
- F. Underwriter's Laboratories and/or Warnock Hersey tested and listed for a Class A rating when installed on incombustible decks for roof slopes and application shown.
- G. Pre-Installation Meeting: Conduct meeting with Owner's Authorized Representative to verify project requirements, substrate conditions, manufacturer's installation instructions and warranty requirements.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Comply with manufacturer's ordering instructions and lead time requirements; deliver products in original, unopened, undamaged containers with identification labels intact.
- B. Storage:
 - 1. Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
 - 2. Store materials in dry, protected areas.
 - 3. Store roll goods on end. 'Flattened' rolls are unacceptable.
 - 4. Control temperature of storage areas in accordance with manufacturer's instructions.
- C. Handling: Exercise care in handling, loading, unloading and storing products to avoid damage.

1.07 PROJECT CONDITIONS

95% REVIEW

- A. Environmental Requirements:
 - 1. Do not apply materials during precipitation of any form (rain, dew, ice, frost, snow), or if such precipitation is imminent.
 - 2. Do not apply materials when water in any form (i.e., rain, dew, ice, frost, snow) is present on deck.
 - 3. Do not apply materials during ambient temperatures of 40°F and below (including wind chill).

1.08 WARRANTIES

- A. Manufacturer's Warranty:
 - 1. Manufacturer's standard warranty document executed by authorized company official.
 - 2. Single source 20 year combined 10+10 renewable, no dollar limit warranty signed by a corporate officer covering roofing materials, insulation materials and installation of the materials, and related systems. Include all roof related items and installations. Warranty to commence on the Date of Substantial Completion.
- B. Installer:
 - 1. Two (2) years material and labor, from date of Substantial Completion.
 - 2. Warrant all roofing, flashing and roof insulation against defects.
 - 3. Maintain roofed areas in watertight condition during this period.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Siplast:
 - 1. Siplast Paradiene 2030 FR.
 - 2. Or approved equals.

2.02 INSULATION MATERIALS

- A. Area "B" Elevator Penthouse Roof (Metal Deck).
 - 1. Base Layer (mechanically attached): Rigid closed-cell polyisocyanurate foam board minimum 20 psi compressive strength and 2 pcf density, complying with ASTM C591, aged R value of 5.6 per inch of thickness, flame spread rating of 25 (ASTM E84), both sides of board faced with glass fiber

95% REVIEW

- mat; 1.6" thick, 4 feet by 4 feet stock. Supplied or approved by Roofing Materials Manufacturer.
2. Submit Manufacturer approved fastener and fastening pattern.
 3. Overlay Board (adhered). See Overlay Board below.
- B. Area C: Tapered Insulation Assembly (Metal Deck).
1. Base Layer (mechanically attached): Gypsum Roof Board: Silicone treated, glass mat faced, gypsum panel, UL Class A, FMRC 90 psf uplift, thickness ½" at exterior stair landing roofs. GP DensDeck, Prime.
 2. Submit Manufacturer approved fastener and fastening pattern.
 3. Tapered Insulation Units (adhered): Rigid closed-cell polyisocyanurate foam board minimum 20 psi compressive strength and 2 pcf density, complying with ASTM C591, aged R value of 5.6 per inch of thickness, flame spread rating of 25 (ASTM E84), both sides of board faced with glass fiber mat; tapered ¼ inch per foot, 4 feet by 4 feet stock. Supplied or approved by Roofing Materials Manufacturer.
 4. Overlay (adhered): See Overlay Board, below
- C. Areas D: Tapered Insulation Assembly (adhered to concrete deck).
1. Base Layer (adhered): Rigid closed-cell polyisocyanurate foam board minimum 20 psi compressive strength and 2 pcf density, complying with ASTM C591, aged R value of 5.6 per inch of thickness, flame spread rating of 25 (ASTM E84), both sides of board faced with glass fiber mat; 1" thick, 4 feet by 4 feet stock. Supplied or approved by Roofing Materials Manufacturer.
 2. Tapered Insulation Units (adhered): Rigid closed-cell polyisocyanurate foam board minimum 20 psi compressive strength and 2 pcf density, complying with ASTM C591, aged R value of 5.6 per inch of thickness, flame spread rating of 25 (ASTM E84), both sides of board faced with glass fiber mat; tapered ⅛ inch per foot, 4 feet by 4 feet stock. Supplied or approved by Roofing Materials Manufacturer.
 3. Overlay (adhered): See Overlay Board, below.
- D. Overlay (Separation) Board:
1. Gypsum Roof Board: Silicone treated, glass mat faced, gypsum panel, UL Class A, FMRC 90 psf uplift, thickness ¼". GP DensDeck, Prime.
- E. Fiber Crickets: Tapered Perlite ½" per ft.
- F. Fiber Cants: Rigid perlite board, 2 or 3 inch minimum, as shown.

95% REVIEW

2.03 ROOF MEMBRANE MATERIALS

- A. Membrane Properties:
 - 1. Passes cyclic fatigue resistance for new material per ASTM D5849 (minimum 500 cycles @ 14 deg. F).
 - 2. Passes cyclic fatigue resistance for over aged material per ASTM D5849 (minimum 200 cycles @ 14 deg. F).
 - 3. Passes ASTM E108, for class A fire rating.
- B. Roof Membrane Materials:
 - 1. Base Sheet: Asphalt coated fiberglass base sheet; Siplast Parabase.
 - 2. Base Ply Sheet: Random glass mat reinforced SBS modified asphalt sheet, minimum thickness 87 mils, smooth surface; Siplast Paradiene 20.
 - 3. Top Ply Sheet: Random glass mat reinforced SBS modified bitumen, minimum thickness 94 mils., granule surfaced, Color A-9 Gray, fire rated; Siplast Paradiene 30 FR.
- C. Reinforcing Sheet: Random glass mat reinforced SBS modified bitumen, minimum weight 62 pounds per 100 square feet; Siplast Paradiene 20 SA.
- D. Flashing Sheet: Granule surfaced, fiberglass or polyester reinforced SBS modified bitumen; Siplast Paradiene 40 FR.
- E. Cold Adhesive: SFT Adhesive.
- F. Flashing Cement: ASTM D 4586, Type II PA-828 Flashing Cement.

2.04 ACCESSORIES

- A. Fasteners:
 - 1. Corrosion resistant and cut resistant.
 - 2. Approved by Roofing Materials Manufacturer.
- B. Overlay Board Adhesive: Para-Stik.
- C. Walkway Pads: Modified bitumen coated polyester fabric with contrasting color granule surface. Siplast Paratread.
- D. Pipe Flashings: Four pound de-silverized lead.
- E. Plastic Cement: ASTM D 4586, Type II.

95% REVIEW

- F. Asphalt Primer: Comply with ASTM D41.
- G. Sealant: In contact with roof membrane materials, neoprene as approved by membrane Manufacturer.
- H. Pitch Pan Grout: Non-metallic type; Upson. Target acceptable.
- I. Pitch Pan Sealant: Two part chemical curing polyurethane base, black pitch pocket sealant.
- J. Liquid Applied Flashing System: ParaPro 123 Flashing System.
- K. Mineral Granules: Armor Gray to match top ply sheet granules.
- L. Fall Protection Anchors: Guardian Fall Protection, CB 18 Series Anchors or approved equal.
- M. Warning Line: Tremco AlphaGuard MT System. Base Coat and Safety Yellow Top Coat. Apply 3 inch wide lines. Mask to prevent seepage and obtain straight lines. Or approved equal.
- N. Pipe Supports: Miro; RAH Series Supports.
- O. Cleaning Agent: TSP (trisodium phosphate).
- P. Metal Flashings: Specified under Section 076200.
- Q. General: Provide all accessory products required for a complete and proper roofing system.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Make investigations as to conditions that will be encountered in performing Work.
- B. Inspection: Verify substrate conditions are acceptable for product installation in accordance with manufacturer's instructions.

95% REVIEW

- C. Report to the Owner's Authorized Representative any deviations between Contract Documents and site conditions.
- D. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Notify the Owner's Authorized Representative at least 48 hours prior to any roofing Work.
- B. Protection:
 - 1. Provide temporary coverings and protection of adjacent work areas.
 - 2. Provide tarps or plastic sheeting to protect opened roofs and flashings and to prevent entrance of moisture into existing structure, until new roof is in a watertight condition; have handy in case of emergency.
 - 3. Do not open up more roof surface than can be covered and/or protected in event of sudden rainfall.
 - 4. Ensure that bitumen will not enter the building interior.
- C. Surface Preparation:
 - 1. Existing Roofing Removal: Specified under Section 024110 - Selective Demolition.
 - 2. Substrate: Ensure surfaces are clean and dry, smooth, free of fins, raised edges, sharp edges, protruding or loose nails and free of foreign material.
 - 3. Prepare surfaces and details in accordance with manufacturer's instructions.
 - 4. Replace existing sheet metal counter flashings as shown. Prepare substrates as required to receive new material.

3.03 INSULATION INSTALLATION

- A. Mechanically fasten base layer and tapered insulation at metal decks.
- B. Adhere base layer and tapered insulation at concrete decks.
- C. Adhere overlay board to polyiso insulation.

3.04 MEMBRANE INSTALLATION

- A. Roofing Membrane Plies:

95% REVIEW

1. Install sheathing paper and base sheet over wood deck. Lap each side-lap minimum 4", and end lap 6". Fasten to meet FM 1-90 Wind Uplift.
 2. Adhere base ply sheet to overlay board.
 3. Install membrane in accordance with manufacturer's application instructions, immediately following insulation assembly as a continuous operation where applicable.
 4. Install membrane immediately following insulation assembly, as a continuous operation.
 5. At low slope roofs, lay all plies of roofing free of wrinkles, creases or fish-mouths; at right angles to slope of deck.
 6. Lay sheets directly into adhesive, behind applicator. Exert sufficient pressure during application to eliminate air pockets.
 7. Fully bond sheets to prepared substrate, and to each other, with minimum 3 inch side and 6 inch end laps.
 8. Do not stack lap seams.
 9. All plies nominal 1½ gallons per 100 square feet of adhesive; total coverage, leaving no voids.
 10. Set each ply sheet in solid uniform coating of adhesive. Laps: totally sealed, avoid buck water laps.
 11. Fully bond top ply sheet to ply sheet surface, with minimum 3 inch side and 6 inch end laps.
- B. Roofing Membrane Details:
1. Prime all metal flanges and concrete and masonry surfaces with uniform coating of asphalt primer.
 2. Provide continuous reinforcing sheet in all waterways, including valleys and crickets.
 3. Pay particular attention to manufacturer's seam sealing instructions.
 4. Step in T-joints; fully sealed and without voids. (Other methods to improve T-joint seal include 45 degree cut and finishing mopping at joint area).
 5. At end of day's Work or when precipitation is imminent, provide water cut-off at open edges. Use adhesive or plastic cement and non-porous roofing felts, constructed to withstand protracted periods of service. Completely remove cut-offs prior to resumption of roofing.
- C. Granule Surface Cap: Fully bond top ply sheet to ply sheet surface, with minimum 3 inch side and 6 inch end laps.
- D. Flashings:
1. Bridge all junctures of vertical and horizontal surfaces with 45 degree cant

95% REVIEW

- strips.
 - 2. Install reinforcing sheet and flashing sheets as shown.
 - 3. Secure top edge of flashing sheets at vertical surfaces at 8 inches on center using fasteners appropriate to substrate.
 - 4. Provide corner patches or folded corners at base flashing corners. Blind cut corners are not acceptable.
 - 5. Apply granules at all laps to cover and protect all exposed adhesive.
- E. ParaPro 123 Flashings:
- 1. Prepare surface for application.
 - 2. Mask area.
 - 3. Apply catalyzed resin at a rate of 0.19 kg.sf.
 - 4. Embed fleece before resin sets up, no air pockets.
 - 5. Apply second layer of catalyzed resin, completely saturate fleece at a rate of 0.12 kg.sf.
 - 6. Remove masking.
- F. Install new primed lead flashing at all pipe penetrations. Set flange in plastic cement on top of base sheet. Provide reinforcing sheet.
- G. Install new primed lead flashing in plastic cement and install reinforcing sheet at drain sumps as shown.

3.05 FIELD QUALITY CONTROL

- A. Inspection:
- 1. Technical representative of roofing manufacturer: Periodically observe Work; observe deck preparation, general installation procedures.
 - 2. Technical representative: Perform a punch list inspection of completed roofing, indicating items in need of attention, including conformance to manufacturer's instructions and Contract Documents; provide documentation.
 - 3. Work shall not proceed until such observations have been made and conditions have been approved in writing by technical representative.

3.06 ADJUSTING

- A. Repair or replace damaged installed products.

3.07 CLEANING

95% REVIEW

- A. Remove temporary coverings and protection of adjacent work areas.
 - 1. Clean installed products in accordance with manufacturer's instructions prior to Final Completion. Remove excess asphalt and adhesives from finished surfaces.
 - 2. Remove equipment from site.
 - 3. Remove construction debris from site and legally dispose thereof.
 - 4. Leave job site in clean condition.

3.08 PROTECTION

- 1. Protect installed product and finish surfaces from damage during subsequent construction.

APPENDIX ON FOLLOWING PAGE

95% REVIEW

**SIPLAST
 CERTIFICATE OF ANALYSIS**

DATE: 06/05/2000 LOT NUMBER : Q-2 157 1001-5012
 MATERIAL TYPE: Paradiene 30 FR White

DIMENSIONS & MASS

	<u>MINIMUM SPECIFICATION</u>	<u>AVERAGE TESTED VALUE ±STANDARD DEVIATION</u>	<u>ACTUAL MINIMUM</u>
LENGTH (ft.):	33.5	33.6 ± .0	33.5
WIDTH (in.):	39.0	39.4 ± .0	39.4
THICKNESS AT SELVAGE (mils):	94	100 ± 2.8	96
TOTAL THICKNESS (mils):	N/A	133 ± 4.0	126
WEIGHT (lbs/roll):	90	95.9 ± 2.2	91.3
SELVAGE WIDTH (in.):	2.2	2.5 ± .1	2.4

PHYSICAL & MECHANICAL PROPERTIES¹

	<u>SPECIFICATION</u>	<u>AVERAGE TESTED VALUE ±STANDARD DEVIATION</u>
LOW TEMP. FLEXIBILITY (°F):	-13	-13 ± 0.0
GRANULE EMBEDMENT (avg. grams loss/sample):	1.50max	.6 ± .2
BREAKING LOAD (lb/in.):	30avg	36 ± 2.9
ULTIMATE ELONGATION ² (%):	55avg	61 ± 2.5
COMPOUND STABILITY (°F):	248	248 ± 0.0
DIMENSIONAL STABILITY (%):	n/a	
RESISTANCE TO THERMAL SHOCK ³ (%):	n/a	

¹Tested in Accordance with ASTM D-5147
²Defined as the point on the load-elongation curve where the load value has decreased to 5% of the maximum value obtained.
³Tested according to UEAtc (Union of European Agreement for technical construction)



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END OF SECTION

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PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Deck preparation.
2. SBS modified bitumen roofing.
3. Drainage Course.
4. Extruded Polystyrene Roof Insulation system.
5. Aggregate Ballast Surface.
6. Paver Walkways.
7. New Elevator Penthouse access ladder.
8. New Crossover Stair.

B. Related Sections:

1. Section 024110 - Selective Demolition.
2. Section 061010 - Rough Carpentry.
3. Section 076200 - Flashing and Sheet Metal.
4. Section 221426 - Roof Drains.

1.02 REFERENCES

- A. ASTM D41 - Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
- B. ASTM D2178 - Asphalt Glass Felt Used in Roofing and Waterproofing.
- C. ASTM D4479 - Asphalt Roof Coatings - Asbestos-Free.
- D. ASTM D4586 - Asphalt Roof Cement, Asbestos-Free.
- E. ASTM D5147 - Test Methods for Sampling and Testing Modified Bituminous Sheet Material.
- F. ASTM D5849 - Test Method for Evaluating Resistance of Modified, Bituminous Roofing Membranes to Cyclic Joint Displacement.
- G. ASTM D6163 - Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements.
- H. ASTM E84 - Test Method for Surface Burning Characteristics of Building

95% REVIEW

Materials.

- I. ASTM E108 - Test Methods for Fire Tests of Roof Coverings.
 - J. ASTM E119 - Test Methods for Fire Tests of Building Construction and Materials.
 - K. ASTM E136 - Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 degrees C.
 - L. ASTM D488 – Specification for Clasification for Sizes of Aggregate for Road and Bridge Construction.
 - M. ASTM C578 – Specification for Preformed, Cellular Polystyrene Thermal Insulation.
 - N. ASTM D1621 - Test Method for Compressive Properties of Rigid Cellular Plastics.
 - O. NRCA (National Roofing Contractors Association) - Roofing and Waterproofing Manual.
 - P. FM (Factory Mutual) 1-90 for wind uplift and fastening.
 - Q. ASHRAE (American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc.) for insulation R-values.
 - R. UL (Underwriters Laboratories) - Roofing Materials and Systems Directory.
- 1.03 SYSTEM DESCRIPTION
- A. Design Requirements: Fully Warranted Class A.
 - B. Performance Requirements: Provide products which have been manufactured, fabricated and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.
- 1.04 SUBMITTALS
- A. Submit in accordance with Section 013323.

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- B. Product Data:
 - 1. Manufacturer's product sheets and installation instructions.
 - 2. Manufacturer's published specifications.
 - 3. Manufacturer's product data sheets for related components.
- C. Shop Drawings:
 - 1. Show layout, profiles, and product components, including anchorage, accessories, finish colors and textures.
- D. Samples: Selection and verification samples for finishes, colors and textures.
- E. Quality Control:
 - 1. Certified independent test reports, showing compliance with specified performance characteristics and physical properties.
 - 2. Evidence of UL Class A and FM Global 1-90 approvals.
 - 3. Certificate of Analysis indicating; Product Identification, Date of manufacture, Lot Number, Dimensions & Mass and Physical Properties, typical of Sample in the Appendix at end of this section.
 - 4. Product certificates, signed by manufacturer, certifying products comply with specified performance characteristics and physical requirements.
 - 5. Manufacturer's field reports.
 - 6. Copy of warranty.
- F. Closeout:
 - 1. Project Record Documents:
 - 2. Operation and maintenance data for installed products, including methods for maintaining, and precautions against cleaning materials and methods detrimental to finishes and performance.
 - 3. Warranty documents specified herein.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: All products furnished by or approved by roofing manufacturer for entire roof assembly.
- B. Installer Qualifications:
 - 1. Minimum 5 years commercial experience in performing this work, having specialized in installation of work similar to that required for this project.
 - 2. Approved by and certified in writing by roofing Manufacturer.
 - 3. Been in continuous business for past 3 years.
 - 4. Completed at least three successful installations of specified materials

95% REVIEW

- and systems on projects of similar scope.
5. Provide all personnel trained in application of materials and systems and maintain supervision as required.
 6. Foreman: Have at least five years experience supervising the installation of SBS Roof Systems of similar application and scope. Provide evidence in writing if requested by Owner.
 7. When requested, submit certificate indicating qualification.
- C. Standards: Comply with applicable requirements of NRCA Roofing and Waterproofing Manual.
- D. Regulatory Requirements: Comply with applicable Building Code requirements.
- E. Underwriter's Laboratories and/or Warnock Hersey tested and listed for a Class A rating when installed on noncombustible decks for roof slopes and application shown.
- F. Pre-Installation Meeting: Conduct meeting with Owner's Authorized Representative to verify project requirements, substrate conditions, manufacturer's installation instructions and warranty requirements.
- 1.06 DELIVERY, STORAGE AND HANDLING
- A. Delivery: Comply with manufacturer's ordering instructions and lead time requirements; deliver products in original, unopened, undamaged containers with identification labels intact.
- B. Storage:
1. Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
 2. Store materials in dry, protected areas.
 3. Store roll goods on end. 'Flattened' rolls are unacceptable.
 4. Control temperature of storage areas in accordance with manufacturer's instructions.
- C. Handling: Exercise care in handling, loading, unloading and storing products to avoid damage.
- 1.07 PROJECT CONDITIONS
- A. Environmental Requirements:

95% REVIEW

1. Do not apply materials during precipitation of any form (rain, dew, ice, frost, snow), or if such precipitation is imminent.
2. Do not apply materials when water in any form (i.e., rain, dew, ice, frost, snow) is present on deck.
3. Do not apply materials during ambient temperatures of 40°F and below (including wind chill).

1.08 WARRANTIES

A. Manufacturer's Warranty:

1. Manufacturer's standard warranty document executed by authorized company official.
2. Single source 20 year combined 10+10 renewable, no dollar limit warranty signed by a corporate officer covering roofing materials, insulation materials and installation of the materials, and related systems.
3. Include all roof related items and installations.

B. Installer:

1. 2 years material and labor, from date of Substantial Completion.
2. Warrant all roofing, flashing and roof insulation against defects.
3. Maintain roofed areas in watertight condition during this period.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Siplast: Paradiene 20 SA 20 PR TG
- B. Or approved equal.

2.02 INSULATION MATERIALS

A. Insulation Assembly:

1. Insulation Units: Extruded Polystyrene, 4 inch thick (6 inch @ paver walkway). Dow Styrofoam Roofmate, R-5 per inch.

2.03 ROOF MEMBRANE MATERIALS

A. Membrane Properties:

1. Passes cyclic fatigue resistance for new material per ASTM D5849

95% REVIEW

- (minimum 500 cycles @ 14 deg. F).
 2. Passes cyclic fatigue resistance for over aged material per ASTM D5849 (minimum 200 cycles @ 14 deg. F).
 3. Passes ASTM E108, for class A fire rating.
- B. Sheet Properties:
1. Minimum 40% elongation at 5% maximum load @ 73 deg. F., per ASTM D5147.
 2. Passes low temperature flexibility @ -13 deg. F. for new material, and 0 deg. F. for over aged material, per ASTM D5147.
- C. Roof Membrane Materials: (*gravel ballast*)
1. Base Ply Sheet: Random glass mat reinforced SBS modified asphalt sheet, minimum thickness 98 mils, minimum weight 72 pounds per 100 square feet, smooth surface; Paradiene 20 SA.
 2. Top Ply Sheet: Polyester mat/fiberglass scrim reinforced SBS modified bitumen, minimum thickness 138 mils at selvage edge, minimum weight 96 pounds per 100 square feet; Paradiene 20 PR TG.
- D. Reinforcing Sheet: Random glass mat reinforced SBS modified bitumen, minimum weight 72 pounds per 100 square feet; Paradiene 20 SA.
- E. Flashing Sheet: Granule surfaced, fiberglass or polyester reinforced SBS modified bitumen; Siplast Paradiene 40 FR.
- F. Cold Adhesive: SFT Adhesive.
- G. Flashing Cement: ASTM D 4586, Type II; PA-828 Flashing Cement.

2.04 ACCESSORIES

- A. Asphalt Primer: Comply with ASTM D41.
- B. Drainage Course: Paradrain Drainage Mat.
- C. Filter Fabric: Non woven Polyester Geotextile Fabric, Hydrotech System Filter SF; Phillips Rufon F38, Dupont Fabrene, International Confil 689H acceptable.
- D. Stone Ballast: Clean, smooth 1 inch to 1½ inch minimum, river washed stone graded to membrane manufacturer's standard specifications and meeting requirements of ASTM C136.

95% REVIEW

- E. Pavers:
 - 1. Walkway: Westile Gibraltar Plaza Paver #1102 or approved.
 - a. 16" x 16" x 1-3/16".
 - b. Compressive Strength: 8,000 psi - ASTM C140
 - c. Water Absorption: 5% max. - ASTM C140
 - d. Flexural Strength: 725 psi. - ASTM C293
 - e. Freeze Thaw: 1% loss of dry weight. - ASTM C67
 - f. Dimensional Tolerance: $\pm 1/16"$ (length, width, height, convex, concave).
- F. Pipe Flashings: Four pound de-silverized lead.
- G. Plastic Cement: ASTM D 4586, Type II.
- H. ParaPro 123 Flashing System.
- I. Sealant: In contact with roof membrane materials, moisture curing, non-slump elastomeric as approved by membrane Manufacturer.
- J. Mineral Granules: To match flashing sheet granules.
- K. Cleaning Agent: TSP (trisodium phosphate).
- L. Roof Access Ladders: IBC & OSHA approved; Cotterman Co. or A-Mezz Industrial Structures, Inc. or approved equal. Fixed Ladder Series FWC.
 - 1. Safety cages are designed to OSHA specifications with flared bottom opening for easy entry for ladders over 10 foot in height.
 - 2. Walk through handrails are made of 1" diameter tubing and spaced 24" apart for convenient pass through.
 - 3. 3/4" round corrugated rungs.
 - 4. 300 lbs. capacity.
 - 5. Cage begins 7' from bottom rung.
 - 6. Powder coated with high gloss polyester powder.
 - 7. Provide shop drawings & color chart for approval.
 - 8. Passover platform and rungs to within 12 inches of each roof.
 - 9. Wall mounted.
 - 10. Concrete Walls Expansion Anchors:
 - a. Powers Fasteners, Power-Stud.
 - b. Five inch (5") embed into masonry.

95% REVIEW

M. Crossover Stairs and Platform:

1. ERECTASTEP.
 - a. Contact Mary Jane Murphy
 - b. Phone Number (425) 264-4857
 - c. Website www.erecastep.com
 - d. Provide Shop Drawing & Calcs
2. or Approved Equal

N. Metal Flashings: Specified under Section 076200.

O. General: Provide all accessory products required for a complete and proper roofing system.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Make investigations as to conditions that will be encountered in performing Work.
- B. Inspection: Verify substrate conditions are acceptable for product installation in accordance with manufacturer's instructions.
- C. Report to the Owner's Authorized Representative any deviations between Contract Documents and site conditions.
- D. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Notify the Owner's Authorized Representative at least 48 hours prior to any roofing Work.
- B. Protection:
 1. Provide temporary coverings and protection of adjacent work areas.
 2. Provide tarps or plastic sheeting to protect opened roofs and flashings and to prevent entrance of moisture into existing structure, until new roof is in a watertight condition; have handy in case of emergency.
 3. Do not open up more roof surface than can be covered and/or protected in event of sudden rainfall.

95% REVIEW

4. Ensure that bitumen will not enter the building interior.

C. Surface Preparation:

1. Existing Roofing Removal: Specified under Section 024110 - Selective Demolition.
2. Prepare surfaces and details in accordance with manufacturer's instructions.

3.03 MEMBRANE INSTALLATION

A. Roofing Membrane Plies:

1. Install membrane in accordance with manufacturer's application instructions, immediately following insulation assembly as a continuous operation.
2. Install membrane immediately following insulation assembly, as a continuous operation.
3. Lay all plies of roofing free of wrinkles, creases or fish-mouths; at right angles to slope of deck.
4. Exert sufficient pressure during application to eliminate air pockets.
5. Fully bond sheets to prepared substrate, and to each other, with minimum 3 inch side and 6 inch end laps.
6. Do not stack lap seams.
7. Fully bond top ply sheet to ply sheet surface, with minimum 3 inch side and 6 inch end laps.

B. Roofing Membrane Details:

1. Prime all flanges and concrete and masonry surfaces with uniform coating of asphalt primer.
2. Provide continuous reinforcing sheet in all waterways, including valleys and crickets.
3. Pay particular attention to manufacturer's seam sealing instructions.
4. Step in T-joints; fully sealed and without voids. (Other methods to improve T-joint seal include 45 degree cut and finishing mopping at joint area).
5. At end of day's Work or when precipitation is imminent, provide water cut-off at open edges. Use adhesive or plastic cement and non-porous roofing felts, constructed to withstand protracted periods of service. Completely remove cut-offs prior to resumption of roofing.

C. Flashings:

1. Bridge all junctures of vertical and horizontal surfaces with 45 degree cant

95% REVIEW

- strips.
 - 2. Install reinforcing sheet and flashing sheets as shown.
 - 3. Install base flashings in specified adhesive.
 - 4. Secure top edge of flashing sheets at vertical surfaces at 8 inches on center using fasteners appropriate to substrate.
 - 5. Provide corner patches or folded corners at base flashing corners. Blind cut corners are not acceptable.
 - 6. Apply granules at all laps to cover and protect all exposed adhesive.
- D. ParaPro 123 Flashings:
- 1. Prepare surface for application.
 - 2. Mask area.
 - 3. Apply catalyzed resin at a rate of 0.19 kg.sf.
 - 4. Embed fleece before resin sets up, no air pockets.
 - 5. Apply second layer of catalyzed resin, completely saturate fleece at a rate of 0.12 kg.sf.
 - 6. Remove masking.
- E. Roof Drains: Refurbish as Specified in Section 221426.
- F. Install new primed lead flashing at all pipe penetrations. Set flange in plastic cement on top of base sheet. Provide reinforcing sheet.
- G. Install new primed drain lead flashing in plastic cement and install reinforcing sheet at drain sumps as shown.

3.04 INSULATION INSTALLATION

- A. Roof Insulation System:
- 1. Install Dow Roofmate Insulation over completed roof system.
 - 2. Install Drainage Course over insulation.
 - 3. Install Filter Fabric over Drainage Course.
- B. Ballast: Place river stone ballast at rate of 10 lbs. per square foot minimum, 12 lbs. per square foot at perimeter and 15 lbs. per square foot in corners.

3.05 ADJUSTING

- A. Repair or replace damaged installed products.
- 1. Verify that all drains are functioning properly, as specified elsewhere.

95% REVIEW

3.06 CLEANING

- A. Remove temporary coverings and protection of adjacent work areas.
 - 1. Clean installed products in accordance with manufacturer's instructions prior to Final Completion.
 - 2. Remove excess asphalt and adhesives from finished surfaces.
 - 3. Remove equipment from site.
 - 4. Remove construction debris from site and legally dispose thereof.
 - 5. Leave job site in clean condition.

3.07 PROTECTION

- A. Protect installed product and finish surfaces from damage during subsequent construction.

3.08 SCHEDULE

- A. Roof Area A:

APPENDIX ON FOLLOWING PAGE

95% REVIEW

SIPLAST CERTIFICATE OF ANALYSIS

DATE: 06/05/2000 LOT NUMBER : Q-2 157 1001-5012

MATERIAL TYPE: Paradiene 30 FR White


DIMENSIONS & MASS

	MINIMUM SPECIFICATION	AVERAGE TESTED VALUE ±STANDARD DEVIATION	ACTUAL MINIMUM
LENGTH (ft.):	33.5	33.6 ± .0	33.5
WIDTH (in.):	39.0	39.4 ± .0	39.4
THICKNESS AT SELVAGE (mils):	94	100 ± 2.8	96
TOTAL THICKNESS (mils):	N/A	133 ± 4.0	126
WEIGHT (lbs/roll):	90	95.9 ± 2.2	91.3
SELVAGE WIDTH (in.):	2.2	2.5 ± .1	2.4

PHYSICAL & MECHANICAL PROPERTIES¹

	SPECIFICATION	AVERAGE TESTED VALUE ±STANDARD DEVIATION
LOW TEMP. FLEXIBILITY (°F):	-13	-13 ± 0.0
GRANULE EMBEDMENT (avg. grams loss/sample):	1.50max	.6 ± .2
BREAKING LOAD (lb/in.):	30avg	36 ± 2.9
ULTIMATE ELONGATION ² (%):	55avg	61 ± 2.5
COMPOUND STABILITY (°F):	248	248 ± 0.0
DIMENSIONAL STABILITY (%):	n/a	
RESISTANCE TO THERMAL SHOCK ³ (%):	n/a	

¹Tested in Accordance with ASTM D-5147
²Defined as the point on the load-elongation curve where the load value has decreased to 5% of the maximum value obtained.
³Tested according to UEAtc (Union of European Agreement for technical construction)



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END OF SECTION

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PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Copings and Cap Flashings.
2. Metal Counter Flashings.
3. Metal Flashings.
4. Stainless Steel Reglet Flashings.

B. Related Sections:

1. Section 061010 - Rough Carpentry.
2. Section 075215 - SBS Modified Bitumen Roofing (Cold).
3. Section 079200 - Joint Sealers.
4. Section 099100 - Painting.
5. Section 230000 - Basic Mechanical.
6. Section 260000 - Basic Electrical.

1.02 REFERENCES

- A. ASTM A167 - Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip.
- B. ASTM A525 - Steel Sheet, Zinc Coated, (Galvanized) by the Hot-Dip Process.
- C. ASTM A792/A792M - Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
- D. ASTM B209 - Aluminum and Aluminum Alloy Sheet and Plate.
- E. AA (Aluminum Association) - Aluminum Construction Manual: Aluminum Sheet Metal Work and Building Construction.
- F. ANSI/ASTM B32 - Solder Metal.
- G. ASTM B749 - Lead and Lead Alloy Strip, Sheet, and Plate Products.
- H. ASTM D41 - Asphalt Primer.
- I. ASTM D226 - Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.

95% REVIEW

- J. ASTM D1970 - Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam.
- K. ASTM D4586 - Asphalt Roof Cement, Asbestos Free.
- L. AISI (American Iron and Steel Institute) - Stainless Steel: Uses in Architecture.
- M. NAAMM (National Association of Architectural Metal Manufacturers) - Metal Finishes Handbook.
- N. NRCA (National Roofing Contractors Association) - Roofing Manual.
- O. SMACNA (Sheet Metal and Air Conditioning Contractors' National Association) - Architectural Sheet Metal Manual.
- P. FS (Federal Specification) O-F-506 - Flux, Soldering, Paste and Liquid.

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide products which have been manufactured, fabricated and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.

1.04 SUBMITTALS

- A. Submit in accordance with Section 013323.
- B. Product Data: Manufacturer's product sheets and installation instructions.
- C. Shop Drawings:
 - 1. Show layout, profiles, and product components, including anchorage, accessories, finish colors and textures.
 - 2. Include jointing patterns, jointing details, fastening methods, and installation details.
- D. Samples:
 - 1. Selection and verification samples for finishes, colors and textures.
 - 2. Three (3) sets metal samples, illustrating full color range.
- E. Quality Control:
 - 1. Certified test reports, showing compliance with specified performance characteristics and physical properties.

95% REVIEW

2. Product certificates, signed by manufacturer, certifying products comply with specified performance characteristics and physical requirements.

F. Closeout:

1. Project Record Documents:
2. Operation and maintenance data for installed products, including methods for maintaining, and precautions against cleaning materials and methods detrimental to finishes and performance.
3. Warranty documents specified herein.
4. Per Section 017700, Contract Closeout.

1.05 QUALITY ASSURANCE

- A. Fabricator Qualifications: Minimum 5 years commercial experience in performing this work, having specialized in work similar to that required for this project. When requested, submit certificate indicating qualification.
- B. Installer Qualifications: Minimum 5 years commercial experience in performing this work, having specialized in installation of work similar to that required for this project. When requested, submit certificate indicating qualification.
- C. Standards: Comply with applicable requirements of NRCA Roofing Manual, and SMACNA Architectural Sheet Metal Manual.
- D. Regulatory Requirements: Comply with applicable Building Code requirements.
- E. Pre-Installation Meeting: Conduct meeting with Owner's Authorized Representative to verify project requirements, substrate conditions, manufacturer's installation instructions and warranty requirements.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Comply with manufacturer's ordering instructions and lead time requirements; deliver products in original, unopened, undamaged containers with identification labels intact.
- B. Storage:
 1. Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
 2. Stack preformed and Pre-coated material to prevent twisting, bending, or abrasion, and to provide ventilation.
 3. Prevent contact with materials during storage which may cause

95% REVIEW

discoloration, staining, or damage.

- C. Handling: Handle products according to manufacturer' recommendations and so as not to damage them prior to installation.

1.07 WARRANTIES

- A. Manufacturer: Manufacturer's standard Kynar Finish warranty, document executed by authorized company official, 25 years commencing on Date of Substantial Completion.
- B. Installer: Provide 2 years, commencing on Date of Substantial Completion, including coverage of materials and installation and resulting damage to building resulting from failure to resist penetration of moisture.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Pre-Coated Galvanized Steel: ASTM A525, G90; 24 gauge core steel, pre-coated with "Kynar 500" or "Hylar 5000" coating of selected color. The color selected from manufacturer's full range of standard colors.
- B. Aluminum: ASTM B209, 0.03 inch thick; "Kynar 500" or "Hylar 5000" coating color to match existing finish.
- C. Lead: ASTM B749, 4 pounds per square foot minimum.
- D. Zinc-Aluminum Coated Steel Sheet: ASTM A792, Zincolume, Coating class AZ55, 24 gauge.

2.02 ACCESSORIES

- A. Fasteners: Galvanized steel or Stainless steel with soft neoprene washers at exposed fasteners. Finish exposed fasteners same as flashing metal.
 - 1. Rawl Zamac Nailins with EPDM washers at masonry/concrete substrates.
 - 2. Woodfast metal to wood screws at wood substrates.
 - 3. Self-tapping sheet metal screws at metal substrates.
- B. Underlayment: ASTM D226; No. 15 asphalt saturated roofing felt.

95% REVIEW

- C. Self Adhering Underlayment: Rubberized asphalt self-adhering sheet, with high strength polyethylene film on one side, minimum 40 mils thick; Carlisle WIP 300 High Temp, or approved equal.
- D. Plastic Cement: ASTM D4586, asbestos free, asphaltic.
- E. Provide various additional items as required for a complete and weatherproof installation.
- F. Sealant and Joint Filler: Specified under Section 079200.
- G. Reglets: Recessed stainless steel, spring lock design.
- H. Solder: FS QQ-S-571; ANSI/ASTM B32; 50/50 type.
- I. Flux: FS O-F-506. Special stainless steel flux.
- J. Provide various additional items as required for a complete and weatherproof installation.

2.03 FABRICATION

- A. Field measure site conditions prior to fabrication.
- B. Form sections true to shape, accurate in size, square, and free from distortion or defects.
- C. Fabricate cleats and starter strips of same material as sheet, 22 gauge, minimum 3 inches wide, inter-lockable with sheet, unless shown otherwise.
- D. Form pieces in longest practical lengths.
- E. Hem exposed edges on underside ½-inch; miter and seam corners.
- F. Form flashing material with flat seam.
- G. Form copings with standing seams.
- H. Form counter flashings with lapped seams.
- I. Seal metal joints. After soldering, remove flux. Wipe and wash solder joints clean.

95% REVIEW

- J. Fabricate vertical faces with bottom edge formed outward ¼-inch and hemmed to form drip.
- K. Scuppers: Stainless steel, with soldered lead flanges.

2.04 FINISHES

- A. Field Painted Where Indicated:
 - 1. Metal Paint Primer: Phosphoric acid etch followed by zinc oxide alkyd, flat finish.
 - 2. Shop prepare and paint prime all exposed ferrous and galvanized metal surfaces.
- B. Metal Roof Primer: Asphaltic to comply with ASTM D41.
- C. Protective Back Paint: Zinc Chromate Alkyd.
- D. Protective Coating: FS-TT-C-494 Bituminous coating compound.
- E. Touch-up Paint: To match Pre-coated metal, from coating manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Inspection:
 - 1. Verify substrate conditions are acceptable for product installation in accordance with manufacturer's instructions.
 - 2. Verify roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set, cant strips and reglets in place, and nailing strips located.
 - 3. Verify membrane termination and base flashings are in place, sealed, and secure.
 - 4. Verify field measurements, site conditions.
- B. Report to the Owner's Authorized Representative any deviations between Contract Documents and site conditions.
- C. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

95% REVIEW

- A. Protection: Provide temporary coverings and protection of adjacent work areas.
- B. Surface Preparation:
 - 1. Substrate: Ensure surfaces are clean and dry, smooth, free of fins, raised edges, sharp edges, protruding or loose nails and free of foreign material.
 - 2. Prepare surfaces and details in accordance with manufacturer's instructions.

3.03 INSTALLATION

- A. Comply with manufacturers' product data, technical bulletins, and catalog and carton installation instructions.
- B. Install Work in accordance with reviewed submittals.
- C. Install starter and edge strips, and cleats.
- D. Install reglets true to lines and levels. Seal top of reglets with sealant. Surface mounted reglets not acceptable unless indicated in the drawings.
- E. Provide self adhering underlayment and slip sheet behind all finish metal such as copings, and wall metal.
- F. Secure flashings in place using concealed fasteners. Use exposed fasteners only in locations indicated.
- G. Seam and seal all joints.
- H. Protective coat dissimilar metals and isolate from each other.
- I. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.

3.04 ADJUSTING

- A. Repair or replace damaged installed products.

3.05 CLEANING

- A. Remove temporary coverings and protection of adjacent work areas.
 - 1. Clean installed products in accordance with manufacturer's instructions prior to Final Completion.

95% REVIEW

2. Promptly remove metal filings from sheet metal.
3. Promptly remove metal scraps from roofing.
4. Touch-up paint Pre-coated metal.
5. Leave sheet metal in clean, finished condition.
6. Remove construction debris from project site and legally dispose thereof.

3.06 PROTECTION

- A. Protect installed product and finish surfaces from damage during subsequent construction.

END OF SECTION

95% REVIEW

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Substrate preparation.
 - 2. Sealant and backing.
- B. Related Sections:
 - 1. Section 076200 - Flashing and Sheet Metal.

1.02 REFERENCES

- A. ASTM C920 - Elastomeric Joint Sealants.
- B. ASTM C1193 - Guide for Use of Joint Sealants.
- C. ASTM C1330 - Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants.
- D. ASTM D5893 - Cold Applied, Single Component, Chemically Curing Silicone Joint Sealant for Portland Cement Concrete Pavements.
- E. ANSI/ASTM D1056 - Flexible Cellular Materials: Sponge or Expanded Rubber.
- F. FS TT-S-001657 - Sealing Compound, Single Component, Butyl Rubber Based, solvent Release Type.
- G. FS TT-S-00227 - Sealing Compound: Elastomeric Type, Multi-Component.
- H. FS TT-S-00230 - Sealing Compound: Elastomeric Type, Single Component.
- I. SWRI (Sealing, Waterproofing and Restoration Institute) - Sealant and Caulking Guide Specification.
- J. SWRI – Applying Liquid Sealants: Applicator Training Program, Section 10 – Testing Sealant Work.

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide products which have been manufactured, fabricated and installed to maintain performance criteria stated by manufacturer

95% REVIEW

without defects, damage or failure.

1.04 SUBMITTALS

- A. Submit in accordance with Section 013323.
- B. Product Data:
 - 1. Manufacturer's product sheets and installation instructions.
 - 2. Indicate sealant chemical characteristics, performance criteria, limitations, color availability, manufacturer's installation instructions.
- C. Samples:
 - 1. Selection and verification samples for finishes, colors and textures.
- D. Quality Control:
 - 1. Certified test reports, showing compliance with specified performance characteristics and physical properties.
 - 2. Product certificates, signed by manufacturer, certifying products comply with specified performance characteristics and physical requirements.
- E. Closeout:
 - 1. Operation and maintenance data for installed products, including methods for maintaining, and precautions against cleaning materials and methods detrimental to finishes and performance.
 - 2. Warranty documents specified herein.
 - 3. Per Section 017700, Contract Closeout.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Capable of providing field service representation during construction, approving acceptable installer and approving application method; regularly engaged in manufacturing and marketing of specified products.
- B. Installer Qualifications: Minimum 5 years commercial experience in performing this work, having specialized in installation of work similar to that required for this project. When requested, submit certificate indicating qualification.
- C. Standard: Comply with applicable requirements of SWRI Guide Specification.
- D. Regulatory Requirements: Comply with applicable Building Code requirements.

95% REVIEW

- E. Pre-Installation Meeting: Conduct meeting with Owner's Authorized Representative to verify project requirements, substrate conditions, manufacturer's installation instructions and warranty requirements.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Comply with manufacturer's ordering instructions and lead time requirements; deliver products in original, unopened, undamaged containers with identification labels intact.
- B. Storage: Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.

1.07 PROJECT CONDITIONS

- A. Environmental Requirements:
 1. Do not install solvent curing sealants in enclosed building spaces.
 2. Maintain temperature and humidity recommended by sealant manufacturer during and after installation.
 3. Install sealants during periods of mean temperature; avoid temperature extremes which would cause maximum or minimum joint widths.

1.08 WARRANTIES

- A. Installer:
 1. Two (2) years commencing on Date of Substantial Completion.
 2. Include coverage of installed sealants and accessories which fail to achieve air tight and watertight seal, exhibit loss of adhesion or cohesion, or fail to properly cure.

PART 2 PRODUCTS

2.01 MANUFACTURER

- A. Vulkem 116.
- B. Pecora, Sika, Sonneborn, or approved equal.

2.02 MATERIALS

- A. Butyl Sealant: FS TT-S-001657 Single component, solvent release, non-

95% REVIEW

skinning, non-sagging, black color.

- B. Polyurethane Sealant: FS TT-S-00230, Single component, chemical curing, non staining, non-bleeding, capable of continuous water immersion, non sagging type; color as selected.

2.03 ACCESSORIES

- A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.
- B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.
- C. Joint Backing: ANSI/ASTM D1056; round, closed cell polyethylene foam rod; oversized 30 to 50 percent larger than joint width; manufactured by sealant manufacturer.
- D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Inspection: Verify substrate conditions are acceptable for product installation in accordance with manufacturer's instructions.
- B. Verify that surfaces and joint openings are ready to receive Work and field measurements are as shown, and as recommended by manufacturer.
- C. Report to the Owner's Authorized Representative any deviations between Contract Documents and site conditions.
- D. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Protection:
 1. Provide temporary coverings and protection of adjacent work areas.
 2. Mask surfaces as necessary.

95% REVIEW

B. Surface Preparation:

1. Clean, prime, and back no more area than can be sealed in the same day.
2. Verify sealant and primer compatibility (non-reactive) and adhesion to all substrates. Notify Architect and Owner of any non-compatible materials.
3. Remove loose materials and foreign matter which might impair adhesion of sealant.
4. Clean joints in accordance with manufacturer's instructions.
5. Prime joint surfaces where required to achieve bond.
6. Verify that joint backing and release tapes are compatible with sealant.

3.03 APPLICATION

- A. Comply with manufacturer's product data, technical bulletins, and catalog and container application instructions.
- B. Measure joint dimensions and size materials to achieve required width/depth ratios.
- C. Install joint backing to achieve a neck dimension half the joint width.
- D. Install bond breaker where joint backing is not used.
- E. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- F. Apply sealant free of air pockets, foreign embedded matter, ridges, and sags.
- G. Unless otherwise shown, tool joints slightly concave and free draining.

3.04 ADJUSTING

- A. Repair or replace damaged installed products.

3.05 CLEANING

- A. Remove temporary coverings and protection of adjacent work areas.
- B. Clean installed products in accordance with manufacturer's instructions prior to Final Completion.

95% REVIEW

- C. Clean adjacent soiled surfaces.
- D. Remove construction debris from project site and legally dispose thereof.

3.06 PROTECTION

- A. Protect installed product and finish surfaces from damage during subsequent construction.
- B. Protect sealants until cured.

3.07 SCHEDULE

- A. Sealant S1: Butyl (concealed locations).
- B. Sealant S2: Single-component polyurethane (exposed exterior locations).

END OF SECTION

95% REVIEW

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Surface preparation.
 - 2. Doors & frames.
 - 3. Exterior roof mounted equipment.
- B. Related Sections:
 - 1. Section 076200 - Flashing and Sheet Metal.

1.02 REFERENCES

- A. ASTM D523 - Test Method for Specular Gloss.
- B. ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.
- C. SSPC (Steel Structures Painting Council) - Steel Structures Painting Manual.
- D. NACE (National Association of Corrosion Engineers International) - Industrial Maintenance Painting.
- E. PDCA (Painting and Decorating Contractors of America) - Architectural Specification Manual, published by the Washington Council.

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide products which have been manufactured, fabricated and installed to maintain performance criteria stated by manufacturers without defects, damage or failure.

1.04 SUBMITTALS

- A. Submit in accordance with Section 013323.
- B. Product Data:
 - 1. Manufacturer's product sheets for each type of paint.
 - 2. Include performance data, application instructions and methods, including mixing, surface preparation, compatible primers and top coats,

95% REVIEW

recommended wet and dry film thickness.

C. Samples:

1. Selection and verification samples for finishes, colors and textures.
2. Apply to 8 inch by 10 inch panels, opaque finishes on cardboard.
3. Submit three displays of each color, finish, texture, and type.

D. Closeout:

1. Operation and maintenance data for installed products, including methods for maintaining, and precautions against cleaning materials and methods detrimental to finishes and performance.
2. Per Section 017700, Contract Closeout.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Minimum 5 years commercial experience in the manufacture and supply of materials used in this work.

1. Provide materials for each general purpose of same manufacturer; except for shop prime coats.

B. Installer Qualifications: Minimum 5 years commercial experience in performing this work, having specialized in installation of work similar to that required for this project. When requested, submit certificate indicating qualification.

C. Standard: Comply with applicable requirements of PDCA Architectural Specification Manual.

D. Regulatory Requirements:

1. Comply with applicable Building Code requirements.
2. Comply with governing agency's regulations for paint materials, including State requirements for volatile organic compounds (VOC).
3. Comply with applicable requirements of USDA (U.S. Department of Agriculture).
4. Comply with applicable requirements of UL (Underwriters Laboratories, Inc.).

E. Each Product Container Bear Manufacturer's label, including:

1. Type of material.
2. Manufacturer's name.
3. Product number.
4. Batch number.
5. Color.

95% REVIEW

6. Instructions for reducing.

F. Field Samples:

1. Apply where directed.
2. Use this sample to determine acceptability of workmanship, color and texture.
3. Acceptable sample will be used as standard, and may be retained as part of finished Work.
4. Remove and properly dispose of rejected samples.

G. Pre-Installation Meeting: Conduct meeting with Owner's Authorized Representative to verify project requirements, substrate conditions, manufacturers' application instructions and warranty requirements.

1.06 DELIVERY, STORAGE AND HANDLING

A. Delivery: Comply with manufacturers' ordering instructions and lead time requirements; deliver products in original, unopened, undamaged containers with identification labels intact.

B. Storage:

1. Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturers.
2. Store in unopened containers, in designated storage space.
3. Keep storage space neat, clean and accessible.
4. Protect floor from spillage.

1.07 PROJECT CONDITIONS

A. Environmental Requirements:

1. Do not paint when air is dust-laden or when weather or temperature conditions are unsuitable.
2. Maintain temperatures within building at minimum 60 degrees Fahrenheit during painting and drying periods.
3. Do not paint exterior surfaces in damp or rainy weather.
4. Do no exterior Work on unprotected surfaces if moisture from any source is present, or forecast before paints can attain proper cure.
5. Provide adequate ventilation for health, safety and drying requirements. Do not apply in areas where dust is being generated. Protect against damage from other areas and/or construction operations.
6. Apply coats to surfaces under environmental conditions and within the

95% REVIEW

limitations recommended by material manufacturers. Minimum ambient air and surface temperature 40 degrees Fahrenheit for 24 hours before, during, and after application.

- B. Fire Precaution: At the end of each Work day, place solvent soaked cloths, waste, and other materials which constitute fire hazard in metal containers and remove from premises.

1.08 WARRANTIES

- A. Installer: Installer's Standard Warranty document executed by authorized company official, 2 years commencing on Date of Substantial Completion.

1.09 MAINTENANCE

- A. Extra Materials:
 - 1. Deliver to Project site the following items as directed. Store in unopened containers and in manner recommended by manufacturer.
 - 2. One gallon each type and color used.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Exterior Paint:
 - 1. Miller.
 - 2. Sherwin Williams.
 - 3. Benjamin Moore.
 - 4. or approved equal.

2.02 MATERIALS

- A. All Materials: Manufacturer's "top-of-the-line," best quality of generic type specified.
- B. Paint Types:
 - 1. Alkyd enamel (AE), oil based, exterior.
- C. Specular Gloss: Ranges determined per ASTM D523. Sheen is specified to establish required gloss range.

95% REVIEW

<u>Sheen</u>	<u>Designation</u>	<u>Geometry/Deg.</u>	<u>Gloss Range</u>
Flat	FL	85	Below 15
Eggshell	EG	60	5 to 20
Satin	SA	60	15 to 35
Semi-Gloss	SG	60	30 to 65
Gloss	GL	60	Over 65

- D. Final Coat Colors: Factory mix; no jobsite color matching permitted.
- E. Mildew Resistance: Add fungicidal agent to exterior paint at factory. Clearly indicate on labels that paint is mildew resistant.

2.03 Paint Systems

- A. Semi-gloss finish to match existing painted metal such as flashing and similar items.
 - First Coat: Rust inhibitive metal primer at bare metal.
 - Second Coat: Exterior alkyd.
 - Third Coat: Exterior alkyd.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Inspection:
 - 1. Examine substrates, adjoining construction and conditions under which Work is to be performed.
 - 2. Verify substrate conditions are acceptable for product installation in accordance with manufacturers' instructions.
 - 3. Examine substrate surfaces to assure that they are dry, clean, of uniform texture, free of bond inhibiting foreign substances or other conditions that would adversely affect adhesion, protective properties, or coating appearance.
- B. Measure moisture of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of interior and exterior surfaces is 12% or less.
- C. Report to the Owner's Authorized Representative any deviations between

95% REVIEW

Contract Documents and site conditions.

- D. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Protection:

1. Provide temporary coverings and protection of adjacent work areas.
2. Provide drop cloths, barricades, other forms of protection necessary to safeguard adjacent Work, and to preserve painted Work free from damages of every nature. Post signs promptly following application.

- B. Fixtures: Remove and store, or protect hardware, accessories, plates, lighting fixtures and similar items installed prior to painting. Reinstall or remove protection upon completion.

C. Surface Preparation:

1. Ensure that all surfaces designated to be coated are properly prepared in accordance with Specifications, referenced standards, and manufacturers' recommendations.
2. Remove scale, dirt, dust, grit, rust, wax, grease, efflorescence, loose material, and other foreign matter detrimental to proper adhesion of paint.

- D. Shop Painted Items: Touch-up abraded surfaces prior to painting; use same type of paint as shop coat. Feather edge abraded surfaces prior to touch-up.

E. Ferrous Metal:

1. Use suitable solvents, tools, and methods to clean surfaces.
2. Un-coated Steel and Iron Surfaces: Remove grease, rust, scale, dirt and dust from steel and iron surfaces in accordance with SSPC-1. Where heavy coatings of scale are evident, remove by wire brushing (SSPC-SP2) or other SSPC-SP approved method.
3. Shop Primed Steel Surfaces: Sand and scrape to remove loose primer and rust. Sand and feather edges to smooth surface. Clean areas with solvent and spot prime bare metal areas.

F. Existing Painted Surfaces:

1. Sand, wire brush, or scrape painted surfaces to remove loose, scaling paint and to reduce gloss. Feather edge abraded surfaces. Thoroughly clean, remove rust, and prepare existing surfaces, insure proper adhesion.
2. Existing lead-based coatings: See Section 011000; 1.05 Lead Based Paint.

95% REVIEW

3.03 APPLICATION

- A. Comply with manufacturers' product data, technical bulletins, and catalog and container application instructions.
- B. Paint all surfaces exposed to view, unless otherwise indicated. Where not indicated, paint as directed.
- C. Surfaces Not to be Painted: Furred spaces; trenches, tunnels, plenums, shafts and hoistways; storage tanks; concealed pipe, ductwork and conduit; concealed rough hardware; cast-iron and galvanized steel gratings, covers and frames; stainless steel, unless otherwise specified; factory finished surfaces, and other surfaces so indicated.
- D. Apply, as a minimum, specified number of coats; apply sufficient coats to produce specified mil dry film thickness.
- E. Apply paint and coating with suitable brushes, rollers, or spraying equipment as recommended by coating manufacturer and as specified. Do not exceed coating manufacturer's recommended drying time between succeeding coats.
- F. Apply finish coats smooth, free of brush marks, runs, drips, sags, streak laps, pile-up, and skipped or missed areas.
- G. Ensure that coating is so complete that additional coating will not change color or texture of painted surface. Apply additional coats as required to achieve this condition.

3.04 FIELD QUALITY CONTROL

- A. Site Tests:
 - 1. Where materials are being applied over previously painted surfaces, apply samples and perform in-place test to check for compatibility, adhesion and film integrity of new materials to existing painted surfaces.
 - 2. Painting may be tested, at the Owner's option, to determine materials quality and compliance with Contract Documents.
 - 3. Upon completion, if requested by the Owner, manufacturer's representative shall measure paint thickness with Tooke Dry Film Thickness System. Recoat Work not conforming to specified dry mil thickness until thickness is that specified.

95% REVIEW

- B. Inspection:
 - 1. After paint and coating Work has been completed, make a detailed inspection of paint finish and touch-up or refinish non-complying Work.

3.05 ADJUSTING

- A. Repair or replace damaged installed products.
- B. Carefully remove splatters of paint materials from adjoining Work. Repair all damages that may be caused by such cleaning operations and other painting activities.

3.06 CLEANING

- A. Remove temporary coverings and protection of adjacent work areas.
 - 1. Clean installed products in accordance with manufacturers' instructions prior to Final Completion.
 - 2. Remove implements of service, and materials from premises and leave entire Project in clean condition.
 - 3. Remove construction debris from project site and legally dispose thereof.

3.07 PROTECTION

- A. Protect finished product and surfaces from damage during subsequent construction.

3.08 EXTERIOR PAINTING SCHEDULE

- A. Roof Mounted Equipment & New Entry Door:
 - Alkyd Enamel on Ferrous Metal:
 - Prime Coat: Rust inhibitive metal primer at bare metal.
 - Body Coat: Exterior alkyd.
 - Finish Coat: Exterior alkyd.
 - Thickness: 4 mils dry.
 - Sheen/Color: Semi-gloss.

END OF SECTION

95% REVIEW

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Plumbing.
- B. Related Sections:
 - 1. Section 221426 - Roof Drains.
 - 2. Section 230000 - Basic Mechanical.

1.02 REFERENCES

- A. ASTM A53/A53M - Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
- B. ASTM A123 - Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- C. ASTM C547 - Mineral Fiber Pipe Insulation.
- D. ANSI/ASME B31.9 - Building Services Piping.
- E. MSS (Manufacturers Standardization Society of The Valve and Fittings Industry) SP-58 - Pipe Hangers and Supports - Materials, Design and Manufacture.
- F. MSS SP-69 - Pipe Hangers and Supports - Selection and Application.
- G. MSS SP-89 - Pipe Hangers and Supports - Fabrication and Installation Practices.
- H. MSS SP-127 - Bracing for Piping Systems Seismic-Wind-Dynamic Design, Selection, Application.

1.03 SYSTEM DESCRIPTION

- A. Design Requirements:
 - 1. Incorporate in designs pipe hangers and supports to manufacturers' recommendations utilizing manufacturers' regular production components, parts and assemblies as detailed in manufacturers' pipe hanger catalog.
 - 2. Establish maximum load ratings with consideration for allowable stresses prescribed by ASME B31.1 or MSS SP-58.

95% REVIEW

- B. Performance Requirements: Provide products which have been manufactured, fabricated and installed to maintain performance criteria stated by manufacturers without defects, damage or failure.

1.04 SUBMITTALS

- A. Submit in accordance with Section 013323.
- B. Product Data:
 - 1. Manufacturers' product sheets and installation instructions.
 - 2. Plumbing fixtures.
- C. Shop Drawings:
 - 1. Show layout, profiles, and product components, including anchorage, accessories.
 - 2. Plans illustrating piping, supports and related items.
- D. Closeout:
 - 1. Project Record Documents: As-Built Drawings and Specifications - maintain at site one set of documents for recording "As-Built" conditions as Work progresses. Indicate locations of concealed elements by dimension from structure or building grid.
 - 2. Operation and maintenance data for installed products, including methods for maintaining, and precautions against cleaning materials and methods detrimental to finishes and performance.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Supply materials of similar class by same manufacturer.
- B. Installer Qualifications: Minimum 5 years commercial experience in performing this work, having specialized in installation of work similar to that required for this project. When requested, submit certificate indicating qualification.
- C. Regulatory Requirements: Comply with applicable requirements of the following:
 - 1. Building Code.
 - 2. Plumbing: Oregon Plumbing Specialty Code.
- D. Obtain applicable permits, licenses, inspections. OSU to pay Permit fees.

95% REVIEW

- E. Pre-Installation Meeting: Conduct meeting to verify project requirements, substrate conditions, manufacturers' installation instructions and warranty requirements.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Comply with manufacturers' ordering instructions and lead time requirements; deliver products in original, unopened, undamaged containers with identification labels intact.
- B. Storage:
 - 1. Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
 - 2. Store inside, protected from dirt and construction dust.
- C. Handling: Exercise care in handling, loading, unloading and storing products to avoid damage.

1.07 PROJECT CONDITIONS

- A. Hazardous Materials: If during the course of Work, Contractor observes existence of hazardous materials, immediately terminate further Work and notify Owner of the condition. Owner will, after consultation, determine a further course of action.

1.08 WARRANTIES

- A. Installer:
 - 1. Standard Workmanship Warranty - Two (2) years commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Materials: New, standard, full weight, identical to products in successful operation for a minimum of two years.
- B. Piping:
 - 1. Cast iron pipe and fittings: Service weight; ASTM A74.
 - 2. No hub piping system: Cast Iron Soil Pipe Institute Specification 301.
 - a. "Anaco", "Huskey SD 4000", or "Clamp -All" high torque heavy-duty couplings.

95% REVIEW

3. Steel pipe: Schedule 40, black and galvanized, ASTM A53.

2.02 MANUFACTURED UNITS

- A. Structural Attachments: Carbon steel per ASTM A36/ASTM A515.
- B. Brackets: Malleable iron per ASTM A47/ASTM A126.
- C. U-Bolts and Straps: Malleable iron per ASTM A47/ASTM A126.
- D. Pipe Supports: Carbon steel per ASTM A36/ASTM A53.

2.03 ACCESSORIES

- A. Insulation Accessories:
 1. Insulation Bands: $\frac{3}{4}$ -inch wide; stainless steel.
 2. Metal Jacket Bands: $\frac{3}{8}$ -inch wide; thick stainless steel.
 3. Adhesives: Compatible with insulation.

2.04 FABRICATION

- A. Provide steel fabrications for support of mechanical equipment; base plates for stands.
- B. Use components for intended design purpose.
- C. Fabricate equipment supports not provided with equipment from structural grade steel.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Inspection: Verify substrate conditions are acceptable for product installation in accordance with manufacturers' instructions.
- B. Report to the Owner's Authorized Representative any deviations between Contract Documents and site conditions.
- C. Do not proceed until unsatisfactory conditions have been corrected.

95% REVIEW

3.02 PREPARATION

- A. Protection: Provide temporary coverings and protection of adjacent work areas.
- B. Disconnect rooftop equipment as required.
- C. Close pipe openings with caps or plugs.
- D. Protect existing wiring, circuits, piping, conduits, control systems, from damage during course of Work.
- E. Layout: Make determination of the existence, location and condition of related utility services.
- F. Arrange Work to minimize interruption of any services. When interruptions are unavoidable, consult Owner and utilities involved; agree in writing upon a mutually satisfactory time and duration.
- G. Coordinate Work with related systems. Should rearrangement or re-routing be necessary, submit proposed revisions to Architect and Owner and obtain approval thereof.

3.03 INSTALLATION

- A. Comply with manufacturers' product data, technical bulletins, and catalog and carton installation instructions.
- B. Comply with reviewed submittals.
- C. Reconnect rooftop equipment as required.
- D. Set equipment to provide for ready access to any parts requiring inspection and/or service.

3.04 FIELD QUALITY CONTROL

- A. Site Tests: Prior to acceptance, operate all affected mechanical systems for a period of at least five consecutive eight hour days.
- B. Inspection: Upon request, provide field service consisting of product use recommendations and site visit for inspection of product installation in accordance with manufacturer's instructions.

95% REVIEW

3.05 ADJUSTING

- A. Repair or replace damaged installed products.

3.06 CLEANING

- A. Remove temporary coverings and protection of adjacent work areas.
- B. Clean installed products in accordance with manufacturer's instructions prior to Final Completion.
- C. Clean all dirt, construction dust and debris from all mechanical systems. Touch up paint where finish has been damaged.
- D. Remove construction debris from project site and legally dispose thereof.

3.07 PROTECTION

- A. Protect installed products, systems and finish surfaces from damage during subsequent construction.

END OF SECTION

95% REVIEW

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. New overflow drains.
 - 2. Refurbish existing roof drains.
 - 3. Contractor Option: Replace existing drain bowls and components.

- B. Related Sections:
 - 1. Section 075215 - SBS Modified Bitumen Roofing (Cold).
 - 2. Section 075225 - SBS Modified Bitumen Roofing (IRMA).
 - 3. Section 220010 - Basic Plumbing.

1.02 REFERENCES

- A. ASTM A74 - Standard Specification for Cast Iron Soil Pipe and Fittings.
- B. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
- C. ASHRAE Equipment Handbook for pipe hanging.
- D. CISPI for no-hub piping.

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide products which have been manufactured, fabricated and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.

1.04 SUBMITTALS

- A. Submit in accordance with Section 013323.
- B. Product Data: Manufacturer's product sheets and installation instructions.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Minimum 5 years commercial experience in performing this work, having specialized in installation of work similar to that required for

95% REVIEW

this project. When requested, submit certificate indicating qualification.

- B. Regulatory Requirements: Comply with applicable Plumbing and Building Code requirements.
- C. Pre-Installation Meeting: Conduct meeting with Owner's Authorized Representative to verify project requirements, substrate conditions, manufacturer's installation instructions and warranty requirements.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Comply with manufacturer's ordering instructions and lead time requirements; deliver products in manufacturer's original, unopened, undamaged containers with identification labels intact.
- B. Storage: Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
- C. Handling: Exercise care in handling, loading, unloading and storing products to avoid damage.

1.07 WARRANTIES

- A. Installer:
 - 1. Standard Workmanship Warranty - Two (2) years commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Rust-Oleum or approved equal.
- B. Contractor Option:
 - 1. Drains and Drain Accessories: Jay R. Smith; or approved equal.
 - 2. Hangers and Supports: Grinnell; Super Strut, Michigan or approved equal.
 - 3. Pipe:
 - a. Cast iron pipe and fittings: ASTM A74, Service weight.
 - b. No hub piping: Cast Iron Soil Pipe Institute Specification 301.

95% REVIEW

- c. Steel pipe: Schedule 40, black and galvanized to comply with ASTM A53/A53M.
- 4. Verify and match existing pipe sizes, unless noted otherwise.

2.02 MATERIALS

- A. Cold Galvanizing Compound:
 - 1. Rust-Oleum 700 System Cold Galvanizing Compound, or approved equal.

2.03 MANUFACTURED UNITS (CONTRACTOR OPTION)

- A. Roof Drains:
 - 1. Roof Drain: Cast iron with cast iron strainer. Smith 1310 or approved equal.
- B. Overflows:
 - 1. Overflow Roof Drain: Cast iron, with 2" high water dam collar (if necessary) with cast iron strainer. Smith 1310 or approved equal.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Inspection: Verify substrate conditions are acceptable for product installation in accordance with manufacturer's instructions.
- B. Report to the Owner's Authorized Representative any deviations between Contract Documents and site conditions.
- C. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Protection: Provide temporary coverings and protection of adjacent work areas.

3.01 REFURBISH COMPONENTS

- A. Remove all waterproofing materials from the components.
- B. Run a tap in all threaded holes to clean existing threads.

95% REVIEW

- C. Wire brush surface to remove corrosion and asphalt residue.
 - D. Prepare surface for application of Cold Galvanizing Compound according to the manufacturer's requirements.
 - E. Coat all components per manufacturer's instructions.
- 3.02 Reassemble with new hardware. Coordinate with waterproofing contractor.
- 3.03 ADJUSTING
- A. Repair or replace damaged installed products.
- 3.04 CLEANING
- A. Remove temporary coverings and protection of adjacent work areas.
 - B. Clean installed products in accordance with manufacturer's instructions prior to Final Completion
 - C. Remove construction debris from project site and legally dispose thereof.
- 3.05 PROTECTION
- A. Protect installed products from damage during subsequent construction.

END OF SECTION

95% REVIEW

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Disconnect, store and reconnect existing rooftop equipment as required to install new roof and insulation system.
 - 2. Provide temporary exhaust venting and filtration as required during construction.

- B. Related Sections:
 - 1. Section 076200 - Flashing and Sheet Metal.
 - 2. Section 099100 - Painting.
 - 3. Section 260000 - Basic Electrical.

1.02 REFERENCES

- A. ASTM A123 - Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- B. ASTM A53/A53M - Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
- C. ASTM A653/A653M - Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- D. ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers) - Fundamentals Handbook.
- E. SMACNA (Sheet Metal and Air Conditioning Contractors National Association) - Manual of HVAC Duct Construction Standards - Metal & Flexible.
- F. MSS SP-69 - Pipe Hangers and Supports - Selection and Application.
- G. MSS SP-127 - Bracing for Piping Systems Seismic-Wind-Dynamic Design, Selection, Application.

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide products which have been manufactured, fabricated and installed to maintain performance criteria stated by manufacturers without defects, damage or failure.

95% REVIEW

1.04 SUBMITTALS

- A. Submit in accordance with Section 013323.
- B. Closeout:
 - 1. Project Record Documents: As-Built Drawings and Specifications - maintain at site one set of documents for recording "As-Built" conditions as Work progresses. Indicate locations of concealed elements by dimension from structure or building grid.
 - 2. Copies of certificates of Code Authority acceptance.
 - 3. Per Section 017700, Contract Closeout.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Minimum 5 years commercial experience in the manufacture and supply of materials used in this work.
- B. Installer Qualifications: Minimum 5 years commercial experience in performing this work, having specialized in installation of work similar to that required for this project. When requested, submit certificate indicating qualification.
- C. Standards: Comply with applicable requirements of the following:
 - 1. ASHRAE Handbook.
 - 2. NFPA 13.
 - 3. NFPA 90A.
 - 4. SMACNA Manual.
 - 5. Gauges, hanging, supporting and bracing per MSS and SMACNA.
- D. Regulatory Requirements: Comply with applicable requirements of the following:
 - 1. Building Code.
 - 2. Plumbing Code.
 - 3. HVAC: Oregon Mechanical Specialty Code.
- E. Obtain applicable permits, Owner reimburses for permits and fees.
- F. Pre-Installation Meeting: Conduct meeting with Owner's Authorized Representative to verify project requirements, substrate conditions, manufacturers' installation instructions and warranty requirements.

1.06 DELIVERY, STORAGE AND HANDLING

95% REVIEW

- A. Delivery: Comply with manufacturers' ordering instructions and lead time requirements; deliver products in original, unopened, undamaged containers with identification labels intact.
- B. Storage:
 - 1. Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
 - 2. Store inside, protected from dirt and construction dust.
- C. Handling: Exercise care in handling, loading, unloading and storing products to avoid damage.

1.07 PROJECT CONDITIONS

- A. Hazardous Materials: If during the course of Work, Contractor observes existence of hazardous materials, immediately terminate further Work and notify the Owner's Authorized Representative of the condition. The Owner will, after consultation, determine a further course of action.

1.08 WARRANTIES

- A. Installer:
 - 1. Standard Workmanship Warranty - Two (2) years commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Materials: New, standard, full weight, identical to products in successful operation for a minimum of two years.
- B. Temporary Exhaust:
 - 1. North exhaust drop: 2,000 cfm minimum. 1.25" s.p., 1 ½ hp.
 - 2. East exhaust drop: 3,450 cfm minimum. 1.25" s.p., 1 ½ hp.
 - 3. South exhaust drop: 3,150 cfm minimum. 1.25" s.p., 1 hp.
- C. Provide filters on the open supply ducts.

95% REVIEW

PART 3 EXECUTION

3.01 EXAMINATION

- A. Inspection:
 - 1. Verify substrate conditions are acceptable for product installation in accordance with manufacturers' instructions.
 - 2. Before starting Work, carefully examine site and Contract Documents. Become thoroughly familiar with conditions governing Work.
- B. Report to the Owner's Authorized Representative any deviations between Contract Documents and site conditions.
- C. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Protection: Provide temporary coverings and protection of adjacent work areas.
- B. Disconnect and store existing roof mounted equipment as necessary to complete work as specified.
- C. Notify Owner's Authorized Representative of any conditions of non-compliance with current applicable codes.
- D. Close pipe openings with caps or plugs.
- E. Protect existing wiring, circuits, piping, conduits, control systems, from damage during course of Work.
- F. Arrange Work to minimize interruption of any services. When interruptions are unavoidable, consult Owner's Authorized Representative and utilities involved; agree in writing upon a mutually satisfactory time and duration.
- G. Coordinate Work with related systems. Should rearrangement or re-routing be necessary, submit proposed revisions and obtain approval thereof.

3.03 INSTALLATION / RECONNECTION

- A. Comply with manufacturers' product data, technical bulletins, and catalog and carton installation instructions.

95% REVIEW

- B. Comply with reviewed submittals.
- C. Install equipment with minimum clearances indicated by manufacturer as required for proper maintenance, repair and service.
- D. Set equipment to provide for ready access to any parts requiring inspection and/or service.

3.04 FIELD QUALITY CONTROL

- A. Site Tests: Prior to acceptance, operate all affected mechanical systems for a period of at least five consecutive eight hour days.

3.05 ADJUSTING

- A. Repair or replace damaged installed products.

3.06 CLEANING

- A. Remove temporary coverings and protection of adjacent work areas.
- B. Clean installed products in accordance with manufacturer's instructions prior to Final Completion.
- C. Clean all dirt, construction dust and debris from all mechanical systems. Touch up paint where finish has been damaged.
- D. Remove construction debris from project site and legally dispose thereof.

3.07 PROTECTION

- A. Protect installed products from damage during subsequent construction.

END OF SECTION

95% REVIEW

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Disconnect and reconnect existing roof mounted equipment as necessary to complete work specified.
 - 2. Materials and methods.

- B. Related Sections:
 - 1. Section 024110 - Selective Demolition.
 - 2. Section 230000 - Basic Mechanical.

1.02 REFERENCES

- A. NFPA (National Fire Protection Association) 70 - National Electrical Code.

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide products which have been manufactured, fabricated and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.

- B. Closeout:
 - 1. Project Record Documents: As-built Drawings and Specifications.
 - 2. Copies of certificates of Code Authority acceptance.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications:
 - 1. Minimum 5 years commercial experience in performing this work, having specialized in installation of work similar to that required for this project. When requested, submit certificate indicating qualification.
 - 2. Provide journeyman electricians, equipped with required tools, meters, and instruments.

- B. Regulatory Requirements:
 - 1. Comply with applicable Building Code requirements.
 - 2. Comply with Rules, Regulations and Codes of the State and local Authorities Having Jurisdiction.
 - 3. Obtain applicable permits, Owner reimburses for permits and fees.

95% REVIEW

- C. Pre-Installation Meeting: Conduct meeting with Owner's Authorized Representative to verify project requirements, substrate conditions, manufacturer's installation instructions and warranty requirements.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Delivery:
 - 1. Comply with manufacturer's ordering instructions and lead time requirements; deliver products in manufacturer's original, unopened, undamaged containers with identification labels intact.
 - 2. Transport products in manner to avoid distortion or damage.
- B. Storage:
 - 1. Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturers.
 - 2. Store products off ground and under cover.
- C. Handling: Exercise care in handling, loading, unloading and storing products to avoid damage.

1.06 WARRANTIES

- 1. Installer: Standard Contractor's Warranty for Workmanship - One (1) year commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MATERIALS

- A. New, listed by the Underwriter's Laboratories, bearing their label.
- B. Conductors: Soft drawn copper, number 12 minimum size, with 600 volt type THAN insulation.
- C. Splices: Scotchlok, Ideal wire nut or similar type connector.
- D. Above Grade Conduit: Zinc coated steel EMT in dry, protected locations. Flexible steel conduit only where flexibility is necessary.

95% REVIEW

- E. Outlet Boxes: Weatherproof of code required size to accommodate wire, fittings and devices.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Inspection: Verify substrate conditions are acceptable for product installation in accordance with manufacturer's instructions.
- B. Report to the Owner's Authorized Representative any deviations between Contract Documents and site conditions.
- C. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Protection: Provide temporary coverings and protection of adjacent work areas.
- B. Coordinate electrical wiring and equipment with conditions of construction.

3.03 INSTALLATION / RECONNECTION

- A. Comply with manufacturer's product data, technical bulletins, and catalog and carton installation instructions.
- B. Install products in conformance with applicable codes and reviewed submittals.
- C. Locate all raceways, conduit, outlet boxes and wiring concealed from view, unless otherwise shown.

3.04 FIELD QUALITY CONTROL

- A. Inspection: Ensure that Work is not covered until reviewed and accepted by Code Authority.

3.05 ADJUSTING

- A. Repair or replace damaged installed products.

95% REVIEW

3.06 CLEANING

- A. Remove temporary coverings and protection of adjacent work areas.
- B. Clean installed products in accordance with manufacturer's instructions prior to Final Completion.
- C. Remove electrical waste and debris from job site as Work progresses.
- D. Upon completion, remove all excess supplies, materials and tools.
- E. Leave the electrical Work clean, dust-free and in proper working order
- F. Remove construction debris from project site and legally dispose thereof.

3.07 PROTECTION

- A. Protect installed products from damage during subsequent construction.

END OF SECTION

95% REVIEW

OREGON STATE UNIVERSITY UNIVERSITY HOUSING & DINING SERVICES BUXTON HALL REEROOFING PROJECT

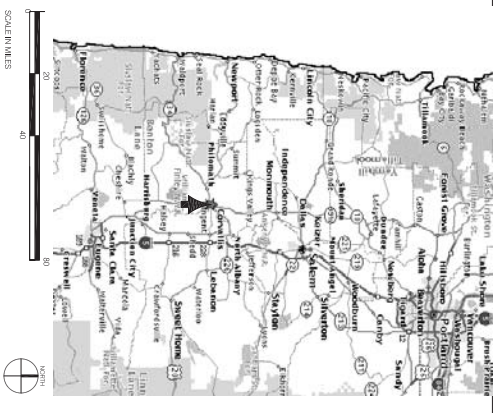


GENERAL NOTES

THIS FACILITY IS CURRENTLY OCCUPIED, AND IS TO REMAIN OPERATIONAL THROUGHOUT CONSTRUCTION. CONTRACTOR SHALL PROTECT EXISTING UTILITIES, AND MAINTAIN SECURITY AND SAFE EGRESS AT ALL TIMES.

- A. EXISTING MATERIALS AND CONSTRUCTION ARE NOTED ON THE PROJECT DRAWINGS.
- B. VERIFY ALL DIMENSIONS AND COMPONENTS OF THE PROJECT.
- C. PROJECT ALL DIMENSIONS AND COMPONENTS OF THE PROJECT, REPAIR AREAS OF DAMAGE BY CONSTRUCTION ACTIVITIES AT NO TIME TO OWNERS. MAINTAIN WORKER PROTECTION AT ALL TIMES.
- D. MAINTAIN ALL EXISTING MATERIALS AND DIMENSIONS TO MATCH NEW WORK AS SPECIFIED.
- E. MAINTAIN PROTECTED ACCESS TO AND EGRESS FROM BUILDING AT ALL TIMES.
- F. KEEP STANDING, PARKING AND STORAGE AREAS IN AN OPERATIONAL CONDITION. RETURN AREAS BACK TO ORIGINAL OR BETTER CONDITION. MAINTAIN PROTECTED ACCESS TO SPECIFIC AREAS PARKING, STAIRWAYS, STORAGE ETC. WITH OWNERS AUTHORIZED REPRESENTATIVE.
- H. UNLESS OTHERWISE INDICATED, ALL COLORS, TEXTURES AND FINISHES MATCH EXISTING.
- I. ALL NEW WOOD COMPONENTS ADDED TO THE BUILDING MUST BE THE MATCHED SET SPECIFICATION.

AREA MAP



SYMBOLS

- DETAIL KEY
- ◇ KENNOTE
- ⊕ NORTH ARROW
- ENTRANCE THE SHADOWS

ABBREVIATIONS

CONC. CONCRETE
 COB. CORNER
 D.O. DOUBLE
 DIA. DIAMETER
 E.A. EACH
 F. FACE
 F. FACTORY
 G.A. GAUGE
 H.G. HEIGHT
 H.C. HORIZONTAL
 LB. POUND
 L.C. LENGTH
 N.C. NUMBER
 N.C. NOT IN CONTACT
 O.C. ON CENTER
 P.F. POUNDS PER SQUARE FOOT
 P.I. PRESSURE INCHES
 S.S. SQUARE FOOT
 T.O. TOP OF
 TYP. TYPICAL
 W.O. WITHOUT

MATERIALS*

- INSULATION
- ▨ LUMBER
- ▨ BLOCKING
- ▨ 2X4 LUMBER
- ▨ INSULATION
- ▨ CONCRETE
- ▨ STEEL
- ▨ RYWOOD

PROJECT DIRECTORY

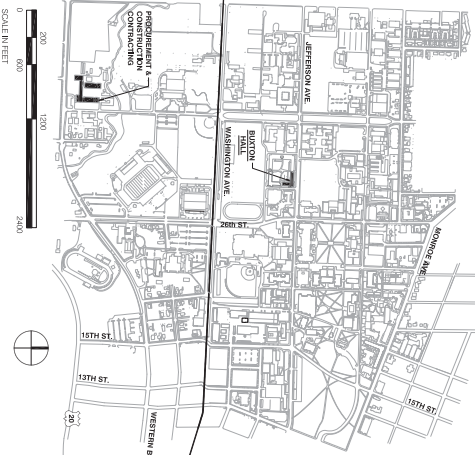
OWNER:
 OREGON STATE UNIVERSITY
 400 SW 6261 ST.
 CORVALLIS, OREGON 97331-0801
 ATTENTION: PROJECT MANAGER
 EMAIL: industrial@oregonstate.edu

ARCHITECT:
 MCBRIDE ARCHITECTURE PC
 2210 NE 12TH ST.
 CORVALLIS, OREGON 97331-2801
 TEL: (503) 973-1881 FAX: (503) 973-1883
 EMAIL: info@mcbridearch.com

PROJECT SUMMARY

PROJECT DESCRIPTION:
 REPAIRS, SCOPED REPAIRS INCLUDES:
 • SELECTIVE DEMOLITION
 • SSI/SMOORED BRIMWORKING
 • FLASHING & SHEET METAL
 • PAINTING
 • FINISHES
 • BRICK ELECTRICAL

CAMPUS MAP



BUILDING CODE

PROJECT DESCRIPTION:
 BUXTON HALL
 OREGON STATE UNIVERSITY
 CORVALLIS, OREGON 97331

PROJECT TASK / CODE DESCRIPTION	TYPICAL NO. OF CONCRETE	HT. FT.	REMARKS
ROOF	2	42'-7"	CLASS A ROOF INSULATION OVER CONCRETE SLAB

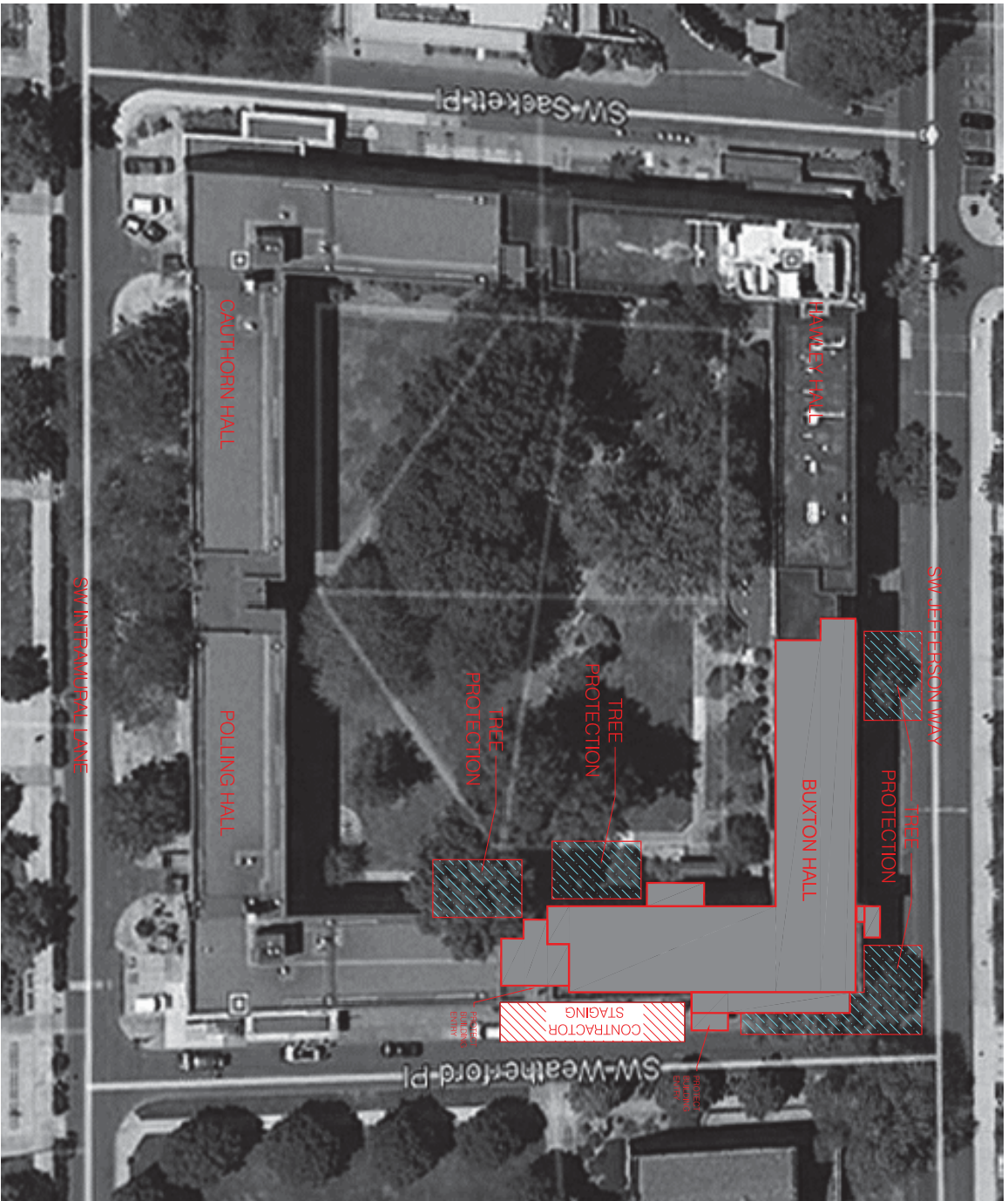
APPLICABLE CODES:
 2014 - OREGON STRUCTURAL SPECIALTY CODE
 2014 - OREGON THE CODE
 2014 - OREGON MECHANICAL SPECIALTY CODE
 2014 - OREGON ELECTRICAL SPECIALTY CODE
 2014 - OREGON PLUMBING SPECIALTY CODE

INDEX

NO.	DESCRIPTION	DATE
01	COVER SHEET PROJECT INFORMATION	JANUARY 6, 2019 09:55
02	RECORD DRAWINGS	
03	REVISIONS	
04	OWNER REVIEW	
05	PLAN CHECK REVISIONS	
06	REVISION NUMBER	

ALTERNATES

ALTERNATE NO. 1: Use Alternative System, Detail and Materials Where Indicated on Drawing. See Specification Section 05100 for system details.



1 SITE PLAN
NO SCALE



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& DINING
SERVICES

BUXTON
HALL
REROOFING
PROJECT

SHEET TITLE:
SITE
PLAN

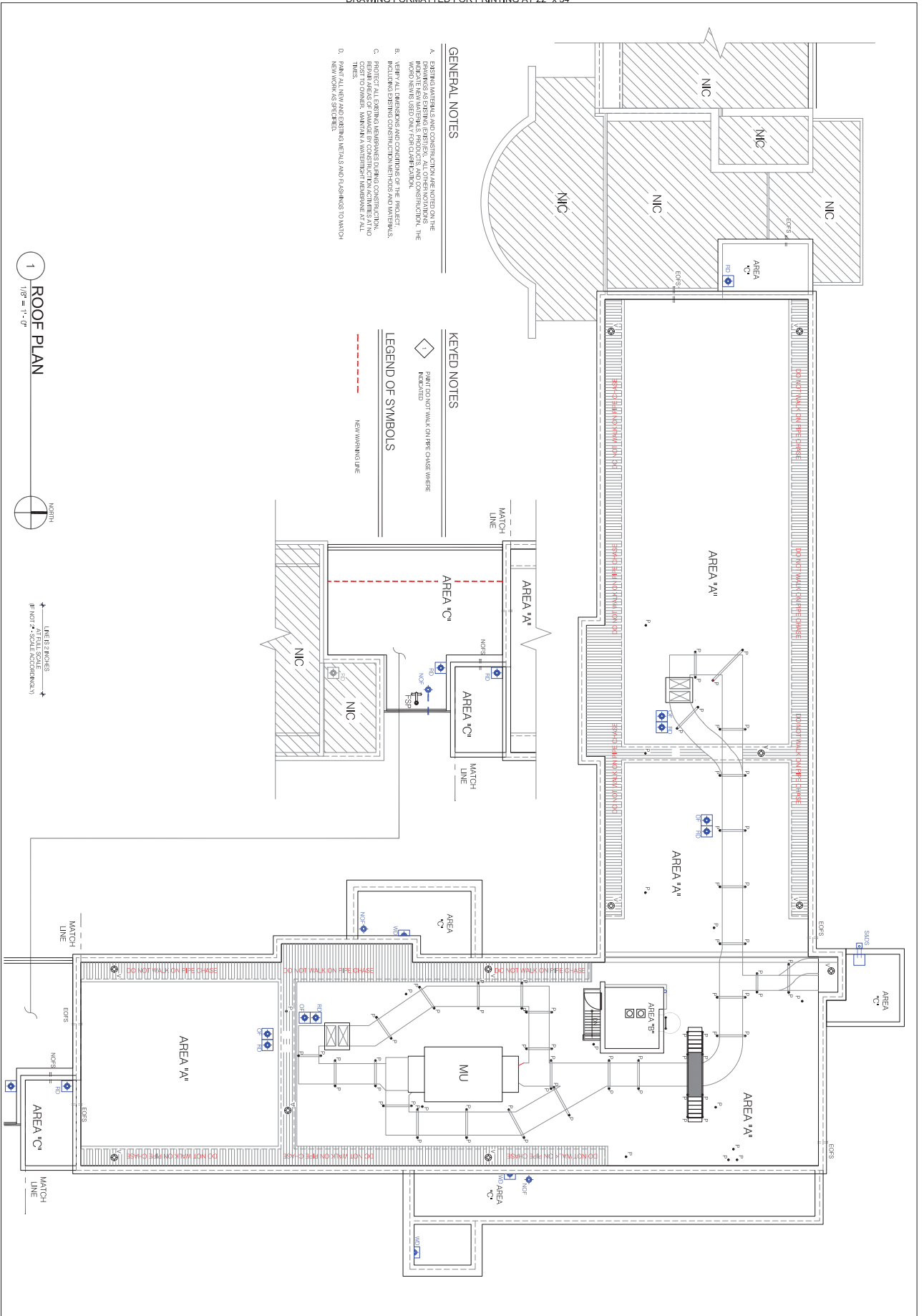
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REVIEW

Date: 01/31/2019
Drawing:
Number:

Drawn:	PS
Checked:	RLM
TR:	18016

Project: 18016
SHEET NUMBER:

A1.1



GENERAL NOTES

- EXISTING MATERIALS AND CONSTRUCTION ARE NOTED ON THE DRAWINGS AS EXISTING. EXISTING, ALL OTHER NOTATIONS ARE NEW UNLESS SPECIFICALLY NOTED OTHERWISE. THE WORD 'NEW' IS USED ONLY FOR CLARIFICATION.
- VERIFY ALL DIMENSIONS AND CONDITIONS OF THE PROJECT, INCLUDING EXISTING CONSTRUCTION METHODS AND MATERIALS.
- PROTECT ALL EXISTING MATERIALS DURING CONSTRUCTION, INCLUDING ALL EXISTING CONSTRUCTION METHODS AND MATERIALS.
- PAINT ALL NEW AND EXISTING METALS AND FLASHINGS TO MATCH NEW WORK AS SPECIFIED.

KEYED NOTES

1. PAINT DO NOT WALK ON PIPE CHASE WHERE INDICATED

LEGEND OF SYMBOLS

--- NEW WORKING LINE

1 ROOF PLAN
1/8" = 1'-0"

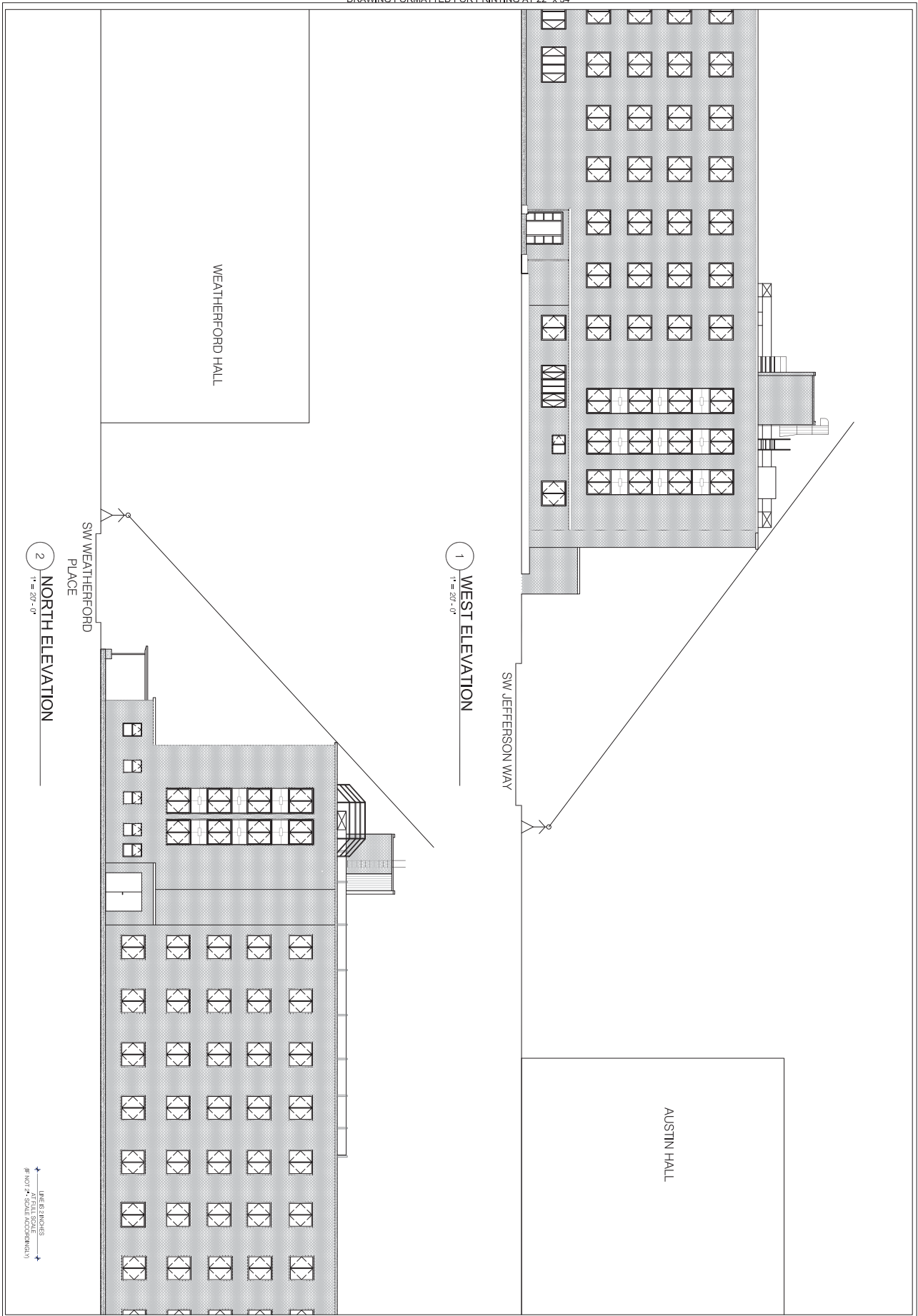


LINE IS 2 INCHES
IF NOT 2" SCALE ACCORDINGLY

UNIVERSITY HOUSING & DINING SERVICES
BUXTON HALL REROOFING PROJECT

95%
REVIEW

WALKWAY & WANNING PLAN
SHEET TITLE:
Date: 01/31/2019
Time: 18:16 AM
Project: 18016
SHEET NUMBER:
A2.3



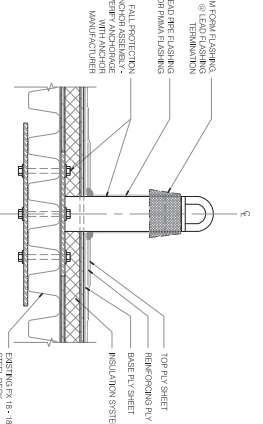
UNIVERSITY
HOUSING
& DINING
SERVICES

BUXTON
HALL
REEROOFING
PROJECT

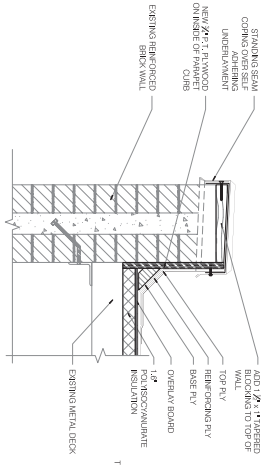
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ELEVATIONS

95%
REVIEW

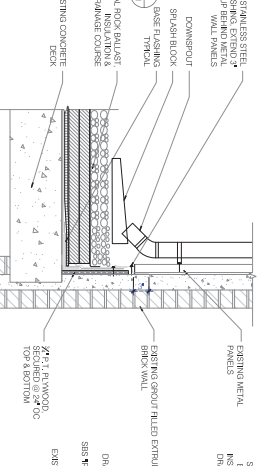
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Drawn by:	RLM
Checked by:	RLM
Title:	18016 E.L.V.
Project:	18016
Sheet Number:	A3.1



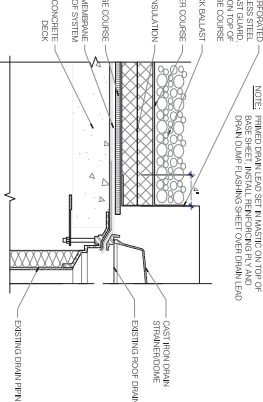
1 AREA DRAIN DETAIL
AS 2 1'-1 1/2\"/>



2 DRAIN GUARD & OVERFLOW GUARD DETAIL
AS 2 3/4\"/>



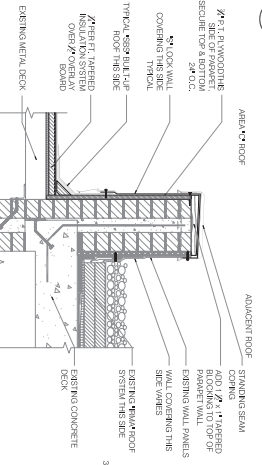
3 EXISTING OVERFLOW @ IRMA SYSTEM
AS 2 1'-1 1/2\"/>



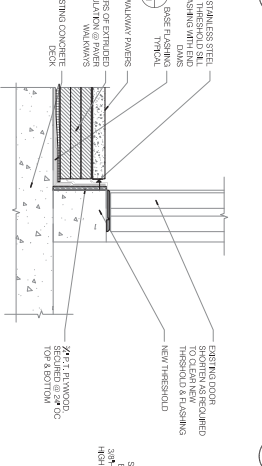
4 REGLET AT PENTHOUSE
AS 2 1\"/>



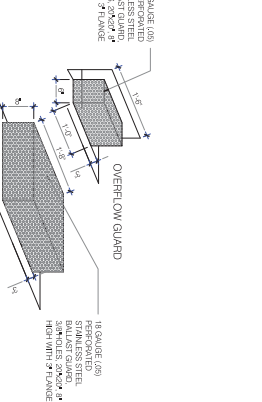
5 PENTHOUSE BASE FLASHING @ METAL WALL
AS 2 1\"/>



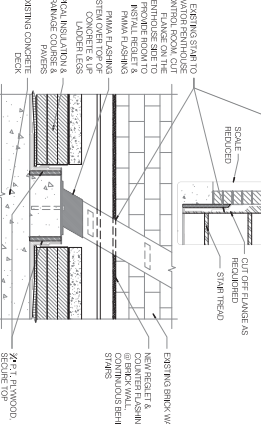
6 PENTHOUSE DOOR THRESHOLD
AS 2 1\"/>



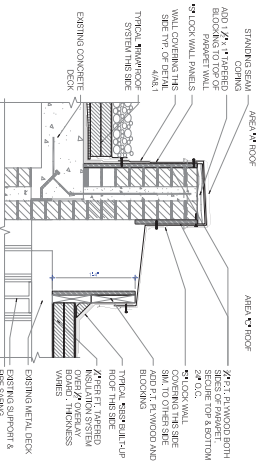
7 SBS BASE FLASHING @ STAIRS
AS 2 3\"/>



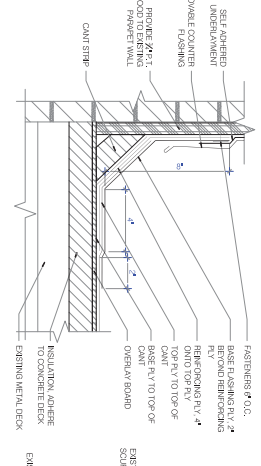
8 ELEVATOR PENTHOUSE GUTTER EDGE
AS 2 1'-1 1/2\"/>



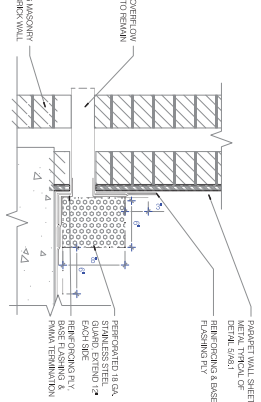
9 ELEVATOR PENTHOUSE PERIMETER CURB
AS 2 1'-1 1/2\"/>



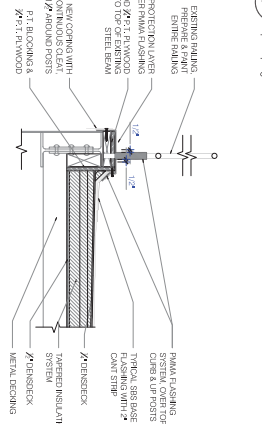
10 AREA 'C' TO ADJACENT NIC ROOF
AS 2 1\"/>



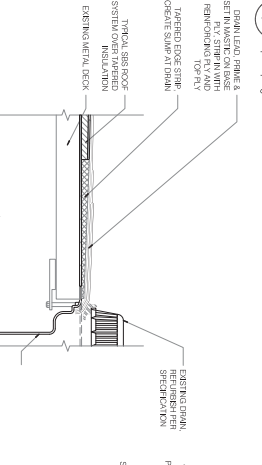
11 AREA 'C' TO 'A' EXPANSION JOINT
AS 2 1\"/>



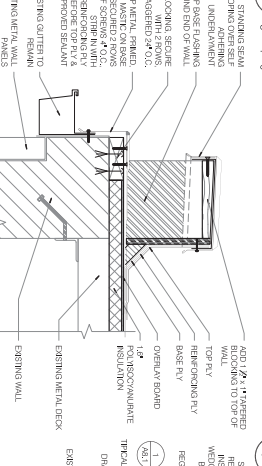
12 EXTERIOR ROOF @ STAIRWELL DRAIN
AS 2 1'-1 1/2\"/>



13 FALL PROTECTION ANCHOR - METAL DECK
AS 2 1'-1 1/2\"/>



14 STAIR BASE @ PENTHOUSE
AS 2 1\"/>



15 AREA 'C' CONNECTOR ROOF RAILING
AS 2 1\"/>

APPROVED: [Signature] PROJECT: BUXTON HALL REROOFING PROJECT SHEET TITLE: DETAILS DATE: 01/31/2019 95% REVIEW

OSU
Oregon State University

UNIVERSITY HOUSING & DINING SERVICES

BUXTON HALL REROOFING PROJECT

DETAILS

95% REVIEW

18016

SHEET NUMBER

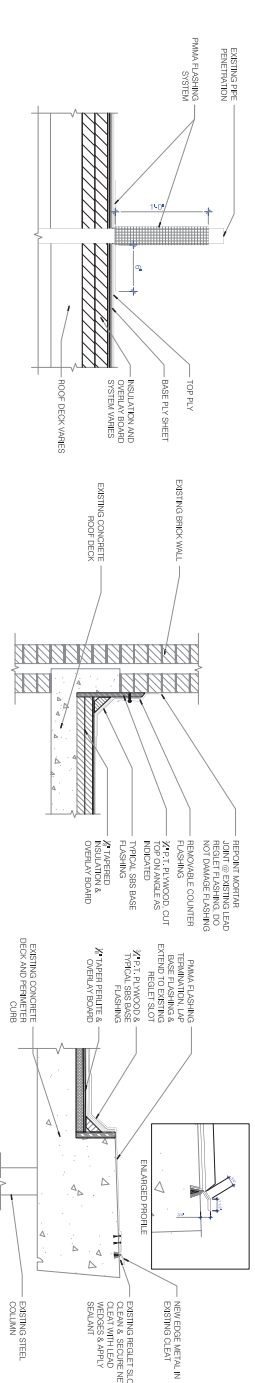
MA
MOBRIDE PC

Project: 18016

Sheet Number: A8.2

Date: 01/31/2019

95% REVIEW

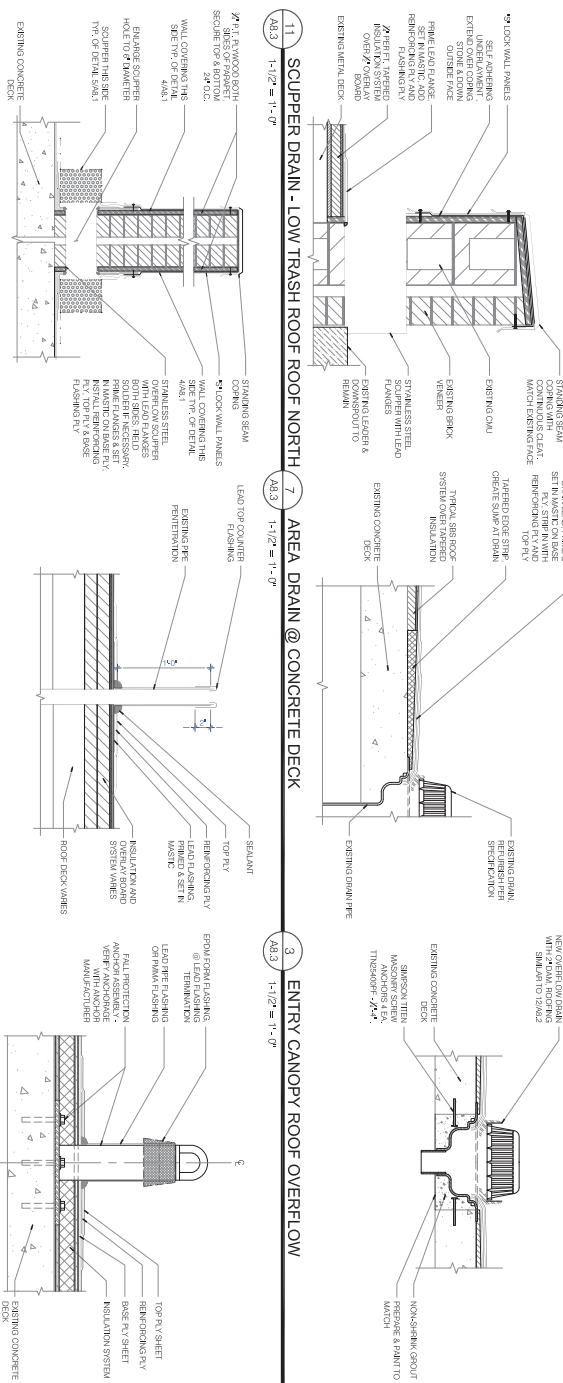


1 ENTRY PERIMETER CURB
 2 WALL DRAIN @ EAST ENTRY CANOPY
 3 ENTRY CANOPY ROOF OVERFLOW
 4 FALL PROTECTION ANCHOR - CONCRETE DECK
 5 AREA 'D' ROOF TO BUILDING DETAIL
 6 PIPE PENETRATION ALTERNATE FLASHING



7 AREA DRAIN @ CONCRETE DECK
 8 SCUPPER DRAIN - LOW TRASH ROOM ROOF NORTH
 9 PARAPET - LOW TRASH ROOM ROOF NORTH
 10 AREA DRAIN @ CONCRETE DECK
 11 SCUPPER DRAIN - LOW TRASH ROOM ROOF NORTH
 12 PARAPET - LOW TRASH ROOM ROOF NORTH

NOT USED



1 ENTRY PERIMETER CURB
 2 WALL DRAIN @ EAST ENTRY CANOPY
 3 ENTRY CANOPY ROOF OVERFLOW
 4 FALL PROTECTION ANCHOR - CONCRETE DECK
 5 AREA DRAIN @ CONCRETE DECK
 6 PIPE PENETRATION FLASHING
 7 SCUPPER DRAIN - LOW TRASH ROOM ROOF NORTH
 8 PARAPET - LOW TRASH ROOM ROOF NORTH
 9 AREA DRAIN @ CONCRETE DECK
 10 SCUPPER DRAIN - LOW TRASH ROOM ROOF NORTH
 11 PARAPET - LOW TRASH ROOM ROOF NORTH
 12 AREA DRAIN @ CONCRETE DECK
 13 SCUPPER DRAIN - LOW TRASH ROOM ROOF NORTH
 14 PARAPET - LOW TRASH ROOM ROOF NORTH



Oregon State University
 HOUSING & DINING SERVICES
 BUXTON HALL
 REEROOFING PROJECT
 SHEET TITLE:

95% REVIEW

DATE: 01/31/2019
 DRAWN BY: [Redacted]
 CHECKED BY: [Redacted]
 TITLE: DETAILS

PROJECT: 18016
 SHEET NUMBER: **A8.3**



PROJECT MANUAL

OREGON STATE UNIVERSITY
UNIVERSITY HOUSING & DINING SERVICES
HAWLEY HALL REROOFING PROJECT

ARCHITECT:

MCBRIDE ARCHITECTURE, P.C.
P.O. BOX 12574
PORTLAND, OREGON 97212
PHONE: (503) 916-1808

PHIL STRAND - PROJECT MANAGER
phil@mcbriearchitecture.com



OWNER:

OREGON STATE UNIVERSITY
UNIVERSITY HOUSING & DINING SERVICES
CORVALLIS, OREGON 97331
PHONE: (541) 737-2428

PATRICK ROBINSON - ASSISTANT DIRECTOR CAPITAL &
SPACE PLANNING
patrick.robinson@oregonstate.edu

April 2019

Project Number: 16003

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McBRIDE ARCHITECTURE, P.C.

DIVISION 2 - SITE WORK

024110 Selective Demolition

DIVISION 3 – NOT USED

DIVISION 4 – NOT USED

DIVISION 5 – NOT USED

DIVISION 6 - WOOD AND PLASTIC

060573 Fire Treated Wood

061010 Rough Carpentry

DIVISION 7 - THERMAL AND MOISTURE PROTECTION

075215 SBS Modified Bitumen Roofing (Cold)

075225 SBS Modified Roofing (IRMA)

075360 Single Ply (EPDM) Roof Membrane Repairs

076200 Flashing and Sheet Metal

079200 Joint Sealers

DIVISION 8 – NOT USED

DIVISION 9 - FINISHES

099100 Painting

DIVISION 10 thru 21 - NOT USED

DIVISION 22 - MECHANICAL

220010 Basic Plumbing

221426 Roof Drains

230000 Basic Mechanical

DIVISION 26 - ELECTRICAL

260000 Basic Electrical

DRAWINGS - UNDER SEPARATE COVER

- G0.1 Cover Sheet
- A1.1 Site Plan
- A2.1 Demolition Plan
- A2.1 Roof Plan
- A2.2 Walkway Plan
- A3.1 Elevations
- A8.1 Details
- A8.2 Details
- A8.3 Details

END OF TABLE OF CONTENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Selective demolition, as indicated.
- B. Removal of existing roofing, flashing and related sheet metal components.
- C. Core samples were taken and tested.
 - 1. Asbestos was detected in samples from the built-up roof under the EPDM system.
 - 2. Comply with OSHA and DEQ rules and regulations regarding demolition of asbestos containing materials.
- D. Demolished Metals are the property of the General Contractor. Please consider the value when determining the bid price.

1.02 REFERENCES

- A. 29 CFR 1926.1101. OSHA Occupational Exposure to Asbestos, Construction Industry Standard.
- B. U.S. Environmental Protection Agency National Emissions Standards for Hazardous Air Pollutants (NESHAPS). (Code of Federal Regulations Title 40, Part 61, Subparts A and M.).
- C. AA guide for Meeting DEQ Requirements: Handling Asbestos-Containing Roofing Materials (December 1994).
- D. DOT Regulations 49 CFR 171 & 172.

1.03 SUBMITTAL

- A. Schedule: Detailed schedule of demolition and removal Work.
- B. Shop Drawings: Demolition procedures and removal sequence, locations and construction of barricade, fences and temporary Work.

1.04 SUBSTRATE

- A. Accurately record actual substrate make-up and condition after elements are removed.

- B. Document with drawings and photographs.

1.05 QUALIFICATIONS

- A. Demolition Firm: A company with commercial experienced in performing the Work of this section with minimum three years experience.

1.06 REGULATORY REQUIREMENTS

- A. Conform to applicable code for demolition of structures, safety of adjacent structures, dust control, and disposal.
- B. Obtain required permits from authorities.
- C. Conform to applicable regulatory procedures when discovering hazardous or contaminated materials.

PART 2 (Not Used)

PART 3 EXECUTION

3.01 PROTECTION

- A. Conduct Work with minimum interference to thoroughfares; maintain protected egress and access at all times; maintain disabled access.
- B. Do not close or obstruct sidewalks without authorization from the Owner's Authorized Representative.
- C. Protect adjacent building surfaces and property from damage during demolition operations.
- D. Provide and maintain suitable barricades, shelters, lights, and danger signals during the progress of the Work.
- E. If necessary, protect existing sidewalks and curbs with planking.
- F. Close pipe openings with caps or plugs.
- G. Protect existing wiring, circuits, piping, conduits, control systems, from damage during course of Work.

- H. Make determination of the existence, location and condition of related utility services.
- I. Arrange Work to minimize interruption of any services. When interruptions are unavoidable, consult Owner and utilities involved; agree in writing upon a mutually satisfactory time and duration.

3.02 PREPARATION

- A. Protect existing landscaping and structures.
- B. Owner will trim trees and shrubbery if required. Coordinate with Owner's Authorized Representative.

3.03 REQUIREMENTS

- A. Conduct demolition to minimize interference with adjacent occupancies.
- B. Dangerous Condition:
 - 1. Cease operations immediately if any structures appear to be in danger.
 - 2. Notify Owner's Authorized Representative.
 - 3. Do not resume operations until directed.

3.04 DEMOLITION

- A. Demolish indicated structures and appurtenances in an orderly and careful manner.
- B. Except where noted otherwise, immediately remove demolished material from site.
- C. Pollution Controls:
 - 3. Use temporary enclosures and other suitable methods to limit dust and dirt rising and scattering in air to lowest practical level.
 - 4. Comply with governing regulations pertaining to environmental protection.
 - 5. Do not use water when it may create hazardous or objectionable conditions.
- D. Clean adjacent structures and improvements of dust, dirt and debris caused by demolition operations.

3.05 REMOVAL

- A. Transport demolished materials and dispose of off-site in a legal manner and location.
- B. Cover vehicles used for removal of demolished materials, so as to prevent debris from littering along the disposal route. Retrieve any fallen debris.

3.06 ROOFING SYSTEMS REMOVAL

- A. Completely remove all existing roofing materials down to existing decks.
- B. Ensure that substrate is clean and dry, smooth, free of protruding or loose fasteners and free of foreign material.

3.07 SALVAGE SCHEDULE

- A. General: Demolished material and equipment not designated for salvage becomes Contractor's property; remove promptly from the project site.
- B. Metals: Stainless steel, copper, galvanized and per-coated metals are to be recycled, provide Owner documentation.
- C. Remove, store, and protect the following materials and equipment to be reused:
 - 1. Equipment indicated on drawings.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

- A Section Includes: Fire retardant treatment for wood, including framing, decking, sheathing and other wood construction, not exposed to weather.
- B Related Sections:
 - 1. Section 06 10 10 - Rough Carpentry.

1.02 REFERENCES

- A ASTM D5516 - Test Method for Evaluating the Flexural Properties of Fire-Retardant Treated Softwood Plywood Exposed to Elevated Temperatures.
- B ASTM D5664 - Test Method for Evaluating the Effects of Fire-Retardant Treatments and Elevated Temperatures on Strength Properties of Fire-Retardant Treated Lumber.
- C ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.
- D AWPA (American Wood-Preservers' Association) Standard C20 - Structural Lumber, Fire Retardant Treatment by Pressure Processes.
- E AWPA Standard C27 - Plywood, Fire Retardant Treatment by Pressure Processes.
- F AWPA Standard P25 - Waterborne Preservatives.
- G AWPA Standard P49 - Fire Retardant Formulations.
- H AWPA Use Category UC1.
- I MS (Military Specification) L-19140E - Lumber and Plywood, Fire-Retardant Treated.
- J NFPA (National Fire Protection Association) 255 - Test Method for Surface Burning Characteristics of Building Materials.
- K UL (Underwriters Laboratories) 723 - Test for Surface Burning Characteristics of Building Materials.

L UL Building Materials Directory.

1.03 SYSTEM DESCRIPTION

A Performance Requirements: Provide fire retardant treatment that will perform in accordance with manufacturer's stated performance criteria without defects, damage or failure.

1.04 SUBMITTALS

A Submit in accordance with Section 01 33 00.

B Product Data: Include manufacturer's product sheets.

C Quality Assurance Submittals:

1. Certified test report showing compliance with specified performance characteristics and physical properties. Include in test report certification that fire retardant solution does not contain ammonium phosphate.
2. NER-303 or ICBO ER-5755 indicating flamespread, strength, corrosion and hygroscopic properties.
3. Certification from treatment plant certifying wood treatment applied complies with Dricon treatment.

D Closeout Submittals:

1. Warranty documents specified herein.

1.05 QUALITY ASSURANCE

A Source Quality: Obtain fire retardant treatment from a single manufacturer.

B Wood Treatment Plant Qualifications: Experienced in performing work of this section which has specialized in the treatment of wood similar to that required for this project. When requested, submit certificate indicating qualifications.

C Regulatory Requirements:

1. FHA Minimum Property Standard #2600.
2. HUD Materials Release 1261.

D Testing: Testing on fire performance, strength and corrosion properties of fire retardant treated wood; recognized by issuance of a National Evaluation Services Report.

E Lumber Treatment Standard: Comply with AWPA Standard C20, current edition and Commodity Specification H of AWPA Use Category System.

F Plywood Treatment Standard: Comply with AWPA Standard C27, current edition and Commodity Specification H of AWPA Use Category System.

1.06 DELIVERY, STORAGE & HANDLING

A Storage: Store materials protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.

1.07 WARRANTY

A Manufacturer's Warranty:

1. Manufacturer's standard warranty document executed by authorized company official.
2. Roof warranty against heat degradation.
3. Warranty Period: 40 years, commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURER[S]

A Arch Wood Protection , or approved equal.

2.02 FIRE RETARDANT TREATMENT

A Product Treatment:

1. Dricon fire retardant treatment, produced by licensed treatment plant.
2. Provide protection against termites and fungal decay, registered for use as wood preservative by EPA.
3. Comply with formulation AWPA P17 FR-1
4. Free of halogens, sulfates and ammonium phosphate.
5. Treated Wood: Flamespread of less than 25 in accordance with ASTM E84.
6. Corrosion Properties: Wood in contact with carbon steel, galvanized steel, aluminum, copper and red brass shall exhibit corrosion rates less than 1 mil per year, when tested in accordance with FS MIL-L-19140, paragraph 4.6.5.2.

2.03 RELATED WOOD MATERIALS

- A Wood Materials: Specified under Section 06 10 10 .
- B Moisture Content:
 - 1. Lumber: Kiln dried, maximum 19% after treatment.
 - 2. Plywood: Kiln dried, maximum 15% after treatment.

PART 3 EXECUTION

3.01 APPLICATION

- A Fire Retardant Treatment: Apply fire retardant treatment in accordance with applicable code requirements.
- B Compliance: Comply with manufacturer's product data, including product technical bulletins, for fire retardant treatment installation.

3.02 PROTECTION

- A Protect fire retardant treated wood from damage during construction.

END OF SECTION

GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Treated wood.
 - a. P.T. Blocking.
 - b. P.T. Plywood.
 - 2. See Section 060573 Fire Treated Wood
 - a. All new wood components must be Fire Treated.
- B. Related Sections:
 - 1. Section 060573 – Fire Treated Wood
 - 2. Section 075215 – SBS Modified Bitumen Roofing (Cold).
 - 3. Section 076200 – Flashing and Sheet Metal.

1.02 REFERENCES

- A. APA (American Plywood Association) - Product Standard PS-1.
- B. WCLIB (West Coast Lumber Inspection Bureau) - Standard Grading Rules No. 17.
- C. WWPA (Western Wood Products Association) - Lumber Standard PS-20.
- D. AWPA (American Wood Preservers' Association):- Book of Standards.

1.03 SYSTEM DESCRIPTION

- A. Design Requirements:
 - 1. PT Plywood at perimeters.
 - 2. Revised equipment curbs.
 - 3. Blocking.
- B. Performance Requirements: Provide products which have been manufactured, fabricated and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Minimum 5 years commercial experience in performing

this work, having specialized in installation of work similar to that required for this project. When requested, submit certificate indicating qualification.

- B. Regulatory Requirements: Comply with applicable Building Code requirements.
- C. Pre-Installation Meeting: Conduct meeting with Owner's Authorized Representative to verify project requirements, substrate conditions, manufacturer's installation instructions and warranty requirements.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Delivery:
 - 1. Comply with manufacturer's ordering instructions and lead time requirements; deliver products with identification labels intact.
 - 2. Protect wood from moisture absorption during transportation and storage.
- B. Storage:
 - 1. Store products protected from exposure to harmful weather.
 - 2. Store wood above grade, permit ventilation.
 - 3. Cover with secure, breathable, weather resistant covers.
- C. Handling: Avoid damage to products.

PART 2 PRODUCTS

2.01 LUMBER MATERIALS

- A. Blocking, Insulation Stops and Nailers: Coast Region Douglas Fir, WCLIB construction or No. 2, S4S, Moisture content maximum 19 percent.

2.02 SHEATHING MATERIALS

- A. Plywood Wall Sheathing: APA Rated, $\frac{3}{4}$ inch, Pressure Treated.

2.03 ACCESSORIES

- A. Fasteners: Galvanized steel for exterior, high humidity, and treated wood locations, plain finish elsewhere.
- B. Die Stamped Connectors: galvanized steel.

- C. Anchors: Expansion shield and lag bolt type for anchorage to solid masonry or concrete.

2.04 WOOD TREATMENT

- A. Wood Preservative (Pressure Treatment): AWPA Treatment C1 using water borne preservative with 0.25 percent retainage.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Inspection: Verify substrate conditions are acceptable for product installation.
- B. Report to the Owner's Authorized Representative any deviations between Contract Documents and site conditions.
- C. Do not proceed until unsatisfactory conditions have been corrected.

3.02 ADJUSTING

- A. Repair or replace damaged installed products.

3.03 CLEANING

- A. Remove construction debris from project site and legally dispose thereof.

3.04 PROTECTION

- A. Protect installed product and finish surfaces from damage during subsequent construction.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Deck preparation.
2. Tapered insulation systems at Roof Areas C, D, E & F and the Raised Steam Pipe Chases in Area A.
3. Cold adhesive applied SBS modified bitumen roofing.
4. Granule surface cap sheet.
5. Splash Blocks (concrete).

B. Related Sections:

1. Section 024110 - Selective Demolition.
2. Section 060573 – Fire Treated Wood.
3. Section 061010 - Rough Carpentry.
4. Section 076200 - Flashing and Sheet Metal.
5. Section 221426 - Roof Drains.
6. Section 230000 - Basic Mechanical.
7. Section 260000 - Basic Electrical.

1.02 REFERENCES

- A. ASTM D41 - Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
- B. ASTM D2178 - Asphalt Glass Felt Used in Roofing and Waterproofing.
- C. ASTM D4586 - Asphalt Roof Cement, Asbestos-Free.
- D. ASTM D5147 - Test Methods for Sampling and Testing Modified Bituminous Sheet Material.
- E. ASTM D5849 - Test Method for Evaluating Resistance of Modified, Bituminous Roofing Membranes to Cyclic Joint Displacement.
- F. ASTM D6163 - Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements.
- G. ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.

- H. ASTM E108 - Test Methods for Fire Tests of Roof Coverings.
- I. ASTM E119 - Test Methods for Fire Tests of Building Construction and Materials.
- J. ASTM E136 - Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 degrees C.
- K. NRCA (National Roofing Contractors Association) - Roofing and Waterproofing Manual.
- L. FM (Factory Mutual) 1-90 for wind uplift and fastening.
- M. ASHRAE (American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc.) for insulation R-values.
- N. UL (Underwriters Laboratories) - Roofing Materials and Systems Directory.

1.03 SYSTEM DESCRIPTION

- A. Design Requirements: Fully Warranted Class A.
- B. Performance Requirements: Provide products which have been manufactured, fabricated and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.

1.04 SUBMITTALS

- A. Submit in accordance with Section 013323.
- B. Product Data:
 - 1. Manufacturer's product sheets and installation instructions.
 - 2. Manufacturer's published specifications.
 - 3. Manufacturer's product data sheets for related components.
 - 4. FM approved fastening pattern.
- C. Shop Drawings:
 - 1. Show layout, profiles, and product components, including anchorage, accessories, finish colors and textures.
 - 2. Insulation and cricket system.

- D. Samples: Selection and verification samples for finishes, colors and textures.
- E. Quality Control:
 - 1. Certified independent test reports, showing compliance with specified performance characteristics and physical properties.
 - 2. Evidence of UL and FM approvals.
 - 3. Certificate of Analysis indicating; Product Identification, Date of manufacture, Lot Number, Dimensions & Mass and Physical Properties, typical of Sample in the Appendix at end of this section.
 - 4. Product certificates, signed by manufacturer, certifying products comply with specified performance characteristics and physical requirements.
 - 5. Manufacturer's field reports.
 - 6. Copy of warranty.
- F. Closeout:
 - 1. Project Record Documents:
 - 2. Operation and maintenance data for installed products, including methods for maintaining, and precautions against cleaning materials and methods detrimental to finishes and performance.
 - 3. Warranty documents specified herein.
 - 4. Per Section 017700, Contract Closeout.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: All products furnished by or approved by roofing manufacturer for entire roof assembly.
- B. Installer Qualifications:
 - 1. Minimum 5 years commercial experience in performing this work, having specialized in installation of work similar to that required for this project.
 - 2. Approved by and certified in writing by roofing Manufacturer.
 - 3. Been in continuous business for past 3 years.
 - 4. Completed at least three successful installations of specified materials and systems on projects of similar scope.
 - 5. Provide all personnel trained in application of materials and systems and maintain supervision as required.
 - 6. Foreman: Have at least five years experience supervising the installation of SBS Roof Systems of similar application and scope. Provide evidence in writing if requested by Owner.
 - 7. When requested, submit certificate indicating qualification.

- C. Standards: Comply with applicable requirements of NRCA Roofing and Waterproofing Manual.
- D. Regulatory Requirements: Comply with applicable Building Code requirements.
- E. Insulation Fire Performance Characteristics: Provide insulation materials which are identical to those whose fire performance characteristics, as listed for each material or assembly of which insulation is a part, have been determined by testing, per methods indicated below, by UL or other testing and inspecting agency acceptable to authorities having jurisdiction:
 - 1. Surface Burning Characteristics: ASTM E84.
 - 2. Fire Resistance Ratings: ASTM E119.
 - 3. Combustibility Characteristics: ASTM E136.
- F. Underwriter's Laboratories and/or Warnock Hersey tested and listed for a Class A rating when installed on incombustible decks for roof slopes and application shown.
- G. Pre-Installation Meeting: Conduct meeting with Owner's Authorized Representative to verify project requirements, substrate conditions, manufacturer's installation instructions and warranty requirements.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Comply with manufacturer's ordering instructions and lead time requirements; deliver products in original, unopened, undamaged containers with identification labels intact.
- B. Storage:
 - 1. Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
 - 2. Store materials in dry, protected areas.
 - 3. Store roll goods on end. 'Flattened' rolls are unacceptable.
 - 4. Control temperature of storage areas in accordance with manufacturer's instructions.
- C. Handling: Exercise care in handling, loading, unloading and storing products to avoid damage.

1.07 PROJECT CONDITIONS

- A. Environmental Requirements:
 - 1. Do not apply materials during precipitation of any form (rain, dew, ice, frost, snow), or if such precipitation is imminent.
 - 2. Do not apply materials when water in any form (i.e., rain, dew, ice, frost, snow) is present on deck.
 - 3. Do not apply materials during ambient temperatures of 40°F and below (including wind chill).

1.08 WARRANTIES

- A. Manufacturer's Warranty:
 - 1. Manufacturer's standard warranty document executed by authorized company official.
 - 2. Single source 20 year combined 10+10 renewable, no dollar limit warranty signed by a corporate officer covering roofing materials, insulation materials and installation of the materials, and related systems. Include all roof related items and installations. Warranty to commence on the Date of Substantial Completion.
- B. Installer:
 - 1. Two (2) years material and labor, from date of Substantial Completion.
 - 2. Warrant all roofing, flashing and roof insulation against defects.
 - 3. Maintain roofed areas in watertight condition during this period.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Siplast:
 - 1. Siplast Paradiene 2030 FR.
 - 2. Or FM Global approved equals.

2.02 INSULATION MATERIALS

- A. Area "B" Elevator Penthouse Roof (Metal Deck).
 - 1. Base Layer (mechanically attached): Rigid closed-cell polyisocyanurate foam board minimum 20 psi compressive strength and 2 pcf density, complying with ASTM C591, aged R value of 5.6 per inch of thickness, flame spread rating of 25 (ASTM E84), both sides of board faced with glass fiber

- mat; 1.6" thick, 4 feet by 4 feet stock. Supplied or approved by Roofing Materials Manufacturer.
2. Submit Manufacturer approved fastener and fastening pattern.
 3. Overlay Board (adhered). See Overlay Board below.
- B. Area C: Tapered Insulation Assembly (Metal Deck).
1. Base Layer (mechanically attached): Gypsum Roof Board: Silicone treated, glass mat faced, gypsum panel, UL Class A, FMRC 90 psf uplift, thickness ½" at exterior stair landing roofs. GP DensDeck, Prime.
 2. Submit Manufacturer approved fastener and fastening pattern.
 3. Tapered Insulation Units (adhered): Rigid closed-cell polyisocyanurate foam board minimum 20 psi compressive strength and 2 pcf density, complying with ASTM C591, aged R value of 5.6 per inch of thickness, flame spread rating of 25 (ASTM E84), both sides of board faced with glass fiber mat; tapered ¼ inch per foot, 4 feet by 4 feet stock. Supplied or approved by Roofing Materials Manufacturer.
 4. Overlay (adhered): See Overlay Board, below
- C. Areas D: Tapered Insulation Assembly (adhered to concrete deck).
1. Base Layer (adhered): Rigid closed-cell polyisocyanurate foam board minimum 20 psi compressive strength and 2 pcf density, complying with ASTM C591, aged R value of 5.6 per inch of thickness, flame spread rating of 25 (ASTM E84), both sides of board faced with glass fiber mat; 1" thick, 4 feet by 4 feet stock. Supplied or approved by Roofing Materials Manufacturer.
 2. Tapered Insulation Units (adhered): Rigid closed-cell polyisocyanurate foam board minimum 20 psi compressive strength and 2 pcf density, complying with ASTM C591, aged R value of 5.6 per inch of thickness, flame spread rating of 25 (ASTM E84), both sides of board faced with glass fiber mat; tapered ⅛ inch per foot, 4 feet by 4 feet stock. Supplied or approved by Roofing Materials Manufacturer.
 3. Overlay (adhered): See Overlay Board, below.
- D. Overlay (Separation) Board:
1. Gypsum Roof Board: Silicone treated, glass mat faced, gypsum panel, UL Class A, FMRC 90 psf uplift, thickness ¼" except ½" at exterior stair landing roofs. GP DensDeck, Prime.
- E. Areas E & F: Modified Perlite Tapered Assembly (adhered to concrete deck).
1. Maximum thickness 2"
 2. Tapered Units (adhered): Tapered ⅛ inch per foot, 4 feet by 4 feet stock.

Supplied or approved by Roofing Materials Manufacturer.

- F. Fiber Crickets: Tapered Perlite ½” per ft..
- G. Fiber Cants: Rigid perlite board, 2 or 3 inch minimum, as shown.

2.03 ROOF MEMBRANE MATERIALS

- A. Membrane Properties:
 - 1. Passes cyclic fatigue resistance for new material per ASTM D5849 (minimum 500 cycles @ 14 deg. F).
 - 2. Passes cyclic fatigue resistance for over aged material per ASTM D5849 (minimum 200 cycles @ 14 deg. F).
 - 3. Passes ASTM E108, for class A fire rating.
- B. Roof Membrane Materials:
 - 1. Base Sheet: Asphalt coated fiberglass base sheet; Siplast Parabase.
 - 2. Base Ply Sheet: Random glass mat reinforced SBS modified asphalt sheet, minimum thickness 87 mils, smooth surface; Siplast Paradiene 20.
 - 3. Top Ply Sheet: Random glass mat reinforced SBS modified bitumen, minimum thickness 94 mils., granule surfaced, Color #71 Armor Gray, fire rated; Siplast Paradiene 30 FR.
- C. Reinforcing Sheet: Random glass mat reinforced SBS modified bitumen, minimum weight 62 pounds per 100 square feet; Siplast Paradiene 20 SA.
- D. Flashing Sheet: Granule surfaced, fiberglass or polyester reinforced SBS modified bitumen; Siplast Paradiene 40 FR.
- E. Cold Adhesive: SFT Adhesive.
- F. Flashing Cement: ASTM D 4586, Type II PA-828 Flashing Cement.

2.04 ACCESSORIES

- A. Fasteners:
 - 1. Corrosion resistant and cut resistant.
 - 2. Approved by Roofing Materials Manufacturer.
- B. Overlay Board Adhesive: Para-Stik.

- C. Walkway Pads: Modified bitumen coated polyester fabric with contrasting color granule surface. Siplast Paratread.
- D. Pipe Flashings: Four pound de-silverized lead.
- E. Plastic Cement: ASTM D 4586, Type II.
- F. Asphalt Primer: Comply with ASTM D41.
- G. Sealant: In contact with roof membrane materials, neoprene as approved by membrane Manufacturer.
- H. Pitch Pan Grout: Non-metallic type; Upson. Target acceptable.
- I. Pitch Pan Sealant: Two part chemical curing polyurethane base, black pitch pocket sealant.
- J. Liquid Applied Flashing System: ParaPro 123 Flashing System.
- K. Mineral Granules: Armor Gray to match top ply sheet granules.
- L. Fall Protection Anchors: Guardian Fall Protection, CB 18 Series Anchors or approved equal.
- M. Warning Line: Tremco AlphaGuard MT System. Base Coat and Safety Yellow Top Coat. Apply 3 inch wide lines. Mask to prevent seepage and obtain straight lines. Or approved equal.
- N. Pipe Supports: Miro; RAH Series Supports.
- O. Cleaning Agent: TSP (trisodium phosphate).
- P. Metal Flashings: Specified under Section 076200.
- Q. General: Provide all accessory products required for a complete and proper roofing system.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Make investigations as to conditions that will be encountered in performing Work.
- B. Inspection: Verify substrate conditions are acceptable for product installation in accordance with manufacturer's instructions.
- C. Report to the Owner's Authorized Representative any deviations between Contract Documents and site conditions.
- D. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Notify the Owner's Authorized Representative at least 48 hours prior to any roofing Work.
- B. Protection:
 - 1. Provide temporary coverings and protection of adjacent work areas.
 - 2. Provide tarps or plastic sheeting to protect opened roofs and flashings and to prevent entrance of moisture into existing structure, until new roof is in a watertight condition; have handy in case of emergency.
 - 3. Do not open up more roof surface than can be covered and/or protected in event of sudden rainfall.
 - 4. Ensure that bitumen will not enter the building interior.
- C. Surface Preparation:
 - 1. Existing Roofing Removal: Specified under Section 024110 - Selective Demolition.
 - 2. Substrate: Ensure surfaces are clean and dry, smooth, free of fins, raised edges, sharp edges, protruding or loose nails and free of foreign material.
 - 3. Prepare surfaces and details in accordance with manufacturer's instructions.
 - 4. Replace existing sheet metal counter flashings as shown. Prepare substrates as required to receive new material.
 - 5. Install Temporary Roof.

3.03 INSULATION INSTALLATION

- A. Adhere overlay board to polyiso.

3.04 MEMBRANE INSTALLATION

A. Roofing Membrane Plies:

1. Install sheathing paper and base sheet over wood deck. Lap each side-lap minimum 4", and end lap 6". Fasten to meet FM 1-90 Wind Uplift.
2. Adhere base ply sheet to overlay board.
3. Install membrane in accordance with manufacturer's application instructions, immediately following insulation assembly as a continuous operation where applicable.
4. Install membrane immediately following insulation assembly, as a continuous operation.
5. At low slope roofs, lay all plies of roofing free of wrinkles, creases or fish-mouths; at right angles to slope of deck.
6. Lay sheets directly into adhesive, behind applicator. Exert sufficient pressure during application to eliminate air pockets.
7. Fully bond sheets to prepared substrate, and to each other, with minimum 3 inch side and 6 inch end laps.
8. Do not stack lap seams.
9. All plies nominal 1½ gallons per 100 square feet of adhesive; total coverage, leaving no voids.
10. Set each ply sheet in solid uniform coating of adhesive. Laps: totally sealed, avoid buck water laps.
11. Fully bond top ply sheet to ply sheet surface, with minimum 3 inch side and 6 inch end laps.

B. Roofing Membrane Details:

1. Prime all metal flanges and concrete and masonry surfaces with uniform coating of asphalt primer.
2. Provide continuous reinforcing sheet in all waterways, including valleys and crickets.
3. Pay particular attention to manufacturer's seam sealing instructions.
4. Step in T-joints; fully sealed and without voids. (Other methods to improve T-joint seal include 45 degree cut and finishing mopping at joint area).
5. At end of day's Work or when precipitation is imminent, provide water cut-off at open edges. Use adhesive or plastic cement and non-porous roofing felts, constructed to withstand protracted periods of service. Completely remove cut-offs prior to resumption of roofing.

C. Granule Surface Cap: Fully bond top ply sheet to ply sheet surface, with minimum 3 inch side and 6 inch end laps.

- D. Flashings:
 - 1. Bridge all junctures of vertical and horizontal surfaces with 45 degree cant strips.
 - 2. Install reinforcing sheet and flashing sheets as shown.
 - 3. Secure top edge of flashing sheets at vertical surfaces at 8 inches on center using fasteners appropriate to substrate.
 - 4. Provide corner patches or folded corners at base flashing corners. Blind cut corners are not acceptable.
 - 5. Apply granules at all laps to cover and protect all exposed adhesive.

- E. ParaPro 123 Flashings:
 - 1. Prepare surface for application.
 - 2. Mask area.
 - 3. Apply catalyzed resin at a rate of 0.19 kg.sf.
 - 4. Embed fleece before resin sets up, no air pockets.
 - 5. Apply second layer of catalyzed resin, completely saturate fleece at a rate of 0.12 kg.sf.
 - 6. Remove masking.

- F. Install new primed lead flashing at all pipe penetrations. Set flange in plastic cement on top of base sheet. Provide reinforcing sheet.

- G. Install new primed lead flashing in plastic cement and install reinforcing sheet at drain sumps as shown.

3.05 FIELD QUALITY CONTROL

- A. Inspection:
 - 1. Technical representative of roofing manufacturer: Periodically observe Work; observe deck preparation, general installation procedures.
 - 2. Technical representative: Perform a punch list inspection of completed roofing, indicating items in need of attention, including conformance to manufacturer's instructions and Contract Documents; provide documentation.
 - 3. Work shall not proceed until such observations have been made and conditions have been approved in writing by technical representative.

3.06 ADJUSTING

- A. Repair or replace damaged installed products.

3.07 CLEANING

- A. Remove temporary coverings and protection of adjacent work areas.
 - 1. Clean installed products in accordance with manufacturer's instructions prior to Final Completion. Remove excess asphalt and adhesives from finished surfaces.
 - 2. Remove equipment from site.
 - 3. Remove construction debris from site and legally dispose thereof.
 - 4. Leave job site in clean condition.

3.08 PROTECTION

- 1. Protect installed product and finish surfaces from damage during subsequent construction.

APPENDIX ON FOLLOWING PAGE

**SIPLAST
 CERTIFICATE OF ANALYSIS**

DATE: 06/05/2000 LOT NUMBER : Q-2 157 1001-5012
 MATERIAL TYPE: Paradiene 30 FR White

DIMENSIONS & MASS

	<u>MINIMUM SPECIFICATION</u>	<u>AVERAGE TESTED VALUE ±STANDARD DEVIATION</u>	<u>ACTUAL MINIMUM</u>
LENGTH (ft.):	33.5	33.6 ± .0	33.5
WIDTH (in.):	39.0	39.4 ± .0	39.4
THICKNESS AT SELVAGE (mils):	94	100 ± 2.8	96
TOTAL THICKNESS (mils):	N/A	133 ± 4.0	126
WEIGHT (lbs/roll):	90	95.9 ± 2.2	91.3
SELVAGE WIDTH (in.):	2.2	2.5 ± .1	2.4

PHYSICAL & MECHANICAL PROPERTIES¹

	<u>SPECIFICATION</u>	<u>AVERAGE TESTED VALUE ±STANDARD DEVIATION</u>
LOW TEMP. FLEXIBILITY (°F):	-13	-13 ± 0.0
GRANULE EMBEDMENT (avg. grams loss/sample):	1.50max	.6 ± .2
BREAKING LOAD (lb/in.):	30avg	36 ± 2.9
ULTIMATE ELONGATION ² (%):	55avg	61 ± 2.5
COMPOUND STABILITY (°F):	248	248 ± 0.0
DIMENSIONAL STABILITY (%):	n/a	
RESISTANCE TO THERMAL SHOCK ³ (%):	n/a	

¹Tested in Accordance with ASTM D-5147

²Defined as the point on the load-elongation curve where the load value has decreased to 5% of the maximum value obtained.

³Tested according to UEAtc (Union of European Agreement for technical construction)



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END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Deck preparation.
 - 2. SBS modified bitumen roofing.
 - 3. Drainage Course.
 - 4. Extruded Polystyrene Roof Insulation system.
 - 5. Aggregate Ballast Surface.
 - 6. Paver Walkways.
 - 7. New Elevator Penthouse access ladder.

- B. Related Sections:
 - 1. Section 024110 - Selective Demolition.
 - 2. Section 061010 - Rough Carpentry.
 - 3. Section 076200 - Flashing and Sheet Metal.
 - 4. Section 221426 - Roof Drains.

1.02 REFERENCES

- A. ASTM D41 - Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
- B. ASTM D2178 - Asphalt Glass Felt Used in Roofing and Waterproofing.
- C. ASTM D4479 - Asphalt Roof Coatings - Asbestos-Free.
- D. ASTM D4586 - Asphalt Roof Cement, Asbestos-Free.
- E. ASTM D5147 - Test Methods for Sampling and Testing Modified Bituminous Sheet Material.
- F. ASTM D5849 - Test Method for Evaluating Resistance of Modified, Bituminous Roofing Membranes to Cyclic Joint Displacement.
- G. ASTM D6163 - Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements.
- H. ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.

- I. ASTM E108 - Test Methods for Fire Tests of Roof Coverings.
- J. ASTM E119 - Test Methods for Fire Tests of Building Construction and Materials.
- K. ASTM E136 - Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 degrees C.
- L. ASTM D488 – Specification for Classification for Sizes of Aggregate for Road and Bridge Construction.
- M. ASTM C578 – Specification for Preformed, Cellular Polystyrene Thermal Insulation.
- N. ASTM D1621 - Test Method for Compressive Properties of Rigid Cellular Plastics.
- O. NRCA (National Roofing Contractors Association) - Roofing and Waterproofing Manual.
- P. FM (Factory Mutual) 1-90 for wind uplift and fastening.
- Q. ASHRAE (American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc.) for insulation R-values.
- R. UL (Underwriters Laboratories) - Roofing Materials and Systems Directory.

1.03 SYSTEM DESCRIPTION

- A. Design Requirements: Fully Warranted Class A.
- B. Performance Requirements: Provide products which have been manufactured, fabricated and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.

1.04 SUBMITTALS

- A. Submit in accordance with Section 013323.
- B. Product Data:

1. Manufacturer's product sheets and installation instructions.
 2. Manufacturer's published specifications.
 3. Manufacturer's product data sheets for related components.
- C. Shop Drawings:
1. Show layout, profiles, and product components, including anchorage, accessories, finish colors and textures.
- D. Samples: Selection and verification samples for finishes, colors and textures.
- E. Quality Control:
1. Certified independent test reports, showing compliance with specified performance characteristics and physical properties.
 2. Evidence of UL Class A and FM Global 1-90 approvals.
 3. Certificate of Analysis indicating; Product Identification, Date of manufacture, Lot Number, Dimensions & Mass and Physical Properties, typical of Sample in the Appendix at end of this section.
 4. Product certificates, signed by manufacturer, certifying products comply with specified performance characteristics and physical requirements.
 5. Manufacturer's field reports.
 6. Copy of warranty.
- F. Closeout:
1. Project Record Documents:
 2. Operation and maintenance data for installed products, including methods for maintaining, and precautions against cleaning materials and methods detrimental to finishes and performance.
 3. Warranty documents specified herein.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: All products furnished by or approved by roofing manufacturer for entire roof assembly.
- B. Installer Qualifications:
1. Minimum 5 years commercial experience in performing this work, having specialized in installation of work similar to that required for this project.
 2. Approved by and certified in writing by roofing Manufacturer.
 3. Been in continuous business for past 3 years.
 4. Completed at least three successful installations of specified materials and systems on projects of similar scope.

5. Provide all personnel trained in application of materials and systems and maintain supervision as required.
 6. Foreman: Have at least five years experience supervising the installation of SBS Roof Systems of similar application and scope. Provide evidence in writing if requested by Owner.
 7. When requested, submit certificate indicating qualification.
- C. Standards: Comply with applicable requirements of NRCA Roofing and Waterproofing Manual.
- D. Regulatory Requirements: Comply with applicable Building Code requirements.
- E. Underwriter's Laboratories and/or Warnock Hersey tested and listed for a Class A rating when installed on noncombustible decks for roof slopes and application shown.
- F. Pre-Installation Meeting: Conduct meeting with Owner's Authorized Representative to verify project requirements, substrate conditions, manufacturer's installation instructions and warranty requirements.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Comply with manufacturer's ordering instructions and lead time requirements; deliver products in original, unopened, undamaged containers with identification labels intact.
- B. Storage:
1. Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
 2. Store materials in dry, protected areas.
 3. Store roll goods on end. 'Flattened' rolls are unacceptable.
 4. Control temperature of storage areas in accordance with manufacturer's instructions.
- C. Handling: Exercise care in handling, loading, unloading and storing products to avoid damage.

1.07 PROJECT CONDITIONS

- A. Environmental Requirements:
1. Do not apply materials during precipitation of any form (rain, dew, ice,

- frost, snow), or if such precipitation is imminent.
- 2. Do not apply materials when water in any form (i.e., rain, dew, ice, frost, snow) is present on deck.
- 3. Do not apply materials during ambient temperatures of 40°F and below (including wind chill).

1.08 WARRANTIES

A. Manufacturer's Warranty:

- 1. Manufacturer's standard warranty document executed by authorized company official.
- 2. Single source 20 year combined 10+10 renewable, no dollar limit warranty signed by a corporate officer covering roofing materials, insulation materials and installation of the materials, and related systems.
- 3. Include all roof related items and installations.

B. Installer:

- 1. 2 years material and labor, from date of Substantial Completion.
- 2. Warrant all roofing, flashing and roof insulation against defects.
- 3. Maintain roofed areas in watertight condition during this period.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Siplast: Paradiene 20 SA 20 PR TG
- B. FM Global and Owner approved equal.

2.02 INSULATION MATERIALS

A. Insulation Assembly:

- 1. Insulation Units: Extruded Polystyrene, 4 inch thick (6 inch @ paver walkway). Dow Styrofoam Roofmate, R-5 per inch.

2.03 ROOF MEMBRANE MATERIALS

A. Membrane Properties:

- 1. Passes cyclic fatigue resistance for new material per ASTM D5849 (minimum 500 cycles @ 14 deg. F).

2. Passes cyclic fatigue resistance for over aged material per ASTM D5849 (minimum 200 cycles @ 14 deg. F).
 3. Passes ASTM E108, for class A fire rating.
- B. Sheet Properties:
1. Minimum 40% elongation at 5% maximum load @ 73 deg. F., per ASTM D5147.
 2. Passes low temperature flexibility @ -13 deg. F. for new material, and 0 deg. F. for over aged material, per ASTM D5147.
- C. Roof Membrane Materials: (*gravel ballast*)
1. Base Ply Sheet: Random glass mat reinforced SBS modified asphalt sheet, minimum thickness 98 mils, minimum weight 72 pounds per 100 square feet, smooth surface; Paradiene 20 SA.
 2. Top Ply Sheet: Polyester mat/fiberglass scrim reinforced SBS modified bitumen, minimum thickness 138 mils at selvage edge, minimum weight 96 pounds per 100 square feet; Paradiene 20 PR TG.
- D. Reinforcing Sheet: Random glass mat reinforced SBS modified bitumen, minimum weight 72 pounds per 100 square feet; Paradiene 20 SA.
- E. Flashing Sheet: Granule surfaced, fiberglass or polyester reinforced SBS modified bitumen; Siplast Paradiene 40 FR.
- F. Cold Adhesive: SFT Adhesive.
- G. Flashing Cement: ASTM D 4586, Type II; PA-828 Flashing Cement.

2.04 ACCESSORIES

- A. Asphalt Primer: Comply with ASTM D41.
- B. Drainage Course: Paradrain Drainage Mat.
- C. Filter Fabric: Non woven Polyester Geotextile Fabric, Hydrotech System Filter SF; Phillips Rufon F38, Dupont Fabrene, International Confil 689H acceptable.
- D. Stone Ballast: Clean, smooth 1 inch to 1½ inch minimum, river washed stone graded to membrane manufacturer's standard specifications and meeting requirements of ASTM C136.

- E. Pavers:
 - 1. Walkway: Westile Gibraltar Plaza Paver #1102 or approved.
 - a. 16" x 16" x 1-3/16".
 - b. Compressive Strength: 8,000 psi - ASTM C140
 - c. Water Absorption: 5% max. - ASTM C140
 - d. Flexural Strength: 725 psi. - ASTM C293
 - e. Freeze Thaw: 1% loss of dry weight. - ASTM C67
 - f. Dimensional Tolerance: $\pm 1/16"$ (length, width, height, convex, concave).

- F. Pipe Flashings: Four pound de-silverized lead.

- G. Plastic Cement: ASTM D 4586, Type II.

- H. ParaPro 123 Flashing System.

- I. Sealant: In contact with roof membrane materials, moisture curing, non-slump elastomeric as approved by membrane Manufacturer.

- J. Mineral Granules: To match flashing sheet granules.

- K. Cleaning Agent: TSP (trisodium phosphate).

- L. Roof Access Ladders: IBC & OSHA approved; Cotterman Co. or A-Mezz Industrial Structures, Inc. or approved equal. Fixed Ladder Series FWC.
 - 1. Safety cages are designed to OSHA specifications with flared bottom opening for easy entry for ladders over 10 foot in height.
 - 2. Walk through handrails are made of 1" diameter tubing and spaced 24" apart for convenient pass through.
 - 3. 3/4" round corrugated rungs.
 - 4. 300 lbs. capacity.
 - 5. Cage begins 7' from bottom rung.
 - 6. Powder coated with high gloss polyester powder.
 - 7. Provide shop drawings & color chart for approval.
 - 8. Passover platform and rungs to within 12 inches of each roof.
 - 9. Wall mounted.
 - 10. Concrete Walls Expansion Anchors:
 - a. Powers Fasteners, Power-Stud.
 - b. Five inch (5") embed into masonry.

- M. Crossover Stairs and Platform:

1. ERECTASTEP.
 - a. Contact Mary Jane Murphy
 - b. Phone Number (425) 264-4857
 - c. Website www.erectastep.com
 - d. Provide Shop Drawing & Calcs
2. or Approved Equal

N. Metal Flashings: Specified under Section 076200.

O. General: Provide all accessory products required for a complete and proper roofing system.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Make investigations as to conditions that will be encountered in performing Work.
- B. Inspection: Verify substrate conditions are acceptable for product installation in accordance with manufacturer's instructions.
- C. Report to the Owner's Authorized Representative any deviations between Contract Documents and site conditions.
- D. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Notify the Owner's Authorized Representative at least 48 hours prior to any roofing Work.
- B. Protection:
 1. Provide temporary coverings and protection of adjacent work areas.
 2. Provide tarps or plastic sheeting to protect opened roofs and flashings and to prevent entrance of moisture into existing structure, until new roof is in a watertight condition; have handy in case of emergency.
 3. Do not open up more roof surface than can be covered and/or protected in event of sudden rainfall.
 4. Ensure that bitumen will not enter the building interior.

C. Surface Preparation:

1. Existing Roofing Removal: Specified under Section 024110 - Selective Demolition.
2. Prepare surfaces and details in accordance with manufacturer's instructions.

3.03 MEMBRANE INSTALLATION

A. Roofing Membrane Plies:

1. Install membrane in accordance with manufacturer's application instructions, immediately following insulation assembly as a continuous operation.
2. Install membrane immediately following insulation assembly, as a continuous operation.
3. Lay all plies of roofing free of wrinkles, creases or fish-mouths; at right angles to slope of deck.
4. Exert sufficient pressure during application to eliminate air pockets.
5. Fully bond sheets to prepared substrate, and to each other, with minimum 3 inch side and 6 inch end laps.
6. Do not stack lap seams.
7. Fully bond top ply sheet to ply sheet surface, with minimum 3 inch side and 6 inch end laps.

B. Roofing Membrane Details:

1. Prime all flanges and concrete and masonry surfaces with uniform coating of asphalt primer.
2. Provide continuous reinforcing sheet in all waterways, including valleys and crickets.
3. Pay particular attention to manufacturer's seam sealing instructions.
4. Step in T-joints; fully sealed and without voids. (Other methods to improve T-joint seal include 45 degree cut and finishing mopping at joint area).
5. At end of day's Work or when precipitation is imminent, provide water cut-off at open edges. Use adhesive or plastic cement and non-porous roofing felts, constructed to withstand protracted periods of service. Completely remove cut-offs prior to resumption of roofing.

C. Flashings:

1. Bridge all junctures of vertical and horizontal surfaces with 45 degree cant strips.

2. Install reinforcing sheet and flashing sheets as shown.
 3. Secure top edge of flashing sheets at vertical surfaces at 8 inches on center using fasteners appropriate to substrate.
 4. Provide corner patches or folded corners at base flashing corners. Blind cut corners are not acceptable.
 5. Apply granules at all laps to cover and protect all exposed adhesive.
- D. ParaPro 123 Flashings:
1. Prepare surface for application.
 2. Mask area.
 3. Apply catalyzed resin at a rate of 0.19 kg.sf.
 4. Embed fleece before resin sets up, no air pockets.
 5. Apply second layer of catalyzed resin, completely saturate fleece at a rate of 0.12 kg.sf.
 6. Remove masking.
- E. Roof Drains: Refurbish as Specified in Section 221426.
- F. Install new primed lead flashing at all pipe penetrations. Set flange in plastic cement on top of base sheet. Provide reinforcing sheet.
- G. Install new primed drain lead flashing in plastic cement and install reinforcing sheet at drain sumps as shown.

3.04 INSULATION INSTALLATION

- A. Roof Insulation System:
1. Install Dow Roofmate Insulation over completed roof system.
 2. Install Drainage Course over insulation.
 3. Install Filter Fabric over Drainage Course.
- B. Ballast: Place river stone ballast at rate of 10 lbs. per square foot minimum, 12 lbs. per square foot at perimeter and 15 lbs. per square foot in corners.

3.05 ADJUSTING

- A. Repair or replace damaged installed products.
1. Verify that all drains are functioning properly, as specified elsewhere.

3.06 CLEANING

- A. Remove temporary coverings and protection of adjacent work areas.
 - 1. Clean installed products in accordance with manufacturer's instructions prior to Final Completion.
 - 2. Remove excess asphalt and adhesives from finished surfaces.
 - 3. Remove equipment from site.
 - 4. Remove construction debris from site and legally dispose thereof.
 - 5. Leave job site in clean condition.

3.07 PROTECTION

- A. Protect installed product and finish surfaces from damage during subsequent construction.

3.08 SCHEDULE

- A. Roof Area A:

APPENDIX ON FOLLOWING PAGE

SIPLAST CERTIFICATE OF ANALYSIS

DATE: 06/05/2000 LOT NUMBER : Q-2 157 1001-5012

MATERIAL TYPE: Paradiene 30 FR White


DIMENSIONS & MASS

	MINIMUM SPECIFICATION	AVERAGE TESTED VALUE ±STANDARD DEVIATION	ACTUAL MINIMUM
LENGTH (ft.):	33.5	33.6 ± .0	33.5
WIDTH (in.):	39.0	39.4 ± .0	39.4
THICKNESS AT SELVAGE (mils):	94	100 ± 2.8	96
TOTAL THICKNESS (mils):	N/A	133 ± 4.0	126
WEIGHT (lbs/roll):	90	95.9 ± 2.2	91.3
SELVAGE WIDTH (in.):	2.2	2.5 ± .1	2.4

PHYSICAL & MECHANICAL PROPERTIES¹

	SPECIFICATION	AVERAGE TESTED VALUE ±STANDARD DEVIATION
LOW TEMP. FLEXIBILITY (°F):	-13	-13 ± 0.0
GRANULE EMBEDMENT (avg. grams loss/sample):	1.50max	.6 ± .2
BREAKING LOAD (lb/in.):	30avg	36 ± 2.9
ULTIMATE ELONGATION ² (%):	55avg	61 ± 2.5
COMPOUND STABILITY (°F):	248	248 ± 0.0
DIMENSIONAL STABILITY (%):	n/a	
RESISTANCE TO THERMAL SHOCK ³ (%):	n/a	

¹Tested in Accordance with ASTM D-5147
²Defined as the point on the load-elongation curve where the load value has decreased to 5% of the maximum value obtained.
³Tested according to UEAtc (Union of European Agreement for technical construction)



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END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

- A. Repair Intent:
 - 1. To maintain Residence Hall in a water tight condition until reroofing can take place in the summer of 2020.
 - 2. Initial repair to take place upon issuance of Signed Contract to Contractor.
 - 3. Contractor to be "On Call" though out the project until reroofing takes place.
 - 4. Additional Repair visits required prior to reroofing to be billed on a Time and Materials Basis.
 - 5. Refer to Section 01 21 00 Allowances for Not to Exceed Amounts.
- B. Scope of Work:
 - 1. Repair areas to be designated by the Owner's Authorized Representative.
- C. Section Includes:
 - 1. All Roof Areas.
 - a. Repair existing EPDM roof membrane, seams and membrane flashings.
- D. Related Sections:
 - 1. Section 01 21 00 - Allowances.
 - 2. Section 07 92 00 - Sealants.

1.02 REFERENCES

- A. ASTM D412 - Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers-Tension.
- B. ASTM D4637 - EPDM Sheet Used In Single-Ply Roof Membrane.
- C. UL (Underwriters Laboratories) - Roofing Materials and Systems Directory.
- D. NRCA (National Roofing Contractors Association) - Roofing and Waterproofing Manual.

1.03 SUBMITTALS

- A. Submit in accordance with Section 01 33 23.
- B. Product Data:

1. Manufacturer's product sheets and installation instructions.
- C. Shop Drawings: Show seam layout for all field fabricated seams.
- D. Closeout:
 1. Project Record Documents:
 2. Operation and maintenance data for installed products, including methods for maintaining, and precautions against cleaning materials and methods detrimental to finishes and performance.
 3. Warranty documents specified herein.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
 1. Installer Qualifications: Approved by manufacturer. Minimum 5 years experience in performing this work, having specialized in installation of work similar to that required for this project. When requested, submit certificate indicating qualification.
- B. Regulatory Requirements: Comply with applicable Building Code requirements.
- C. Pre-Installation Meeting: Conduct meeting to verify project requirements, substrate conditions, manufacturer's installation instructions and warranty requirements.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Comply with manufacturer's ordering instructions and lead time requirements; deliver products in original, unopened, undamaged containers with identification labels intact.
- B. Storage: Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
- C. Handling: Exercise care in handling, loading, unloading and storing products to avoid damage.

1.06 PROJECT CONDITIONS

- A. Environmental Requirements: Do not install membrane repair materials during inclement weather or when air temperature may fall below 40 degrees F.

1.07 WARRANTIES

- A. Manufacturer:
 - 1. Manufacturer's standard material warranty for repair materials used.
- B. Installer:
 - 1. Three (3) years from date of Final Completion.
 - 2. Warrant membrane repairs, seams and flashing against defects.
 - 3. Maintain subject areas in watertight condition during this period.

PART 2 PRODUCTS

2.01 MANUFACTURER

- A. Firestone Building Products, specified.
- B. Or Approved Equal.

2.02 MATERIALS

- A. Membrane: EPDM (Ethylene Diene Monomer) materials; match existing mil thickness. Existing system is fully adhered over a mechanically attached layer of 2" polyisocyanurate insulation.
- B. Repair Materials:
 - 1. EPDM Membrane: Match existing thickness & properties, fully adhered.
 - 2. QuickSeam Batten Cover Flashing: 40 mil, 6 & 9 inch wide or approved.
 - 3. Formflash Flashing: 60 mil EPDM or approved.
 - 4. Primer: Quick Prime Plus Primer.
 - 5. Splice Wash: SW-100.
 - 6. Splice Adhesive: SA-1065.
 - 7. Lap Sealant: HS.
 - 8. Manufacturer's Preformed Pipe Flashings.
 - 9. Manufacturer's accessories as needed.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Inspection: Verify substrate conditions are acceptable for product installation in

accordance with manufacturer's instructions.

3.02 PREPARATION

A. Repair area and seam cleaning:

1. Thoroughly clean exposed areas per Manufacturer's recommendations with a wash of TSP and clean water.
2. Inspect area of work for punctures, tears, and other defects. Mark each defect for future repair.

3.03 WEATHER PROTECTION

- #### A. Have necessary waterproof canvas or plastic sheeting handy in case of emergency.

3.04 REPAIR

A. Repair of Membrane Defects:

1. Thoroughly clean and prime all penetrations.
2. Install membrane patch extending 6 inch defect in all directions as individual conditions warrant.
3. Roll all flashing sheets using a heavy steel roller; pay particular attention to T-joints.
4. Apply lap sealant.

B. Repair of seams:

1. Thoroughly clean and prime all seams, laps, and T-joints per Manufacturer's recommendations.
2. Install 6 inch wide QuickSeam Batten Cover, centered over existing seam per Manufacturer's recommendations.
3. Roll all flashing sheets using a heavy steel roller; pay particular attention to T-joints.

C. Repair of miscellaneous penetrations:

1. Thoroughly clean and prime all penetrations and surrounding area.
2. Install 9 inch QuickSeam flashing around all penetrations as individual conditions warrant.
3. Roll all flashing sheets using a heavy steel roller; pay particular attention to T-joints.

3.05 NOTIFICATION

- A. Exposed repaired membranes will be observed by the Owner's Authorized Representative; Walkway materials applied without such prior observation will be subject to rejection:
- B. Contractor is responsible for scheduling observation/inspections by Owner's Authorized Representative.

3.06 QUALITY OF WORK

- A. Finished Work:
 - 1. Free of wrinkles, creases, bubbles, fishmouths, and similar defects.
 - 2. Laps fully sealed.
 - 3. Entire surface watertight.
- B. Repair damaged areas prior to Final Completion.
- C. Water test each area by placing sprinklers or other device that applies a simulation of rain for 48 hours. Do not plug drains and flood test unless specifically instructed to do so. Verify with the Owner's Authorized Representative that all areas are free of leaks.

3.07 PROTECTION

- A. Protect existing membrane and flashing systems from damage during Work, until Final Completion.

3.08 CLEANING

- A. Remove temporary coverings and protection of adjacent work areas.
- B. Clean installed products in accordance with manufacturer's instructions prior to acceptance.
- C. Remove construction debris from project site and legally dispose thereof

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Copings and Cap Flashings.
2. Metal Counter Flashings.
3. Metal Flashings.
4. Stainless Steel Reglet Flashings.

B. Related Sections:

1. Section 061010 - Rough Carpentry.
2. Section 075215 - SBS Modified Bitumen Roofing (Cold).
3. Section 079200 - Joint Sealers.
4. Section 099100 - Painting.
5. Section 230000 - Basic Mechanical.
6. Section 260000 - Basic Electrical.

1.02 REFERENCES

- A. ASTM A167 - Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip.
- B. ASTM A525 - Steel Sheet, Zinc Coated, (Galvanized) by the Hot-Dip Process.
- C. ASTM A792/A792M - Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
- D. ASTM B209 - Aluminum and Aluminum Alloy Sheet and Plate.
- E. AA (Aluminum Association) - Aluminum Construction Manual: Aluminum Sheet Metal Work and Building Construction.
- F. ANSI/ASTM B32 - Solder Metal.
- G. ASTM B749 - Lead and Lead Alloy Strip, Sheet, and Plate Products.
- H. ASTM D41 - Asphalt Primer.
- I. ASTM D226 - Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.

- J. ASTM D1970 - Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam.
- K. ASTM D4586 - Asphalt Roof Cement, Asbestos Free.
- L. AISI (American Iron and Steel Institute) - Stainless Steel: Uses in Architecture.
- M. NAAMM (National Association of Architectural Metal Manufacturers) - Metal Finishes Handbook.
- N. NRCA (National Roofing Contractors Association) - Roofing Manual.
- O. SMACNA (Sheet Metal and Air Conditioning Contractors' National Association) - Architectural Sheet Metal Manual.
- P. FS (Federal Specification) O-F-506 - Flux, Soldering, Paste and Liquid.

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide products which have been manufactured, fabricated and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.

1.04 SUBMITTALS

- A. Submit in accordance with Section 013323.
- B. Product Data: Manufacturer's product sheets and installation instructions.
- C. Shop Drawings:
 - 1. Show layout, profiles, and product components, including anchorage, accessories, finish colors and textures.
 - 2. Include jointing patterns, jointing details, fastening methods, and installation details.
- D. Samples:
 - 1. Selection and verification samples for finishes, colors and textures.
 - 2. Three (3) sets metal samples, illustrating full color range.
- E. Quality Control:
 - 1. Certified test reports, showing compliance with specified performance characteristics and physical properties.

2. Product certificates, signed by manufacturer, certifying products comply with specified performance characteristics and physical requirements.

F. Closeout:

1. Project Record Documents:
2. Operation and maintenance data for installed products, including methods for maintaining, and precautions against cleaning materials and methods detrimental to finishes and performance.
3. Warranty documents specified herein.
4. Per Section 017700, Contract Closeout.

1.05 QUALITY ASSURANCE

- A. Fabricator Qualifications: Minimum 5 years commercial experience in performing this work, having specialized in work similar to that required for this project. When requested, submit certificate indicating qualification.
- B. Installer Qualifications: Minimum 5 years commercial experience in performing this work, having specialized in installation of work similar to that required for this project. When requested, submit certificate indicating qualification.
- C. Standards: Comply with applicable requirements of NRCA Roofing Manual, and SMACNA Architectural Sheet Metal Manual.
- D. Regulatory Requirements: Comply with applicable Building Code requirements.
- E. Pre-Installation Meeting: Conduct meeting with Owner's Authorized Representative to verify project requirements, substrate conditions, manufacturer's installation instructions and warranty requirements.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Comply with manufacturer's ordering instructions and lead time requirements; deliver products in original, unopened, undamaged containers with identification labels intact.
- B. Storage:
 1. Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
 2. Stack preformed and Pre-coated material to prevent twisting, bending, or abrasion, and to provide ventilation.
 3. Prevent contact with materials during storage which may cause

discoloration, staining, or damage.

- C. Handling: Handle products according to manufacturer' recommendations and so as not to damage them prior to installation.

1.07 WARRANTIES

- A. Manufacturer: Manufacturer's standard Kynar Finish warranty, document executed by authorized company official, 25 years commencing on Date of Substantial Completion.
- B. Installer: Provide 2 years, commencing on Date of Substantial Completion, including coverage of materials and installation and resulting damage to building resulting from failure to resist penetration of moisture.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Pre-Coated Galvanized Steel: ASTM A525, G90; 24 gauge core steel, pre-coated with "Kynar 500" or "Hylar 5000" coating of selected color. The color selected from manufacturer's full range of standard colors.
- B. Aluminum: ASTM B209, 0.03 inch thick; "Kynar 500" or "Hylar 5000" coating color to match existing finish.
- C. Lead: ASTM B749, 4 pounds per square foot minimum.
- D. Zinc-Aluminum Coated Steel Sheet: ASTM A792, Zincolume, Coating class AZ55, 24 gauge.

2.02 ACCESSORIES

- A. Fasteners: Galvanized steel or Stainless steel with soft neoprene washers at exposed fasteners. Finish exposed fasteners same as flashing metal.
 - 1. Rawl Zamac Nailins with EPDM washers at masonry/concrete substrates.
 - 2. Woodfast metal to wood screws at wood substrates.
 - 3. Self-tapping sheet metal screws at metal substrates.
- B. Underlayment: ASTM D226; No. 15 asphalt saturated roofing felt.

- C. Self Adhering Underlayment: Rubberized asphalt self-adhering sheet, with high strength polyethylene film on one side, minimum 40 mils thick; Carlisle WIP 300 High Temp, or approved equal.
- D. Plastic Cement: ASTM D4586, asbestos free, asphaltic.
- E. Provide various additional items as required for a complete and weatherproof installation.
- F. Sealant and Joint Filler: Specified under Section 079200.
- G. Reglets: Recessed stainless steel, spring lock design.
- H. Solder: FS QQ-S-571; ANSI/ASTM B32; 50/50 type.
- I. Flux: FS O-F-506. Special stainless steel flux.
- J. Provide various additional items as required for a complete and weatherproof installation.

2.03 FABRICATION

- A. Field measure site conditions prior to fabrication.
- B. Form sections true to shape, accurate in size, square, and free from distortion or defects.
- C. Fabricate cleats and starter strips of same material as sheet, 22 gauge, minimum 3 inches wide, inter-lockable with sheet, unless shown otherwise.
- D. Form pieces in longest practical lengths.
- E. Hem exposed edges on underside ½-inch; miter and seam corners.
- F. Form flashing material with flat seam.
- G. Form copings with standing seams.
- H. Form counter flashings with lapped seams.
- I. Seal metal joints. After soldering, remove flux. Wipe and wash solder joints clean.

- J. Fabricate vertical faces with bottom edge formed outward ¼-inch and hemmed to form drip.
- K. Scuppers: Stainless steel, with soldered lead flanges.

2.04 FINISHES

- A. Field Painted Where Indicated:
 - 1. Metal Paint Primer: Phosphoric acid etch followed by zinc oxide alkyd, flat finish.
 - 2. Shop prepare and paint prime all exposed ferrous and galvanized metal surfaces.
- B. Metal Roof Primer: Asphaltic to comply with ASTM D41.
- C. Protective Back Paint: Zinc Chromate Alkyd.
- D. Protective Coating: FS-TT-C-494 Bituminous coating compound.
- E. Touch-up Paint: To match Pre-coated metal, from coating manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Inspection:
 - 1. Verify substrate conditions are acceptable for product installation in accordance with manufacturer's instructions.
 - 2. Verify roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set, cant strips and reglets in place, and nailing strips located.
 - 3. Verify membrane termination and base flashings are in place, sealed, and secure.
 - 4. Verify field measurements, site conditions.
- B. Report to the Owner's Authorized Representative any deviations between Contract Documents and site conditions.
- C. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Protection: Provide temporary coverings and protection of adjacent work areas.
- B. Surface Preparation:
 - 1. Substrate: Ensure surfaces are clean and dry, smooth, free of fins, raised edges, sharp edges, protruding or loose nails and free of foreign material.
 - 2. Prepare surfaces and details in accordance with manufacturer's instructions.

3.03 INSTALLATION

- A. Comply with manufacturers' product data, technical bulletins, and catalog and carton installation instructions.
- B. Install Work in accordance with reviewed submittals.
- C. Install starter and edge strips, and cleats.
- D. Install reglets true to lines and levels. Seal top of reglets with sealant. Surface mounted reglets not acceptable unless indicated in the drawings.
- E. Provide self adhering underlayment and slip sheet behind all finish metal such as copings, and wall metal.
- F. Secure flashings in place using concealed fasteners. Use exposed fasteners only in locations indicated.
- G. Seam and seal all joints.
- H. Protective coat dissimilar metals and isolate from each other.
- I. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.

3.04 ADJUSTING

- A. Repair or replace damaged installed products.

3.05 CLEANING

- A. Remove temporary coverings and protection of adjacent work areas.
 - 1. Clean installed products in accordance with manufacturer's instructions prior to Final Completion.

2. Promptly remove metal filings from sheet metal.
3. Promptly remove metal scraps from roofing.
4. Touch-up paint Pre-coated metal.
5. Leave sheet metal in clean, finished condition.
6. Remove construction debris from project site and legally dispose thereof.

3.06 PROTECTION

- A. Protect installed product and finish surfaces from damage during subsequent construction.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Substrate preparation.
 - 2. Sealant and backing.

- B. Related Sections:
 - 1. Section 076200 - Flashing and Sheet Metal.

1.02 REFERENCES

- A. ASTM C920 - Elastomeric Joint Sealants.
- B. ASTM C1193 - Guide for Use of Joint Sealants.
- C. ASTM C1330 - Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants.
- D. ASTM D5893 - Cold Applied, Single Component, Chemically Curing Silicone Joint Sealant for Portland Cement Concrete Pavements.
- E. ANSI/ASTM D1056 - Flexible Cellular Materials: Sponge or Expanded Rubber.
- F. FS TT-S-001657 - Sealing Compound, Single Component, Butyl Rubber Based, solvent Release Type.
- G. FS TT-S-00227 - Sealing Compound: Elastomeric Type, Multi-Component.
- H. FS TT-S-00230 - Sealing Compound: Elastomeric Type, Single Component.
- I. SWRI (Sealing, Waterproofing and Restoration Institute) - Sealant and Caulking Guide Specification.
- J. SWRI – Applying Liquid Sealants: Applicator Training Program, Section 10 – Testing Sealant Work.

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide products which have been manufactured, fabricated and installed to maintain performance criteria stated by manufacturer

without defects, damage or failure.

1.04 SUBMITTALS

- A. Submit in accordance with Section 013323.
- B. Product Data:
 - 1. Manufacturer's product sheets and installation instructions.
 - 2. Indicate sealant chemical characteristics, performance criteria, limitations, color availability, manufacturer's installation instructions.
- C. Samples:
 - 1. Selection and verification samples for finishes, colors and textures.
- D. Quality Control:
 - 1. Certified test reports, showing compliance with specified performance characteristics and physical properties.
 - 2. Product certificates, signed by manufacturer, certifying products comply with specified performance characteristics and physical requirements.
- E. Closeout:
 - 1. Operation and maintenance data for installed products, including methods for maintaining, and precautions against cleaning materials and methods detrimental to finishes and performance.
 - 2. Warranty documents specified herein.
 - 3. Per Section 017700, Contract Closeout.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Capable of providing field service representation during construction, approving acceptable installer and approving application method; regularly engaged in manufacturing and marketing of specified products.
- B. Installer Qualifications: Minimum 5 years commercial experience in performing this work, having specialized in installation of work similar to that required for this project. When requested, submit certificate indicating qualification.
- C. Standard: Comply with applicable requirements of SWRI Guide Specification.
- D. Regulatory Requirements: Comply with applicable Building Code requirements.

- E. Pre-Installation Meeting: Conduct meeting with Owner's Authorized Representative to verify project requirements, substrate conditions, manufacturer's installation instructions and warranty requirements.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Comply with manufacturer's ordering instructions and lead time requirements; deliver products in original, unopened, undamaged containers with identification labels intact.
- B. Storage: Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.

1.07 PROJECT CONDITIONS

- A. Environmental Requirements:
 - 1. Do not install solvent curing sealants in enclosed building spaces.
 - 2. Maintain temperature and humidity recommended by sealant manufacturer during and after installation.
 - 3. Install sealants during periods of mean temperature; avoid temperature extremes which would cause maximum or minimum joint widths.

1.08 WARRANTIES

- A. Installer:
 - 1. Two (2) years commencing on Date of Substantial Completion.
 - 2. Include coverage of installed sealants and accessories which fail to achieve air tight and watertight seal, exhibit loss of adhesion or cohesion, or fail to properly cure.

PART 2 PRODUCTS

2.01 MANUFACTURER

- A. Vulkem 116.
- B. Pecora, Sika, Sonneborn, or approved equal.

2.02 MATERIALS

- A. Butyl Sealant: FS TT-S-001657 Single component, solvent release, non-

skinning, non-sagging, black color.

- B. Polyurethane Sealant: FS TT-S-00230, Single component, chemical curing, non staining, non-bleeding, capable of continuous water immersion, non sagging type; color as selected.

2.03 ACCESSORIES

- A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.
- B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.
- C. Joint Backing: ANSI/ASTM D1056; round, closed cell polyethylene foam rod; oversized 30 to 50 percent larger than joint width; manufactured by sealant manufacturer.
- D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Inspection: Verify substrate conditions are acceptable for product installation in accordance with manufacturer's instructions.
- B. Verify that surfaces and joint openings are ready to receive Work and field measurements are as shown, and as recommended by manufacturer.
- C. Report to the Owner's Authorized Representative any deviations between Contract Documents and site conditions.
- D. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Protection:
 - 1. Provide temporary coverings and protection of adjacent work areas.
 - 2. Mask surfaces as necessary.

B. Surface Preparation:

1. Clean, prime, and back no more area than can be sealed in the same day.
2. Verify sealant and primer compatibility (non-reactive) and adhesion to all substrates. Notify Architect and Owner of any non-compatible materials.
3. Remove loose materials and foreign matter which might impair adhesion of sealant.
4. Clean joints in accordance with manufacturer's instructions.
5. Prime joint surfaces where required to achieve bond.
6. Verify that joint backing and release tapes are compatible with sealant.

3.03 APPLICATION

- A. Comply with manufacturer's product data, technical bulletins, and catalog and container application instructions.
- B. Measure joint dimensions and size materials to achieve required width/depth ratios.
- C. Install joint backing to achieve a neck dimension half the joint width.
- D. Install bond breaker where joint backing is not used.
- E. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- F. Apply sealant free of air pockets, foreign embedded matter, ridges, and sags.
- G. Unless otherwise shown, tool joints slightly concave and free draining.

3.04 ADJUSTING

- A. Repair or replace damaged installed products.

3.05 CLEANING

- A. Remove temporary coverings and protection of adjacent work areas.
- B. Clean installed products in accordance with manufacturer's instructions prior to Final Completion.

- C. Clean adjacent soiled surfaces.
- D. Remove construction debris from project site and legally dispose thereof.

3.06 PROTECTION

- A. Protect installed product and finish surfaces from damage during subsequent construction.
- B. Protect sealants until cured.

3.07 SCHEDULE

- A. Sealant S1: Butyl (concealed locations).
- B. Sealant S2: Single-component polyurethane (exposed exterior locations).

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Surface preparation.
 - 2. Doors & frames.
 - 3. Exterior roof mounted equipment.

- B. Related Sections:
 - 1. Section 076200 - Flashing and Sheet Metal.

1.02 REFERENCES

- A. ASTM D523 - Test Method for Specular Gloss.

- B. ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.

- C. SSPC (Steel Structures Painting Council) - Steel Structures Painting Manual.

- D. NACE (National Association of Corrosion Engineers International) - Industrial Maintenance Painting.

- E. PDCA (Painting and Decorating Contractors of America) - Architectural Specification Manual, published by the Washington Council.

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide products which have been manufactured, fabricated and installed to maintain performance criteria stated by manufacturers without defects, damage or failure.

1.04 SUBMITTALS

- A. Submit in accordance with Section 013323.

- B. Product Data:
 - 1. Manufacturer's product sheets for each type of paint.
 - 2. Include performance data, application instructions and methods, including mixing, surface preparation, compatible primers and top coats,

recommended wet and dry film thickness.

C. Samples:

1. Selection and verification samples for finishes, colors and textures.
2. Apply to 8 inch by 10 inch panels, opaque finishes on cardboard.
3. Submit three displays of each color, finish, texture, and type.

D. Closeout:

1. Operation and maintenance data for installed products, including methods for maintaining, and precautions against cleaning materials and methods detrimental to finishes and performance.
2. Per Section 017700, Contract Closeout.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Minimum 5 years commercial experience in the manufacture and supply of materials used in this work.

1. Provide materials for each general purpose of same manufacturer; except for shop prime coats.

B. Installer Qualifications: Minimum 5 years commercial experience in performing this work, having specialized in installation of work similar to that required for this project. When requested, submit certificate indicating qualification.

C. Standard: Comply with applicable requirements of PDCA Architectural Specification Manual.

D. Regulatory Requirements:

1. Comply with applicable Building Code requirements.
2. Comply with governing agency's regulations for paint materials, including State requirements for volatile organic compounds (VOC).
3. Comply with applicable requirements of USDA (U.S. Department of Agriculture).
4. Comply with applicable requirements of UL (Underwriters Laboratories, Inc.).

E. Each Product Container Bear Manufacturer's label, including:

1. Type of material.
2. Manufacturer's name.
3. Product number.
4. Batch number.
5. Color.

6. Instructions for reducing.

F. Field Samples:

1. Apply where directed.
2. Use this sample to determine acceptability of workmanship, color and texture.
3. Acceptable sample will be used as standard, and may be retained as part of finished Work.
4. Remove and properly dispose of rejected samples.

G. Pre-Installation Meeting: Conduct meeting with Owner's Authorized Representative to verify project requirements, substrate conditions, manufacturers' application instructions and warranty requirements.

1.06 DELIVERY, STORAGE AND HANDLING

A. Delivery: Comply with manufacturers' ordering instructions and lead time requirements; deliver products in original, unopened, undamaged containers with identification labels intact.

B. Storage:

1. Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturers.
2. Store in unopened containers, in designated storage space.
3. Keep storage space neat, clean and accessible.
4. Protect floor from spillage.

1.07 PROJECT CONDITIONS

A. Environmental Requirements:

1. Do not paint when air is dust-laden or when weather or temperature conditions are unsuitable.
2. Maintain temperatures within building at minimum 60 degrees Fahrenheit during painting and drying periods.
3. Do not paint exterior surfaces in damp or rainy weather.
4. Do no exterior Work on unprotected surfaces if moisture from any source is present, or forecast before paints can attain proper cure.
5. Provide adequate ventilation for health, safety and drying requirements. Do not apply in areas where dust is being generated. Protect against damage from other areas and/or construction operations.
6. Apply coats to surfaces under environmental conditions and within the

limitations recommended by material manufacturers. Minimum ambient air and surface temperature 40 degrees Fahrenheit for 24 hours before, during, and after application.

- B. Fire Precaution: At the end of each Work day, place solvent soaked cloths, waste, and other materials which constitute fire hazard in metal containers and remove from premises.

1.08 WARRANTIES

- A. Installer: Installer's Standard Warranty document executed by authorized company official, 2 years commencing on Date of Substantial Completion.

1.09 MAINTENANCE

- A. Extra Materials:
 - 1. Deliver to Project site the following items as directed. Store in unopened containers and in manner recommended by manufacturer.
 - 2. One gallon each type and color used.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Exterior Paint:
 - 1. Miller, Sherwin Williams, Benjamin Moore, or approved equal.
- B. Exterior Paint – South Wall:
 - 1. Sherwin Williams, ConFlex XL High Build Coating or approved equal.

2.02 MATERIALS

- A. All Materials: Manufacturer's "top-of-the-line," best quality of generic type specified.
- B. Paint Types:
 - 1. Alkyd enamel (AE), oil based, exterior and interior.
 - 2. Elastomeric coating
- C. Specular Gloss: Ranges determined per ASTM D523. Sheen is specified to

establish required gloss range.

<u>Sheen</u>	<u>Designation</u>	<u>Geometry/Deg.</u>	<u>Gloss Range</u>
Flat	FL	85	Below 15
Eggshell	EG	60	5 to 20
Satin	SA	60	15 to 35
Semi-Gloss	SG	60	30 to 65
Gloss	GL	60	Over 65

- D. Final Coat Colors: Factory mix; no jobsite color matching permitted.
- E. Mildew Resistance: Add fungicidal agent to exterior paint at factory. Clearly indicate on labels that paint is mildew resistant.

2.03 Paint Systems

- A. Semi-gloss finish to match existing painted metal such as flashing and similar items.
 - First Coat: Rust inhibitive metal primer at bare metal.
 - Second Coat: Exterior alkyd.
 - Third Coat: Exterior alkyd.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Inspection:
 - 1. Examine substrates, adjoining construction and conditions under which Work is to be performed.
 - 2. Verify substrate conditions are acceptable for product installation in accordance with manufacturers' instructions.
 - 3. Examine substrate surfaces to assure that they are dry, clean, of uniform texture, free of bond inhibiting foreign substances or other conditions that would adversely affect adhesion, protective properties, or coating appearance.
- B. Measure moisture of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of interior and exterior surfaces is 12% or less.

- C. Report to the Owner's Authorized Representative any deviations between Contract Documents and site conditions.
- D. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Protection:
 - 1. Provide temporary coverings and protection of adjacent work areas.
 - 2. Provide drop cloths, barricades, other forms of protection necessary to safeguard adjacent Work, and to preserve painted Work free from damages of every nature. Post signs promptly following application.
- B. Fixtures: Remove and store, or protect hardware, accessories, plates, lighting fixtures and similar items installed prior to painting. Reinstall or remove protection upon completion.
- C. Surface Preparation:
 - 1. Ensure that all surfaces designated to be coated are properly prepared in accordance with Specifications, referenced standards, and manufacturers' recommendations.
 - 2. Remove scale, dirt, dust, grit, rust, wax, grease, efflorescence, loose material, and other foreign matter detrimental to proper adhesion of paint.
 - 3. Pressure wash south wall exterior.
- D. Shop Painted Items: Touch-up abraded surfaces prior to painting; use same type of paint as shop coat. Feather edge abraded surfaces prior to touch-up.
- E. Ferrous Metal:
 - 1. Use suitable solvents, tools, and methods to clean surfaces.
 - 2. Un-coated Steel and Iron Surfaces: Remove grease, rust, scale, dirt and dust from steel and iron surfaces in accordance with SSPC-1. Where heavy coatings of scale are evident, remove by wire brushing (SSPC-SP2) or other SSPC-SP approved method.
 - 3. Shop Primed Steel Surfaces: Sand and scrape to remove loose primer and rust. Sand and feather edges to smooth surface. Clean areas with solvent and spot prime bare metal areas.
- F. Existing Painted Surfaces:
 - 1. Sand, wire brush, or scrape painted surfaces to remove loose, scaling paint and to reduce gloss. Feather edge abraded surfaces. Thoroughly clean,

- remove rust, and prepare existing surfaces, insure proper adhesion.
2. Existing lead-based coatings: See Section 011000; 1.05 Lead Based Paint.

3.03 APPLICATION

- A. Comply with manufacturers' product data, technical bulletins, and catalog and container application instructions.
- B. Paint all surfaces exposed to view, unless otherwise indicated. Where not indicated, paint as directed.
- C. Surfaces Not to be Painted: Furred spaces; trenches, tunnels, plenums, shafts and hoistways; storage tanks; concealed pipe, ductwork and conduit; concealed rough hardware; cast-iron and galvanized steel gratings, covers and frames; stainless steel, unless otherwise specified; factory finished surfaces, and other surfaces so indicated.
- D. Apply, as a minimum, specified number of coats; apply sufficient coats to produce specified mil dry film thickness.
- E. Apply paint and coating with suitable brushes, rollers, or spraying equipment as recommended by coating manufacturer and as specified. Do not exceed coating manufacturer's recommended drying time between succeeding coats.
- F. Apply finish coats smooth, free of brush marks, runs, drips, sags, streak laps, pile-up, and skipped or missed areas.
- G. Ensure that coating is so complete that additional coating will not change color or texture of painted surface. Apply additional coats as required to achieve this condition.

3.04 FIELD QUALITY CONTROL

- A. Site Tests:
 1. Where materials are being applied over previously painted surfaces, apply samples and perform in-place test to check for compatibility, adhesion and film integrity of new materials to existing painted surfaces.
 2. Painting may be tested, at the Owner's option, to determine materials quality and compliance with Contract Documents.
 3. Upon completion, if requested by the Owner, manufacturer's representative shall measure paint thickness with Tooke Dry Film Thickness System.

Recoat Work not conforming to specified dry mil thickness until thickness is that specified.

- B. Inspection:
 - 1. After paint and coating Work has been completed, make a detailed inspection of paint finish and touch-up or refinish non-complying Work.

3.05 ADJUSTING

- A. Repair or replace damaged installed products.
- B. Carefully remove splatters of paint materials from adjoining Work. Repair all damages that may be caused by such cleaning operations and other painting activities.

3.06 CLEANING

- A. Remove temporary coverings and protection of adjacent work areas.
 - 1. Clean installed products in accordance with manufacturers' instructions prior to Final Completion.
 - 2. Remove implements of service, and materials from premises and leave entire Project in clean condition.
 - 3. Remove construction debris from project site and legally dispose thereof.

3.07 PROTECTION

- A. Protect finished product and surfaces from damage during subsequent construction.

3.08 EXTERIOR PAINTING SCHEDULE

- A. Roof Mounted Equipment & New Entry Door:
 - Alkyd Enamel on Ferrous Metal:
 - Prime Coat: Metal primer; provided under applicable Sections.
 - Body Coat: Exterior alkyd.
 - Finish Coat: Exterior alkyd.
 - Thickness: 4 mils dry.
 - Sheen/Color: Semi-gloss.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Plumbing.
- B. Related Sections:
 - 1. Section 221426 - Roof Drains.
 - 2. Section 230000 - Basic Mechanical.

1.02 REFERENCES

- A. ASTM A53/A53M - Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
- B. ASTM A123 - Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- C. ASTM C547 - Mineral Fiber Pipe Insulation.
- D. ANSI/ASME B31.9 - Building Services Piping.
- E. MSS (Manufacturers Standardization Society of The Valve and Fittings Industry) SP-58 - Pipe Hangers and Supports - Materials, Design and Manufacture.
- F. MSS SP-69 - Pipe Hangers and Supports - Selection and Application.
- G. MSS SP-89 - Pipe Hangers and Supports - Fabrication and Installation Practices.
- H. MSS SP-127 - Bracing for Piping Systems Seismic-Wind-Dynamic Design, Selection, Application.

1.03 SYSTEM DESCRIPTION

- A. Design Requirements:
 - 1. Incorporate in designs pipe hangers and supports to manufacturers' recommendations utilizing manufacturers' regular production components, parts and assemblies as detailed in manufacturers' pipe hanger catalog.
 - 2. Establish maximum load ratings with consideration for allowable stresses prescribed by ASME B31.1 or MSS SP-58.

- B. Performance Requirements: Provide products which have been manufactured, fabricated and installed to maintain performance criteria stated by manufacturers without defects, damage or failure.

1.04 SUBMITTALS

- A. Submit in accordance with Section 013323.
- B. Product Data:
 - 1. Manufacturers' product sheets and installation instructions.
 - 2. Plumbing fixtures.
- C. Shop Drawings:
 - 1. Show layout, profiles, and product components, including anchorage, accessories.
 - 2. Plans illustrating piping, supports and related items.
- D. Closeout:
 - 1. Project Record Documents: As-Built Drawings and Specifications - maintain at site one set of documents for recording "As-Built" conditions as Work progresses. Indicate locations of concealed elements by dimension from structure or building grid.
 - 2. Operation and maintenance data for installed products, including methods for maintaining, and precautions against cleaning materials and methods detrimental to finishes and performance.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Supply materials of similar class by same manufacturer.
- B. Installer Qualifications: Minimum 5 years commercial experience in performing this work, having specialized in installation of work similar to that required for this project. When requested, submit certificate indicating qualification.
- C. Regulatory Requirements: Comply with applicable requirements of the following:
 - 1. Building Code.
 - 2. Plumbing: Oregon Plumbing Specialty Code.
- D. Obtain applicable permits, licenses, inspections. OSU to pay Permit fees.

- E. Pre-Installation Meeting: Conduct meeting to verify project requirements, substrate conditions, manufacturers' installation instructions and warranty requirements.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Comply with manufacturers' ordering instructions and lead time requirements; deliver products in original, unopened, undamaged containers with identification labels intact.
- B. Storage:
 - 1. Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
 - 2. Store inside, protected from dirt and construction dust.
- C. Handling: Exercise care in handling, loading, unloading and storing products to avoid damage.

1.07 PROJECT CONDITIONS

- A. Hazardous Materials: If during the course of Work, Contractor observes existence of hazardous materials, immediately terminate further Work and notify Owner of the condition. Owner will, after consultation, determine a further course of action.

1.08 WARRANTIES

- A. Installer:
 - 1. Standard Workmanship Warranty - Two (2) years commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Materials: New, standard, full weight, identical to products in successful operation for a minimum of two years.
- B. Piping:
 - 1. Cast iron pipe and fittings: Service weight; ASTM A74.
 - 2. No hub piping system: Cast Iron Soil Pipe Institute Specification 301.
 - a. "Anaco", "Huskey SD 4000", or "Clamp -All" high torque heavy-duty couplings.

3. Steel pipe: Schedule 40, black and galvanized, ASTM A53.

2.02 MANUFACTURED UNITS

- A. Structural Attachments: Carbon steel per ASTM A36/ASTM A515.
- B. Brackets: Malleable iron per ASTM A47/ASTM A126.
- C. U-Bolts and Straps: Malleable iron per ASTM A47/ASTM A126.
- D. Pipe Supports: Carbon steel per ASTM A36/ASTM A53.

2.03 ACCESSORIES

- A. Insulation Accessories:
 1. Insulation Bands: $\frac{3}{4}$ -inch wide; stainless steel.
 2. Metal Jacket Bands: $\frac{3}{8}$ -inch wide; thick stainless steel.
 3. Adhesives: Compatible with insulation.

2.04 FABRICATION

- A. Provide steel fabrications for support of mechanical equipment; base plates for stands.
- B. Use components for intended design purpose.
- C. Fabricate equipment supports not provided with equipment from structural grade steel.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Inspection: Verify substrate conditions are acceptable for product installation in accordance with manufacturers' instructions.
- B. Report to the Owner's Authorized Representative any deviations between Contract Documents and site conditions.
- C. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Protection: Provide temporary coverings and protection of adjacent work areas.
- B. Disconnect rooftop equipment as required.
- C. Close pipe openings with caps or plugs.
- D. Protect existing wiring, circuits, piping, conduits, control systems, from damage during course of Work.
- E. Layout: Make determination of the existence, location and condition of related utility services.
- F. Arrange Work to minimize interruption of any services. When interruptions are unavoidable, consult Owner and utilities involved; agree in writing upon a mutually satisfactory time and duration.
- G. Coordinate Work with related systems. Should rearrangement or re-routing be necessary, submit proposed revisions to Architect and Owner and obtain approval thereof.

3.03 INSTALLATION

- A. Comply with manufacturers' product data, technical bulletins, and catalog and carton installation instructions.
- B. Comply with reviewed submittals.
- C. Reconnect rooftop equipment as required.
- D. Set equipment to provide for ready access to any parts requiring inspection and/or service.

3.04 FIELD QUALITY CONTROL

- A. Site Tests: Prior to acceptance, operate all affected mechanical systems for a period of at least five consecutive eight hour days.
- B. Inspection: Upon request, provide field service consisting of product use recommendations and site visit for inspection of product installation in accordance with manufacturer's instructions.

3.05 ADJUSTING

- A. Repair or replace damaged installed products.

3.06 CLEANING

- A. Remove temporary coverings and protection of adjacent work areas.
- B. Clean installed products in accordance with manufacturer's instructions prior to Final Completion.
- C. Clean all dirt, construction dust and debris from all mechanical systems. Touch up paint where finish has been damaged.
- D. Remove construction debris from project site and legally dispose thereof.

3.07 PROTECTION

- A. Protect installed products, systems and finish surfaces from damage during subsequent construction.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. New overflow drains.
 - 2. Refurbish existing roof drains.
 - 3. Contractor Option: Replace existing drain bowls and components.

- B. Related Sections:
 - 1. Section 075215 - SBS Modified Bitumen Roofing (Cold).
 - 2. Section 075225 - SBS Modified Bitumen Roofing (IRMA).
 - 3. Section 220010 - Basic Plumbing.

1.02 REFERENCES

- A. ASTM A74 - Standard Specification for Cast Iron Soil Pipe and Fittings.
- B. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
- C. ASHRAE Equipment Handbook for pipe hanging.
- D. CISPI for no-hub piping.

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide products which have been manufactured, fabricated and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.

1.04 SUBMITTALS

- A. Submit in accordance with Section 013323.
- B. Product Data: Manufacturer's product sheets and installation instructions.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Minimum 5 years commercial experience in performing this work, having specialized in installation of work similar to that required for

this project. When requested, submit certificate indicating qualification.

- B. Regulatory Requirements: Comply with applicable Plumbing and Building Code requirements.
- C. Pre-Installation Meeting: Conduct meeting with Owner's Authorized Representative to verify project requirements, substrate conditions, manufacturer's installation instructions and warranty requirements.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Comply with manufacturer's ordering instructions and lead time requirements; deliver products in manufacturer's original, unopened, undamaged containers with identification labels intact.
- B. Storage: Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
- C. Handling: Exercise care in handling, loading, unloading and storing products to avoid damage.

1.07 WARRANTIES

- A. Installer:
 - 1. Standard Workmanship Warranty - Two (2) years commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Rust-Oleum or approved equal.
- B. Contractor Option:
 - 1. Drains and Drain Accessories: Jay R. Smith; or approved equal.
 - 2. Hangers and Supports: Grinnell; Super Strut, Michigan or approved equal.
 - 3. Pipe:
 - a. Cast iron pipe and fittings: ASTM A74, Service weight.
 - b. No hub piping: Cast Iron Soil Pipe Institute Specification 301.

- c. Steel pipe: Schedule 40, black and galvanized to comply with ASTM A53/A53M.
- 4. Verify and match existing pipe sizes, unless noted otherwise.

2.02 MATERIALS

- A. Cold Galvanizing Compound:
 - 1. Rust-Oleum 700 System Cold Galvanizing Compound, or approved equal.

2.03 MANUFACTURED UNITS (CONTRACTOR OPTION)

- A. Roof Drains:
 - 1. Roof Drain: Cast iron with cast iron strainer. Smith 1310 or approved equal.
- B. Overflows:
 - 1. Overflow Roof Drain: Cast iron, with 2" high water dam collar (if necessary) with cast iron strainer. Smith 1310 or approved equal.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Inspection: Verify substrate conditions are acceptable for product installation in accordance with manufacturer's instructions.
- B. Report to the Owner's Authorized Representative any deviations between Contract Documents and site conditions.
- C. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Protection: Provide temporary coverings and protection of adjacent work areas.

3.01 REFURBISH COMPONENTS

- A. Remove all waterproofing materials from the components.
- B. Run a tap in all threaded holes to clean existing threads.

- C. Wire brush surface to remove corrosion and asphalt residue.
- D. Prepare surface for application of Cold Galvanizing Compound according to the manufacturer's requirements.
- E. Coat all components per manufacturer's instructions.

3.02 Reassemble with new hardware. Coordinate with waterproofing contractor.

3.03 ADJUSTING

- A. Repair or replace damaged installed products.

3.04 CLEANING

- A. Remove temporary coverings and protection of adjacent work areas.
- B. Clean installed products in accordance with manufacturer's instructions prior to Final Completion
- C. Remove construction debris from project site and legally dispose thereof.

3.05 PROTECTION

- A. Protect installed products from damage during subsequent construction.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Disconnect, store and reconnect existing rooftop equipment as required to install new roof and insulation system.
2. Provide temporary exhaust venting and filtration as required during construction.

B. Related Sections:

1. Section 076200 - Flashing and Sheet Metal.
2. Section 099100 - Painting.
3. Section 260000 - Basic Electrical.

1.02 REFERENCES

- A. ASTM A123 - Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- B. ASTM A53/A53M - Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
- C. ASTM A653/A653M - Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- D. ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers) - Fundamentals Handbook.
- E. SMACNA (Sheet Metal and Air Conditioning Contractors National Association) - Manual of HVAC Duct Construction Standards - Metal & Flexible.
- F. MSS SP-69 - Pipe Hangers and Supports - Selection and Application.
- G. MSS SP-127 - Bracing for Piping Systems Seismic-Wind-Dynamic Design, Selection, Application.

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide products which have been manufactured, fabricated and installed to maintain performance criteria stated by manufacturers without defects, damage or failure.

1.04 SUBMITTALS

- A. Submit in accordance with Section 013323.
- B. Closeout:
 - 1. Project Record Documents: As-Built Drawings and Specifications - maintain at site one set of documents for recording "As-Built" conditions as Work progresses. Indicate locations of concealed elements by dimension from structure or building grid.
 - 2. Copies of certificates of Code Authority acceptance.
 - 3. Per Section 017700, Contract Closeout.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Minimum 5 years commercial experience in the manufacture and supply of materials used in this work.
- B. Installer Qualifications: Minimum 5 years commercial experience in performing this work, having specialized in installation of work similar to that required for this project. When requested, submit certificate indicating qualification.
- C. Standards: Comply with applicable requirements of the following:
 - 1. ASHRAE Handbook.
 - 2. NFPA 13.
 - 3. NFPA 90A.
 - 4. SMACNA Manual.
 - 5. Gauges, hanging, supporting and bracing per MSS and SMACNA.
- D. Regulatory Requirements: Comply with applicable requirements of the following:
 - 1. Building Code.
 - 2. Plumbing Code.
 - 3. HVAC: Oregon Mechanical Specialty Code.
- E. Obtain applicable permits, Owner reimburses for permits and fees.
- F. Pre-Installation Meeting: Conduct meeting with Owner's Authorized Representative to verify project requirements, substrate conditions, manufacturers' installation instructions and warranty requirements.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Comply with manufacturers' ordering instructions and lead time requirements; deliver products in original, unopened, undamaged containers with identification labels intact.
- B. Storage:
 - 1. Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
 - 2. Store inside, protected from dirt and construction dust.
- C. Handling: Exercise care in handling, loading, unloading and storing products to avoid damage.

1.07 PROJECT CONDITIONS

- A. Hazardous Materials: If during the course of Work, Contractor observes existence of hazardous materials, immediately terminate further Work and notify the Owner's Authorized Representative of the condition. The Owner will, after consultation, determine a further course of action.

1.08 WARRANTIES

- A. Installer:
 - 1. Standard Workmanship Warranty - Two (2) years commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Materials: New, standard, full weight, identical to products in successful operation for a minimum of two years.
- B. Temporary Exhaust:
 - 1. North exhaust drop: 2,000 cfm minimum. 1.25" s.p., 1 ½ hp.
 - 2. East exhaust drop: 3,450 cfm minimum. 1.25" s.p., 1 ½ hp.
 - 3. South exhaust drop: 3,150 cfm minimum. 1.25" s.p., 1 hp.
- C. Provide filters on the open supply ducts.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Inspection:
 - 1. Verify substrate conditions are acceptable for product installation in accordance with manufacturers' instructions.
 - 2. Before starting Work, carefully examine site and Contract Documents. Become thoroughly familiar with conditions governing Work.
- B. Report to the Owner's Authorized Representative any deviations between Contract Documents and site conditions.
- C. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Protection: Provide temporary coverings and protection of adjacent work areas.
- B. Disconnect and store existing roof mounted equipment as necessary to complete work as specified.
- C. Notify Owner's Authorized Representative of any conditions of non-compliance with current applicable codes.
- D. Close pipe openings with caps or plugs.
- E. Protect existing wiring, circuits, piping, conduits, control systems, from damage during course of Work.
- F. Arrange Work to minimize interruption of any services. When interruptions are unavoidable, consult Owner's Authorized Representative and utilities involved; agree in writing upon a mutually satisfactory time and duration.
- G. Coordinate Work with related systems. Should rearrangement or re-routing be necessary, submit proposed revisions and obtain approval thereof.

3.03 INSTALLATION / RECONNECTION

- A. Comply with manufacturers' product data, technical bulletins, and catalog and carton installation instructions.

- B. Comply with reviewed submittals.
- C. Install equipment with minimum clearances indicated by manufacturer as required for proper maintenance, repair and service.
- D. Set equipment to provide for ready access to any parts requiring inspection and/or service.

3.04 FIELD QUALITY CONTROL

- A. Site Tests: Prior to acceptance, operate all affected mechanical systems for a period of at least five consecutive eight hour days.

3.05 ADJUSTING

- A. Repair or replace damaged installed products.

3.06 CLEANING

- A. Remove temporary coverings and protection of adjacent work areas.
- B. Clean installed products in accordance with manufacturer's instructions prior to Final Completion.
- C. Clean all dirt, construction dust and debris from all mechanical systems. Touch up paint where finish has been damaged.
- D. Remove construction debris from project site and legally dispose thereof.

3.07 PROTECTION

- A. Protect installed products from damage during subsequent construction.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Disconnect and reconnect existing roof mounted equipment as necessary to complete work specified.
 - 2. Materials and methods.

- B. Related Sections:
 - 1. Section 024110 - Selective Demolition.
 - 2. Section 230000 - Basic Mechanical.

1.02 REFERENCES

- A. NFPA (National Fire Protection Association) 70 - National Electrical Code.

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide products which have been manufactured, fabricated and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.

- B. Closeout:
 - 1. Project Record Documents: As-built Drawings and Specifications.
 - 2. Copies of certificates of Code Authority acceptance.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications:
 - 1. Minimum 5 years commercial experience in performing this work, having specialized in installation of work similar to that required for this project. When requested, submit certificate indicating qualification.
 - 2. Provide journeyman electricians, equipped with required tools, meters, and instruments.

- B. Regulatory Requirements:
 - 1. Comply with applicable Building Code requirements.
 - 2. Comply with Rules, Regulations and Codes of the State and local Authorities Having Jurisdiction.
 - 3. Obtain applicable permits, Owner reimburses for permits and fees.

- C. Pre-Installation Meeting: Conduct meeting with Owner's Authorized Representative to verify project requirements, substrate conditions, manufacturer's installation instructions and warranty requirements.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Delivery:
 - 1. Comply with manufacturer's ordering instructions and lead time requirements; deliver products in manufacturer's original, unopened, undamaged containers with identification labels intact.
 - 2. Transport products in manner to avoid distortion or damage.
- B. Storage:
 - 1. Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturers.
 - 2. Store products off ground and under cover.
- C. Handling: Exercise care in handling, loading, unloading and storing products to avoid damage.

1.06 WARRANTIES

- 1. Installer: Standard Contractor's Warranty for Workmanship - One (1) year commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MATERIALS

- A. New, listed by the Underwriter's Laboratories, bearing their label.
- B. Conductors: Soft drawn copper, number 12 minimum size, with 600 volt type THAN insulation.
- C. Splices: Scotchlok, Ideal wire nut or similar type connector.
- D. Above Grade Conduit: Zinc coated steel EMT in dry, protected locations. Flexible steel conduit only where flexibility is necessary.

- E. Outlet Boxes: Weatherproof of code required size to accommodate wire, fittings and devices.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Inspection: Verify substrate conditions are acceptable for product installation in accordance with manufacturer's instructions.
- B. Report to the Owner's Authorized Representative any deviations between Contract Documents and site conditions.
- C. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Protection: Provide temporary coverings and protection of adjacent work areas.
- B. Coordinate electrical wiring and equipment with conditions of construction.

3.03 INSTALLATION / RECONNECTION

- A. Comply with manufacturer's product data, technical bulletins, and catalog and carton installation instructions.
- B. Install products in conformance with applicable codes and reviewed submittals.
- C. Locate all raceways, conduit, outlet boxes and wiring concealed from view, unless otherwise shown.

3.04 FIELD QUALITY CONTROL

- A. Inspection: Ensure that Work is not covered until reviewed and accepted by Code Authority.

3.05 ADJUSTING

- A. Repair or replace damaged installed products.

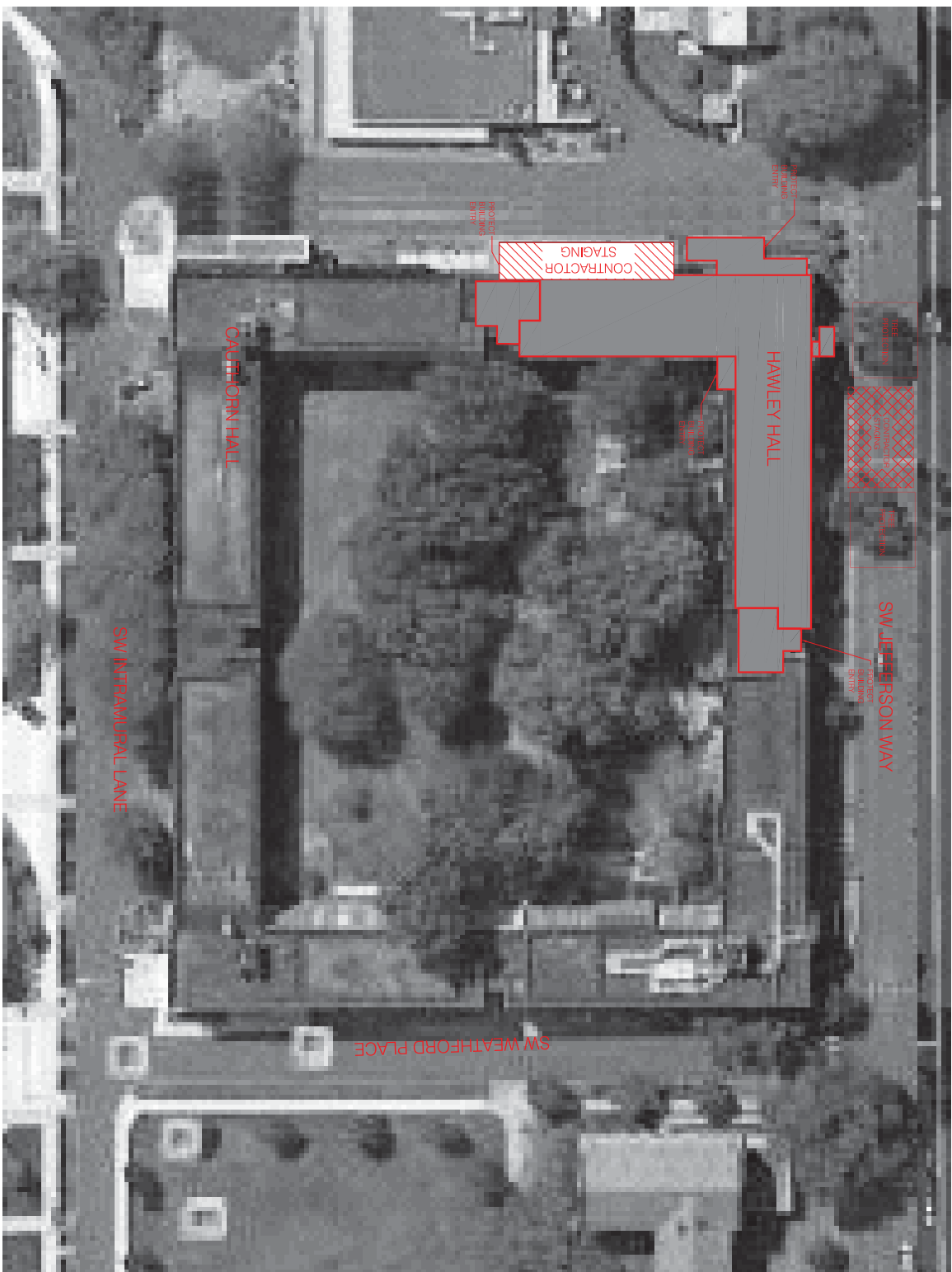
3.06 CLEANING

- A. Remove temporary coverings and protection of adjacent work areas.
- B. Clean installed products in accordance with manufacturer's instructions prior to Final Completion.
- C. Remove electrical waste and debris from job site as Work progresses.
- D. Upon completion, remove all excess supplies, materials and tools.
- E. Leave the electrical Work clean, dust-free and in proper working order
- F. Remove construction debris from project site and legally dispose thereof.

3.07 PROTECTION

- A. Protect installed products from damage during subsequent construction.

END OF SECTION



1 SITE PLAN
NO SCALE



Oregon State University
UNIVERSITY HOUSING & DINING SERVICES

HAWLEY HALL
REEROOFING PROJECT

SHEET TITLE:
SITE PLAN

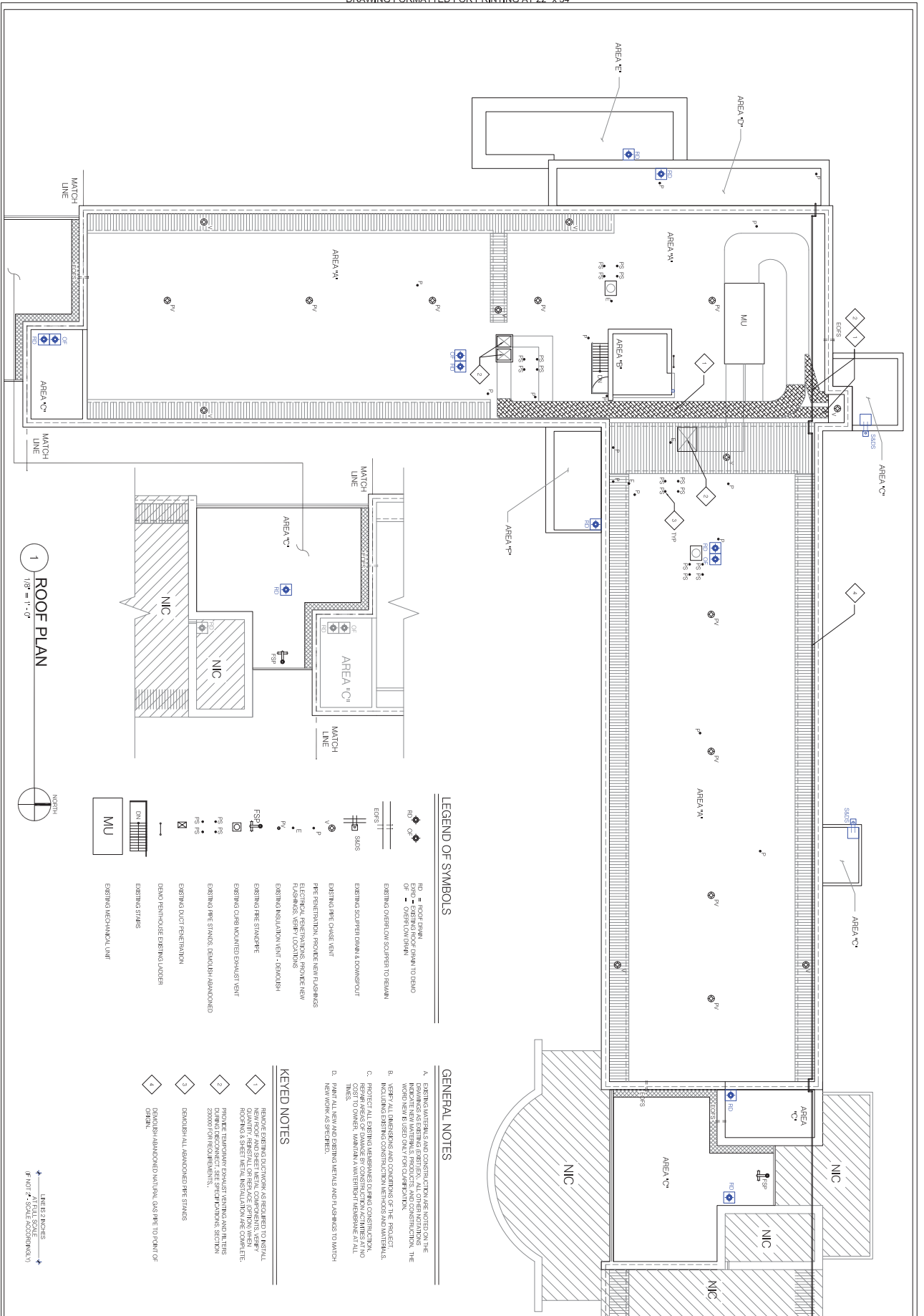


Date: 04/23/2019
Drawn by: [illegible]

Drawn by:	PS
Checked by:	RLM
Title:	16003

Project: 16003
SHEET NUMBER:

A1.1



1 ROOF PLAN
1/8" = 1'-0"



LINE SIZES
AT FULL SCALE
1/8" = 1'-0" (SCALE COMPONENT)

LEGEND OF SYMBOLS

- RD = ROOF DRAIN
- GRD = EXISTING ROOF DRAIN TO BE DEMO
- GRD = STOP ON DRAIN
- EXISTING OVER/LAP SCUPPER TO REMAIN
- EXISTING SCUPPER DRAIN & DOWNPOUT
- EXISTING PER CHASE VENT
- PER PENETRATION PROVIDE NEW FLASHINGS
- ELECTRICAL PENETRATIONS PROVIDE NEW FLASHINGS, VERIFY LOCATIONS
- EXISTING INSULATION VENT - DEMOLISH
- EXISTING PER STAIRS, DEMOLISH/ABANDONED
- EXISTING CURB MOUNTED DWELLST VENT
- FSP = FRESH AIR SUPPLY
- EXISTING PER STAIRWELL
- EXISTING DUCT PENETRATION
- DEMO PENHOUSE EXISTING LADDER
- EXISTING STAIRS
- EXISTING MECHANICAL UNIT

GENERAL NOTES

- A. EXISTING MATERIALS AND CONSTRUCTION ARE NOTED ON THE PLAN.
- B. INDICATE NEW MATERIALS, FINISHES, AND CONSTRUCTION. THE WORD 'NEW' IS USED ONLY FOR CLARIFICATION.
- C. VERIFY ALL DIMENSIONS AND CONDITIONS OF THE PROJECT.
- D. PROVIDE ALL EXISTING CONDITIONS AND MATERIALS.
- E. REPAIR AREAS OF DAMAGE BY CONSTRUCTION ACTIVITIES AND RESTORE TO ORIGINAL CONDITION.
- F. PAINT ALL VENT AND EXISTING METALS AND FLASHINGS TO MATCH EXISTING MATERIALS.

KEYED NOTES

1. REMOVE EXISTING DUCTWORK AS REQUIRED TO INSTALL QUANTITY, REINSTATE OR REPLACE OPTION WITH PROPOSED SHEET METAL INSTALLATION AS COMMENTED.
2. DEMOLISH ALL ABANDONED PER STAIRS.
3. DEMOLISH ABANDONED MATERIAL ON PER TO FRONT OF GENERAL.
4. DEMOLISH ABANDONED MATERIAL ON PER TO FRONT OF GENERAL.

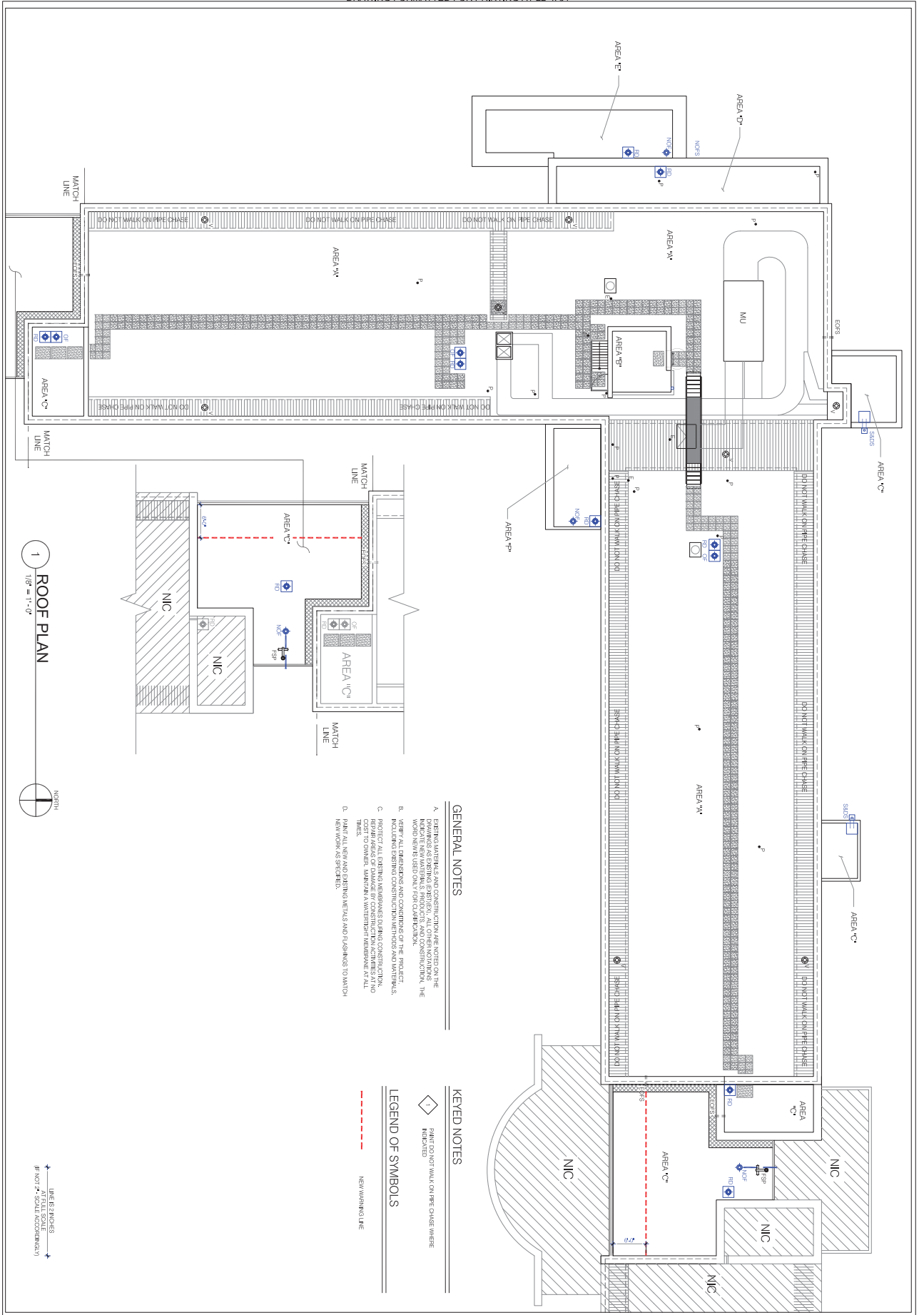
UNIVERSITY HOUSING & DINING SERVICES

HAWLEY HALL REROOFING PROJECT

REGISTERED ARCHITECT
STATE OF OREGON

DATE: 04/23/2019
DRAWN: PMS
CHECKED: RLK
TITLE: 16003

Project: 16003
SHEET NUMBER: A2.1



1 ROOF PLAN
1/8" = 1'-0"



GENERAL NOTES

- A. EXISTING MATERIALS AND CONSTRUCTION ARE NOTED ON THE PLAN WITH A DASHED LINE. NEW MATERIALS, PRODUCTS AND CONSTRUCTION, THE WORD "NEW" IS USED ONLY FOR CLARIFICATION.
- B. VERIFY ALL DIMENSIONS AND CONDITIONS OF THE PROJECT INCLUDING EXISTING CONSTRUCTION METHODS AND WORKMANSHIP.
- C. HISTORICAL ORIGINARY MATERIALS TO BE CONSTRUCTED TO MATCH EXISTING MATERIALS AND FINISHES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF PORTLAND AND THE PORTLAND DEVELOPMENT DEPARTMENT AT ALL TIMES.
- D. PAINT ALL NEW AND EXISTING METALS AND FINISHES TO MATCH EXISTING MATERIALS AND FINISHES.

KEYED NOTES

- ◆ PAINT DO NOT WALK ON THE CHASE WHERE INDICATED

LEGEND OF SYMBOLS

- NEW WARNING LINE

LINE DIMENSIONS AT FULL SCALE (IF NOT A SCALE ACCORDING TO)

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UNIVERSITY HOUSING & DINING SERVICES
HAWLEY HALL
REROOFING PROJECT

WALKWAY & WARNING LINE PLAN

SHEET TITLE:

DATE: 04/23/2019

PROJECT: 16003

SHEET NUMBER: A2.3

REGISTERED ARCHITECT
STATE OF OREGON
MAY 1998

DATE: 04/23/2019

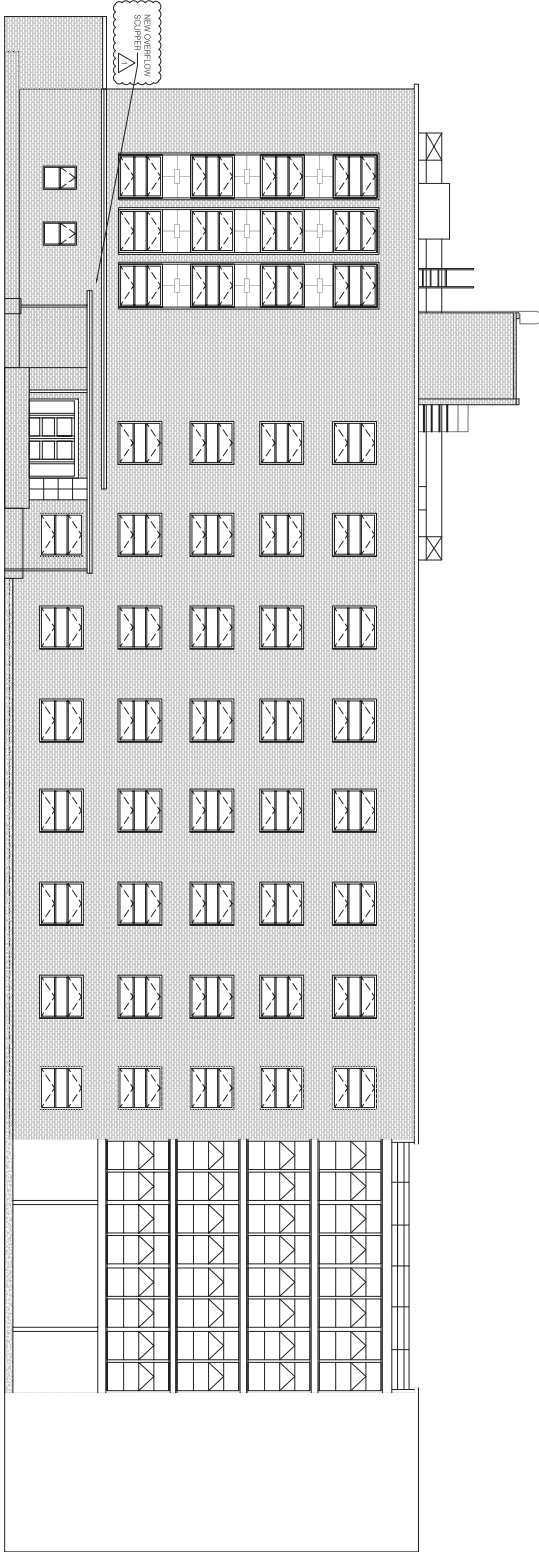
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DRIVING: PAS

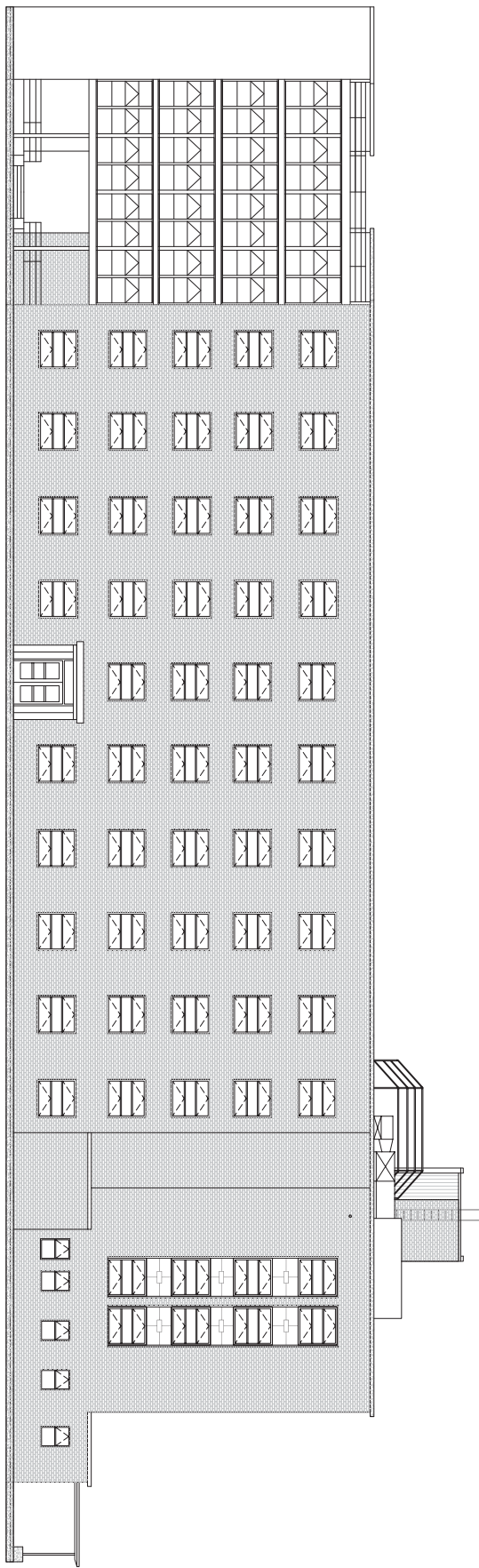
DESIGN: RLM

CHECK: RLM

FILE: 16003



1 WEST ELEVATION
1/8" = 1'-0"



2 NORTH ELEVATION
1/8" = 1'-0"

LINE FINISHES
AT FULL SCALE
(IF NOT OTHERWISE NOTED)



UNIVERSITY
HOUSING
& DINING
SERVICES

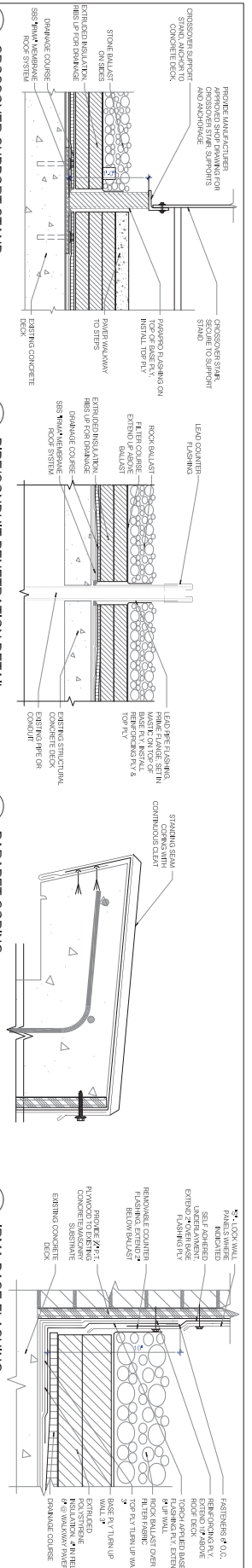
HAWLEY
HALL
REEROOFING
PROJECT

SHEET TITLE:
ELEVATIONS

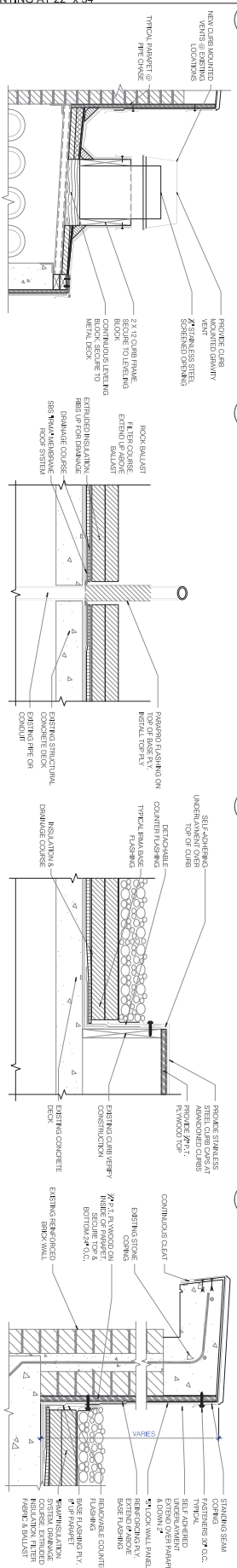


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 Project: 16003
 SHEET NUMBER:

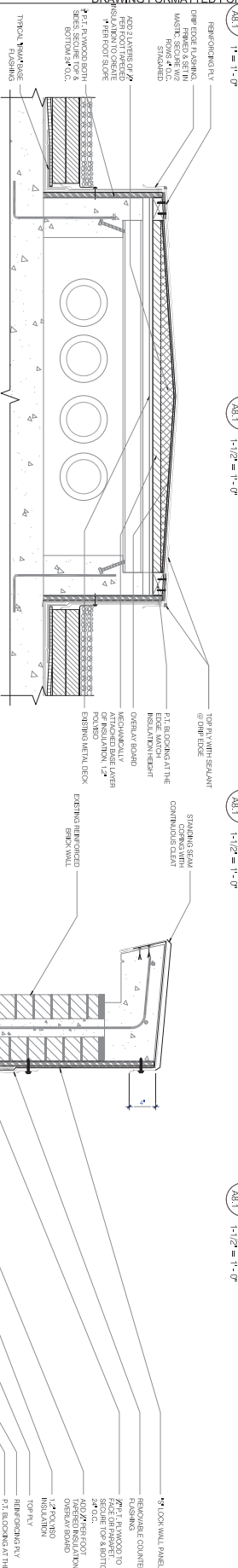
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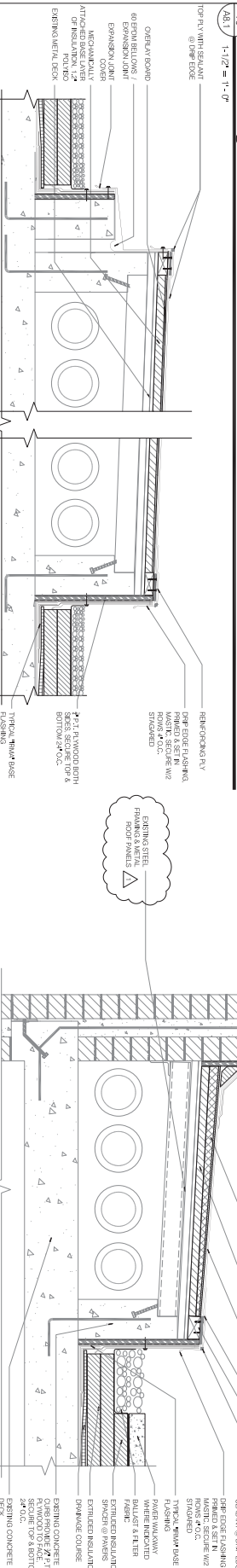
1 IRMA BASE FLASHING
A8.1 3" = 1'-0"



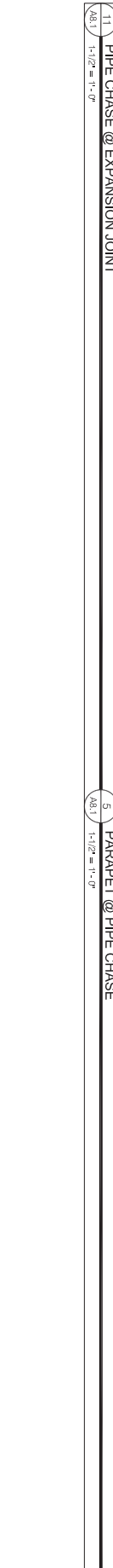
2 IRMA ROOF SYSTEM @ TALL PARAPET
A8.1 1-1/2" = 1'-0"



3 ABANDONED MECHANICAL CURB DETAIL (IRMA)
A8.1 1-1/2" = 1'-0"



4 PIPE/CONDUIT PENETRATION DETAIL
A8.1 1-1/2" = 1'-0"



5 PARAPET COPING
A8.1 3" = 1'-0"



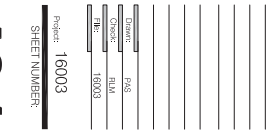
6 PIPE/CONDUIT PENETRATION DETAIL
A8.1 1-1/2" = 1'-0"



7 PIPE/CONDUIT PENETRATION DETAIL
A8.1 1-1/2" = 1'-0"



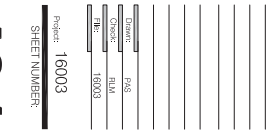
8 CROSSOVER SUPPORT STAND
A8.1 1-1/2" = 1'-0"



9 NEW CURBS VENT @ PIPE CHASE
A8.1 1" = 1'-0"



10 PIPE CHASE @ ROOF DIVIDER
A8.1 1-1/2" = 1'-0"



11 PIPE CHASE @ EXPANSION JOINT
A8.1 1-1/2" = 1'-0"

16003
SHEET NUMBER

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04/23/2019
DATE

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PROJECT

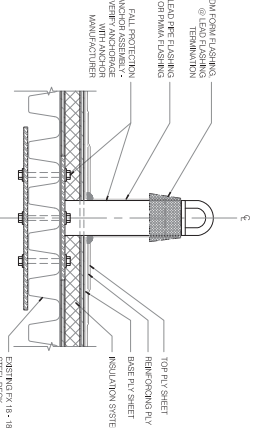
REGISTERED ARCHITECT
STATE OF OREGON
NO. 16003

HAWLEY
REEROOFING
PROJECT
SHEET TITLE

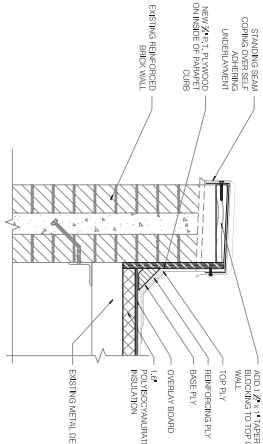
DETAILS

OSU
Oregon State University
UNIVERSITY HOUSING & DINING SERVICES

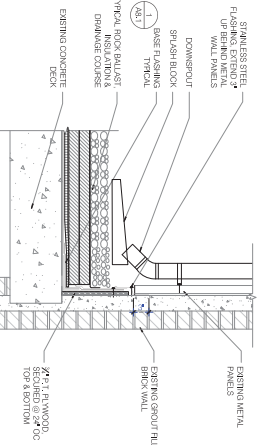
MA
MOBRIDE PC
ARCHITECTURE



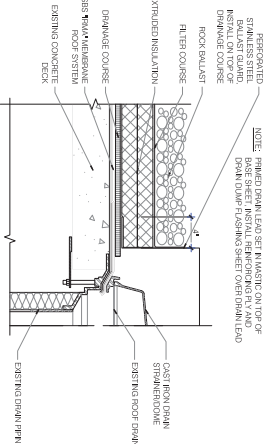
1 AREA DRAIN DETAIL
AS 2 1'-1/2" = 1'-0"



2 DRAIN GUARD & OVERFLOW GUARD DETAIL
AS 2 3/4" = 1'-0"



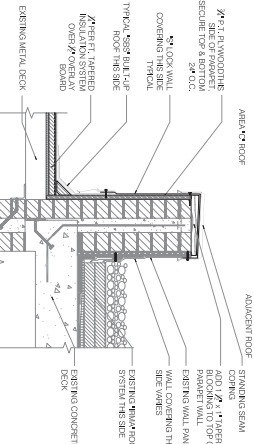
3 EXISTING OVERLOW @ IRMA SYSTEM
AS 2 1'-1/2" = 1'-0"



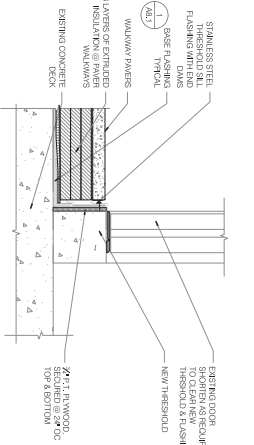
4 REGLET AT PENTHOUSE
AS 2 1" = 1'-0"



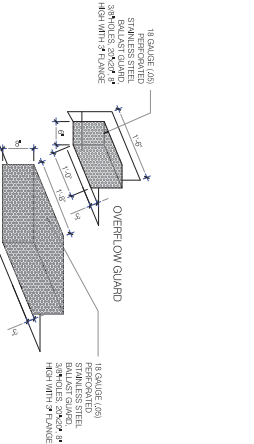
5 PENTHOUSE BASE FLASHING @ METAL WALL
AS 2 1" = 1'-0"



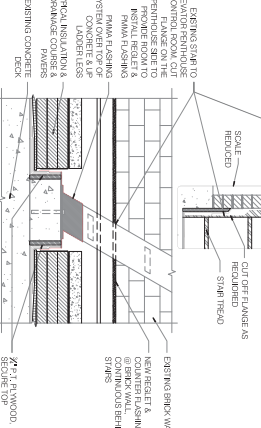
6 PENTHOUSE DOOR THRESHOLD
AS 2 1" = 1'-0"



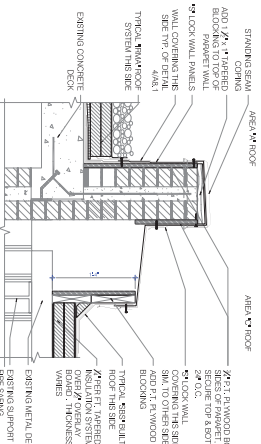
7 SBS BASE FLASHING @ STAIRS
AS 2 3" = 1'-0"



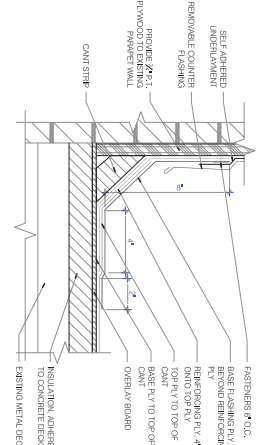
8 ELEVATOR PENTHOUSE GUTTER EDGE
AS 2 1'-1/2" = 1'-0"



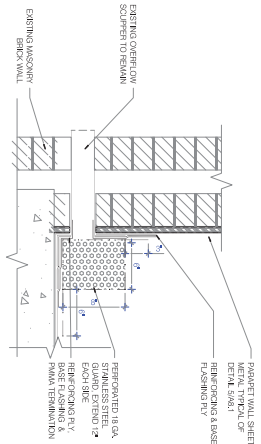
9 ELEVATOR PENTHOUSE PERIMETER CURB
AS 2 1'-1/2" = 1'-0"



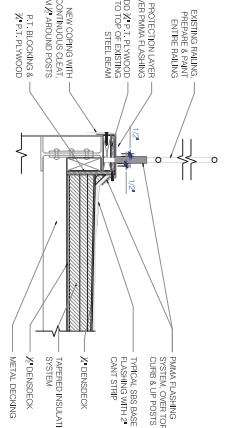
10 AREA 'C' TO ADJACENT NIC ROOF
AS 2 1" = 1'-0"



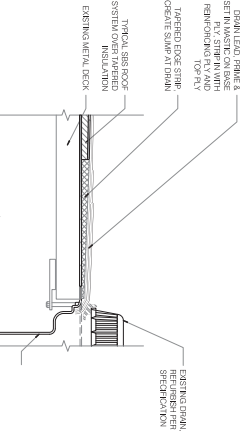
11 AREA 'C' TO 'A' EXPANSION JOINT
AS 2 1" = 1'-0"



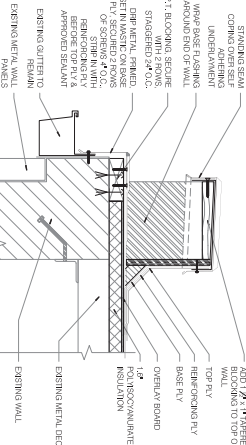
12 EXTERIOR ROOF @ STAIRWELL DRAIN
AS 2 1'-1/2" = 1'-0"



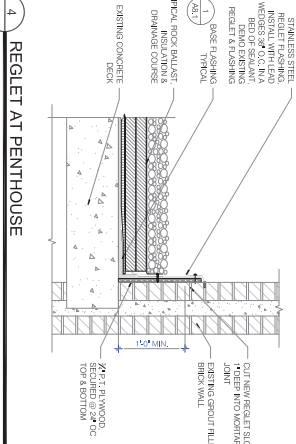
13 FALL PROTECTION ANCHOR - METAL DECK
AS 2 1'-1/2" = 1'-0"



14 STAIR BASE @ PENTHOUSE
AS 2 1" = 1'-0"



15 AREA 'C' CONNECTOR ROOF RAILING
AS 2 1" = 1'-0"



16 AREA 'C' CONNECTOR ROOF RAILING
AS 2 1" = 1'-0"





REGISTERED ARCHITECT
 JOHN W. HAWLEY
 STATE OF OREGON
 No. 04232019
 Date: 04/23/2019

DETAILS
 SHEET TITLE:
 PROJECT:

Project: 16003
 SHEET NUMBER:

Drawing: P&S
 Checked: RLK
 Title: 16003

16003
 SHEET NUMBER



PROJECT MANUAL

**OREGON STATE UNIVERSITY
UNIVERSITY HOUSING & DINING SERVICES
WEST HALL REROOFING PROJECT**

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January 2019

Project Number: 18020

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DIVISION 2 - SITE WORK

024110 Selective Demolition

DIVISION 3 - NOT USED

DIVISION 4 - NOT USED

DIVISION 5 - NOT USED

DIVISION 6 - WOOD AND PLASTIC

060573 Fire Treated Wood

061010 Rough Carpentry

DIVISION 7 - THERMAL AND MOISTURE PROTECTION

075215 SBS Modified Bitumen Roofing (Cold)

075225 SBS Modified Roofing/Waterproofing (IRMA)

076200 Flashing and Sheet Metal

079200 Joint Sealers

DIVISION 8 - NOT USED

DIVISION 9 - FINISHES

099100 Painting

DIVISION 10 thru 21 - NOT USED

DIVISION 22 - MECHANICAL

220010 Basic Plumbing

221426 Roof Drains

230000 Basic Mechanical

DIVISION 26 - ELECTRICAL

260000 Basic Electrical

95% REVIEW

DRAWINGS - UNDER SEPARATE COVER

G0.1	Cover Sheet
A1.1	Site Plan
A2.1	Demolition Plan
A2.1	Roof Plan
A2.2	Walkway Plan
A3.1	Elevations
A8.1	Details
A8.2	Details
A8.3	Details

END OF TABLE OF CONTENTS

95% REVIEW

PART 1 - GENERAL

1.01 SUMMARY OF WORK

- A. The Work Contract consists of Demolition, Fall Protection, Metal Fabrications, Roof Replacement, Sheet Metal Revisions, and Sealants, at the West International House on the Oregon State University Campus, Corvallis, Oregon.
- B. Work shall be started on []. The Contract may not be signed prior to approval of the Contractor's Certificate of Insurance by Procurement and Construction Contracting, Oregon State University. Work shall be completed by [].

1.02 CONTRACTORS USE OF PREMISES

- A. Contractor shall limit use of the Premises for work and storage to allow for:
 - 1. Owner occupancy, day and night.
 - 2. Public use, day and night.
 - 3. Security.
 - 4. Safe entry and exit for vehicles and pedestrians.
 - 5. Fire egress.
- B. Coordinate all operations with the Owner's Authorized Representative during the construction period.

1. Contractor shall provide scaffold stairs to access the roof.

- C. Limit Contractor's employee parking to locations designated at the Pre-construction Conference.

1.03 OWNER OCCUPANCY

- A. The Owner will occupy the Premises during the entire period of construction for the conduct of normal operations. Cooperate with Owner's Authorized Representative in construction operations to minimize conflict and to facilitate the Owner's usage especially in the following areas:
 - 1. Restricted access and parking.
 - 2. Use of stairs.
 - 3. Storage space availability.
- B. Conduct operations in such a way to ensure the least inconvenience to the general public, including:
 - 1. Limitations and easements.

95% REVIEW

2. Emergency vehicle access.
3. Building access to the public, day and night

1.04 ASBESTOS AND OTHER HAZARDOUS MATERIAL

- A. The Owner has made a reasonable attempt to locate and identify asbestos or other hazardous material that may be encountered during the course of the Work. Core samples were taken and analyzed, no asbestos was found in the samples.
- B. Information has been included on the plans and specifications for the Work, or is available from the Owner's Authorized Representative.
- C. If the Contractor observes or suspects the existence of asbestos or other hazardous materials in the structure or components of the building, the Contractor shall immediately stop work and notify Facilities Services.
- D. The Owner will arrange for the removal of asbestos or other hazardous materials as required by Facilities Services personnel or by separate contract.
- E. Schedule ten (10) days of slack or "down" time for the removal of hazardous materials without penalty to Owner for the delay of the Contract.

1.05 LEAD BASED PAINT

- A. Existing lead based paint is not expected in this project. If lead base paint is encountered notify the Owner's Authorized Representative.

END OF SECTION

95% REVIEW

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. The alternates described in this Section may be exercised at the option of the Owner within 60 days of the execution of the Contract.
- B. It is generally the practice of the Owner to exercise alternates in numerical order.
- C. The Owner reserves the right to accept the alternates without regard to order or sequence; but, such acceptance shall not impair the selection of a low, responsible and responsive bidder to whom the Contract may be awarded under an equitable bid procedure.

1.02 QUALITY ASSURANCE

- A. For each alternate which is accepted, coordinate the work of the various trades involved, and modify surrounding work as required to complete the project as intended.
- B. In the change-in-price figure for each alternate, include incidental costs which are attributable to adjustments in the work of other trades which may be required to achieve the contemplated and final conditions
- C. Questions:
 - 1. If there is a question regarding the extent, scope, nature, or intent of the alternates, contact the Owner's Authorized Representative for clarification.
 - 2. Failure on the part of the Contractor to clarify any unclear items shall not relieve the Contractor of the responsibility for performing the selected alternates in accordance with the intent and requirements of the Project Manual and Drawings.
- D. The description of the alternates hereinafter is qualitative and not quantitative; the Contractor shall determine the quantities of labor and materials and the extent of same required to execute the selected alternates in accordance with the intent and requirements of the Project Manual and Drawings.
- E. The applicable Sections of the Specifications apply to the work under each alternate.

1.03 LIST OF ALTERNATES

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Alternate 1: Leak Detection System, Electric Field Vector Mapping by International Leak Detection (ILD®) or approved.

END OF SECTION

95% REVIEW

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Selective demolition, as indicated.
 - 1. Removal of existing roofing systems.
 - 2. Remove existing sheet metal coping and flashings.
 - 3. Remove existing ladder to the Elevator Penthouse Roof.
 - 4. Salvage: Copper metal to be salvaged to Owner, see Section 3.07; C.

1.02 REFERENCES

- A. 29 CFR 1926.1101. OSHA Occupational Exposure to Asbestos, Construction Industry Standard.
- B. U.S. Environmental Protection Agency National Emissions Standards for Hazardous Air Pollutants (NESHAPS). (Code of Federal Regulations Title 40, Part 61, Subparts A and M.).
- C. AA guide for Meeting DEQ Requirements: Handling Asbestos-Containing Roofing Materials (December 1994).
- D. DOT Regulations 49 CFR 171 & 172.

1.03 SUBMITTAL

- A. Submit in accordance with Section 013300
- B. Schedule: Detailed schedule of demolition and removal Work.
- C. Shop Drawings: Demolition procedures and removal sequence, locations and construction of barricade, fences and temporary Work.

1.04 SUBSTRATE

- A. Accurately record actual substrate make-up and condition after elements are removed.
- B. Document with drawings and photographs.

1.05 QUALIFICATIONS

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- A. Demolition Firm: Company experienced in performing the Work of this section with minimum three years of commercial experience.

1.06 REGULATORY REQUIREMENTS

- A. Conform to applicable code for demolition of structures, safety of adjacent structures, dust control, and disposal.
- B. Obtain required permits from authorities.
- B. Conform to applicable regulatory procedures when discovering hazardous or contaminated materials.

PART 2 (Not Used)

PART 3 EXECUTION

3.01 PROTECTION

- A. Conduct Work with minimum interference to thoroughfares; maintain protected egress and access at all times; maintain disabled access.
- B. Do not close or obstruct sidewalks without authorization from the Owner's Authorized Representative.
- C. Protect adjacent building surfaces and property from damage during demolition operations.
- D. Provide and maintain suitable barricades, shelters, lights, and danger signals during the progress of the Work.
- E. If necessary, protect existing sidewalks and curbs with planking.
- F. Close pipe openings with caps or plugs.
- G. Protect existing wiring, circuits, piping, conduits, control systems, from damage during course of Work.
- H. Make determination of the existence, location and condition of related utility services.

95% REVIEW

- I. Arrange Work to minimize interruption of any services. When interruptions are unavoidable, consult Owner and utilities involved; agree in writing upon a mutually satisfactory time and duration.

3.02 PREPARATION

- A. Protect existing landscaping and structures.
- B. Owner will trim trees and shrubbery if required. Coordinate with Owner's Authorized Representative.

4.03 REQUIREMENTS

- A. Conduct demolition to minimize interference with adjacent occupancies.
- B. Dangerous Condition:
 1. Cease operations immediately if any structures appear to be in danger.
 2. Notify Owner's Authorized Representative.
 3. Do not resume operations until directed.

3.04 DEMOLITION

- A. Demolish indicated structures and appurtenances in an orderly and careful manner.
- B. Except where noted otherwise, immediately remove demolished material from site.
- C. Pollution Controls:
 1. Use temporary enclosures and other suitable methods to limit dust and dirt rising and scattering in air to lowest practical level.
 2. Comply with governing regulations pertaining to environmental protection.
 3. Do not use water when it may create hazardous or objectionable conditions.
- D. Clean adjacent structures and improvements of dust, dirt and debris caused by demolition operations.

3.05 REMOVAL

- A. Transport demolished materials and dispose of off-site in a legal manner and location.

95% REVIEW

- B. Cover vehicles used for removal of demolished materials, so as to prevent debris from littering along the disposal route. Retrieve any fallen debris.

3.06 ROOFING SYSTEMS REMOVAL

- A. Completely remove all existing roofing materials down to existing decks.
- B. Ensure that substrate is clean and dry, smooth, free of protruding or loose fasteners and free of foreign material.

3.07 SALVAGE SCHEDULE

- A. General: Demolished material and equipment not designated for salvage becomes Contractor's property; remove promptly from the project site.
- B. Remove, store, and protect the following materials and equipment to be reused:
 - 1. Equipment indicated on drawings.
- C. Salvage all copper metal to Owner:
 - 1. Lower copper materials to the ground.
 - 2. Stack on a pallet.
 - 3. Notify Owner to haul away.

END OF SECTION

95% REVIEW

PART 1 GENERAL

1.01 SUMMARY

- A Section Includes: Fire retardant treatment for wood, including framing, decking, sheathing and other wood construction, not exposed to weather.
- B Related Sections:
 - 1. Section 061010 - Rough Carpentry.

1.02 REFERENCES

- A ASTM D5516 - Test Method for Evaluating the Flexural Properties of Fire-Retardant Treated Softwood Plywood Exposed to Elevated Temperatures.
- B ASTM D5664 - Test Method for Evaluating the Effects of Fire-Retardant Treatments and Elevated Temperatures on Strength Properties of Fire-Retardant Treated Lumber.
- C ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.
- D AWPA (American Wood-Preservers' Association) Standard C20 - Structural Lumber, Fire Retardant Treatment by Pressure Processes.
- E AWPA Standard C27 - Plywood, Fire Retardant Treatment by Pressure Processes.
- F AWPA Standard P25 - Waterborne Preservatives.
- G AWPA Standard P49 - Fire Retardant Formulations.
- H AWPA Use Category UC1.
- I MS (Military Specification) L-19140E - Lumber and Plywood, Fire-Retardant Treated.
- J NFPA (National Fire Protection Association) 255 - Test Method for Surface Burning Characteristics of Building Materials.
- K UL (Underwriters Laboratories) 723 - Test for Surface Burning Characteristics of Building Materials.

95% REVIEW

L UL Building Materials Directory.

1.03 SYSTEM DESCRIPTION

A Performance Requirements: Provide fire retardant treatment that will perform in accordance with manufacturer's stated performance criteria without defects, damage or failure.

1.04 SUBMITTALS

A Submit in accordance with Section 013300.

B Product Data: Include manufacturer's product sheets.

C Quality Assurance Submittals:

1. Certified test report showing compliance with specified performance characteristics and physical properties. Include in test report certification that fire retardant solution does not contain ammonium phosphate.
2. NER-303 or ICBO ER-5755 indicating flamespread, strength, corrosion and hygroscopic properties.
3. Certification from treatment plant certifying wood treatment applied complies with Dricon treatment.

D Closeout Submittals:

1. Warranty documents specified herein.

1.05 QUALITY ASSURANCE

A Source Quality: Obtain fire retardant treatment from a single manufacturer.

B Wood Treatment Plant Qualifications: Experienced in performing work of this section which has specialized in the treatment of wood similar to that required for this project. When requested, submit certificate indicating qualifications.

C Regulatory Requirements:

1. FHA Minimum Property Standard #2600.
2. HUD Materials Release 1261.

D Testing: Testing on fire performance, strength and corrosion properties of fire retardant treated wood; recognized by issuance of a National Evaluation Services Report.

95% REVIEW

E Lumber Treatment Standard: Comply with AWPA Standard C20, current edition and Commodity Specification H of AWPA Use Category System.

F Plywood Treatment Standard: Comply with AWPA Standard C27, current edition and Commodity Specification H of AWPA Use Category System.

1.06 DELIVERY, STORAGE & HANDLING

A Storage: Store materials protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.

1.07 WARRANTY

A Manufacturer's Warranty:

1. Manufacturer's standard warranty document executed by authorized company official.
2. Roof warranty against heat degradation.
3. Warranty Period: 40 years, commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURER[S]

A Arch Wood Protection , or approved equal.

2.02 FIRE RETARDANT TREATMENT

A Product Treatment:

1. Dricon fire retardant treatment, produced by licensed treatment plant.
2. Provide protection against termites and fungal decay, registered for use as wood preservative by EPA.
3. Comply with formulation AWPA P17 FR-1
4. Free of halogens, sulfates and ammonium phosphate.
5. Treated Wood: Flamespread of less than 25 in accordance with ASTM E84.
6. Corrosion Properties: Wood in contact with carbon steel, galvanized steel, aluminum, copper and red brass shall exhibit corrosion rates less than 1 mil per year, when tested in accordance with FS MIL-L-19140, paragraph 4.6.5.2.

95% REVIEW

2.03 RELATED WOOD MATERIALS

- A Wood Materials: Specified under Section 06 10 10 .
- B Moisture Content:
 - 1. Lumber: Kiln dried, maximum 19% after treatment.
 - 2. Plywood: Kiln dried, maximum 15% after treatment.

PART 3 EXECUTION

3.01 APPLICATION

- A Fire Retardant Treatment: Apply fire retardant treatment in accordance with applicable code requirements.
- B Compliance: Comply with manufacturer's product data, including product technical bulletins, for fire retardant treatment installation.

3.02 PROTECTION

- A Protect fire retardant treated wood from damage during construction.

END OF SECTION

95% REVIEW

GENERAL

1.01 SUMMARY

A. Section Includes:

1. Fire Treated wood, see Section 06 05 73.
2. All new wood components will be fire treated to meet Code.
3. Blocking.
4. Plywood.
5. New Perimeter Curbs.

B. Related Sections:

1. Section 060573 – Fire Treated Wood.
2. Section 075215 - SBS Modified Bitumen Roofing (Cold).
3. Section 075225 - SBS Modified Roofing (IRMA)
4. Section 076200 - Flashing and Sheet Metal.

1.02 REFERENCES

- A. APA (American Plywood Association) - Product Standard PS-1.
- B. WCLIB (West Coast Lumber Inspection Bureau) - Standard Grading Rules No. 17.
- C. WWPA (Western Wood Products Association) - Lumber Standard PS-20.
- D. AWPA (American Wood Preservers' Association):- Book of Standards.

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide products which have been manufactured, fabricated and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.

1.04 SUBMITTALS

- A. Submit in accordance with Section 013300.
- B. Product Data:
 1. Manufacturer's product data sheets and installation instructions.
 2. Manufacturer's published specifications.

95% REVIEW

1.05 Manufacturer's product data sheets for related components.

1.06 QUALITY ASSURANCE

- A. Installer Qualifications: Minimum 5 years commercial experience in performing this work, having specialized in installation of work similar to that required for this project. When requested, submit certificate indicating qualification.
- B. Regulatory Requirements: Comply with applicable Building Code requirements.
- C. Pre-Installation Meeting: Conduct meeting with Owner's Authorized Representative to verify project requirements, substrate conditions, manufacturer's installation instructions and warranty requirements.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Delivery:
 - 1. Comply with manufacturer's ordering instructions and lead time requirements; deliver products with identification labels intact.
 - 2. Protect wood from moisture absorption during transportation and storage.
- B. Storage:
 - 1. Store products protected from exposure to harmful weather.
 - 2. Store wood above grade, permit ventilation.
 - 3. Cover with secure, breathable, weather resistant covers.
- C. Handling: Avoid damage to products.

PART 2 PRODUCTS

2.01 LUMBER MATERIALS – ALL FIRE RETARDANT TREATED

- A. Blocking, Insulation Stops and Nailers: Coast Region Douglas Fir, WCLIB construction or No. 2, S4S, Moisture content maximum 19 percent. Pressure Treated where in contact with concrete or masonry.
- B. Framing: Coast Region Douglas Fir, WCLIB construction or No. 2, S4S, Moisture content maximum 19 percent. Pressure Treated where in contact with concrete or masonry.

95% REVIEW

2.02 SHEATHING MATERIALS

- A. Plywood Wall Sheathing: APA Rated, $\frac{3}{4}$ inch, Pressure Treated.

2.03 ACCESSORIES

- A. Fasteners: Galvanized steel for exterior, high humidity, and treated wood locations, plain finish elsewhere.
- B. Die Stamped Connectors: galvanized steel.
- C. Anchors: Expansion shield and lag bolt type for anchorage to solid masonry or concrete.

2.04 WOOD TREATMENT – (See Section 06 05 73 for Fire Retardant Treatment)

- A. Wood Preservative (Pressure Treatment): AWPA Treatment C1 using water borne preservative with 0.25 percent retainage.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Inspection: Verify substrate conditions are acceptable for product installation.
- B. Report to the Owner's Authorized Representative any deviations between Contract Documents and site conditions.
- C. Do not proceed until unsatisfactory conditions have been corrected.

3.02 ADJUSTING

- A. Repair or replace damaged installed products.

3.03 CLEANING

- A. Remove construction debris from project site and legally dispose thereof.

3.04 PROTECTION

95% REVIEW

- A. Protect installed product and finish surfaces from damage during subsequent construction.

END OF SECTION

95% REVIEW

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Deck preparation.
2. Tapered Insulation
3. Cold adhesive applied SBS modified bitumen roofing.
4. Granule surface cap sheet.

B. Related Sections:

1. Section 024110 - Selective Demolition.
2. Section 061010 - Rough Carpentry.
3. Section 075225 - SBS Modified Bitumen Waterproofing (IRMA)
4. Section 076200 - Flashing and Sheet Metal.
5. Section 2214 26 - Roof Drains.

1.02 REFERENCES

- A. ASTM D41 - Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
- B. ASTM D2178 - Asphalt Glass Felt Used in Roofing and Waterproofing.
- C. ASTM D4586 - Asphalt Roof Cement, Asbestos-Free.
- D. ASTM D5147 - Test Methods for Sampling and Testing Modified Bituminous Sheet Material.
- E. ASTM D5849 - Test Method for Evaluating Resistance of Modified, Bituminous Roofing Membranes to Cyclic Joint Displacement.
- F. ASTM D6163 - Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements.
- G. ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.
- H. ASTM E108 - Test Methods for Fire Tests of Roof Coverings.
- I. ASTM E119 - Test Methods for Fire Tests of Building Construction and

95% REVIEW

Materials.

- J. ASTM E136 - Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 degrees C.
- K. NRCA (National Roofing Contractors Association) - Roofing and Waterproofing Manual.
- L. FM (Factory Mutual) 1-90 for wind uplift and fastening.
- M. ASHRAE (American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc.) for insulation R-values.
- N. UL (Underwriters Laboratories) - Roofing Materials and Systems Directory.

1.03 SYSTEM DESCRIPTION

- A. Design Requirements: Fully Warranted Class A.
- B. Performance Requirements: Provide products which have been manufactured, fabricated and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.

1.04 SUBMITTALS

- A. Submit in accordance with Section 013300.
- B. Product Data:
 - 1. Manufacturer's product sheets and installation instructions.
 - 2. Manufacturer's published specifications.
 - 3. Manufacturer's product data sheets for related components.
 - 4. FM approved fastening pattern.
- C. Shop Drawings:
 - 1. Show layout, profiles, and product components, including anchorage, accessories, finish colors and textures.
 - 2. Insulation and cricket system.
- D. Samples: Selection and verification samples for finishes, colors and textures.
- E. Quality Control:

95% REVIEW

1. Certified independent test reports, showing compliance with specified performance characteristics and physical properties.
2. Evidence of UL and FM approvals.
3. Certificate of Analysis indicating; Product Identification, Date of manufacture, Lot Number, Dimensions & Mass and Physical Properties, typical of Sample in the Appendix at end of this section.
4. Product certificates, signed by manufacturer, certifying products comply with specified performance characteristics and physical requirements.
5. Manufacturer's field reports.
6. Copy of warranty.

F. Closeout:

1. Project Record Documents:
2. Operation and maintenance data for installed products, including methods for maintaining, and precautions against cleaning materials and methods detrimental to finishes and performance.
3. Warranty documents specified herein.
4. Per Section 01 77 00, Contract Closeout.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: All products furnished by or approved by roofing manufacturer for entire roof assembly.
- B. Installer Qualifications:
1. Minimum 5 years commercial experience in performing this work, having specialized in installation of work similar to that required for this project.
 2. Approved by and certified in writing by roofing Manufacturer.
 3. Been in continuous business for past 3 years.
 4. Completed at least three successful installations of specified materials and systems on projects of similar scope.
 5. Provide all personnel trained in application of materials and systems and maintain supervision as required.
 6. Foreman: Have at least five years experience supervising the installation of SBS Roof Systems of similar application and scope. Provide evidence in writing if requested by Owner.
 7. When requested, submit certificate indicating qualification.
- C. Standards: Comply with applicable requirements of NRCA Roofing and Waterproofing Manual.

95% REVIEW

- D. Regulatory Requirements: Comply with applicable Building Code requirements.
- E. Insulation Fire Performance Characteristics: Provide insulation materials which are identical to those whose fire performance characteristics, as listed for each material or assembly of which insulation is a part, have been determined by testing, per methods indicated below, by UL or other testing and inspecting agency acceptable to authorities having jurisdiction:
 - 1. Surface Burning Characteristics: ASTM E84.
 - 2. Fire Resistance Ratings: ASTM E119.
 - 3. Combustibility Characteristics: ASTM E136.
- F. Underwriter's Laboratories and/or Warnock Hersey tested and listed for a Class A rating when installed on incombustible decks for roof slopes and application shown.
- G. Pre-Installation Meeting: Conduct meeting with Owner's Authorized Representative to verify project requirements, substrate conditions, manufacturer's installation instructions and warranty requirements.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Comply with manufacturer's ordering instructions and lead time requirements; deliver products in original, unopened, undamaged containers with identification labels intact.
- B. Storage:
 - 1. Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
 - 2. Store materials in dry, protected areas.
 - 3. Store roll goods on end. 'Flattened' rolls are unacceptable.
 - 4. Control temperature of storage areas in accordance with manufacturer's instructions.
- C. Handling: Exercise care in handling, loading, unloading and storing products to avoid damage.

1.07 PROJECT CONDITIONS

- A. Environmental Requirements:
 - 1. Do not apply materials during precipitation of any form (rain, dew, ice,

95% REVIEW

- frost, snow), or if such precipitation is imminent.
2. Do not apply materials when water in any form (i.e., rain, dew, ice, frost, snow) is present on deck.
 3. Do not apply materials during ambient temperatures of 40°F and below (including wind chill).

1.08 WARRANTIES

A. Manufacturer's Warranty:

1. Manufacturer's standard warranty document executed by authorized company official.
2. Single source 20 year combined 10+10 renewable, no dollar limit warranty signed by a corporate officer covering roofing materials, insulation materials and installation of the materials, and related systems. Include all roof related items and installations. Warranty to commence on the Date of Substantial Completion.

B. Installer:

1. Two (2) years material and labor, from date of Substantial Completion.
2. Warrant all roofing, flashing and roof insulation against defects.
3. Maintain roofed areas in watertight condition during this period.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Siplast:

1. Siplast Paradiene 2030 FR IA.
2. Or approved equal.

2.02 INSULATION MATERIALS

A. Area "B" Elevator Penthouse Roof (Metal Deck).

1. Base Layer (mechanically attached): Rigid closed-cell polyisocyanurate foam board minimum 20 psi compressive strength and 2 pcf density, complying with ASTM C591, aged R value of 5.6 per inch of thickness, flame spread rating of 25 (ASTM E84), both sides of board faced with glass fiber mat; 1.6" thick, 4 feet by 4 feet stock. Supplied or approved by Roofing Materials Manufacturer.
2. Submit Manufacturer approved fastener and fastening pattern.

95% REVIEW

3. Overlay Board (adhered). See Overlay Board below.
- B. Area C: Tapered Insulation Assembly (Metal Deck).
1. Base Layer (mechanically attached): Gypsum Roof Board: Silicone treated, glass mat faced, gypsum panel, UL Class A, FMRC 90 psf uplift, thickness ½" at exterior stair landing roofs. GP DensDeck, Prime.
 2. Submit Manufacturer approved fastener and fastening pattern.
 3. Tapered Insulation Units (adhered): Rigid closed-cell polyisocyanurate foam board minimum 20 psi compressive strength and 2 pcf density, complying with ASTM C591, aged R value of 5.6 per inch of thickness, flame spread rating of 25 (ASTM E84), both sides of board faced with glass fiber mat; tapered ¼ inch per foot, 4 feet by 4 feet stock. Supplied or approved by Roofing Materials Manufacturer.
 4. Overlay (adhered): See Overlay Board, below
- C. Areas D: Tapered Insulation Assembly (adhered to concrete deck).
1. Base Layer (adhered): Rigid closed-cell polyisocyanurate foam board minimum 20 psi compressive strength and 2 pcf density, complying with ASTM C591, aged R value of 5.6 per inch of thickness, flame spread rating of 25 (ASTM E84), both sides of board faced with glass fiber mat; 1" thick, 4 feet by 4 feet stock. Supplied or approved by Roofing Materials Manufacturer.
 2. Tapered Insulation Units (adhered): Rigid closed-cell polyisocyanurate foam board minimum 20 psi compressive strength and 2 pcf density, complying with ASTM C591, aged R value of 5.6 per inch of thickness, flame spread rating of 25 (ASTM E84), both sides of board faced with glass fiber mat; tapered ⅛ inch per foot, 4 feet by 4 feet stock. Supplied or approved by Roofing Materials Manufacturer.
 3. Overlay (adhered): See Overlay Board, below.
- D. Overlay (Separation) Board:
1. Gypsum Roof Board: Silicone treated, glass mat faced, gypsum panel, UL Class A, FMRC 90 psf uplift, thickness ¼" except ½" at exterior stair landing roofs. GP DensDeck, Prime.
- E. Areas E & F: Modified Perlite Tapered Assembly (adhered to concrete deck).
1. Maximum thickness 2".
 2. Tapered Units (adhered): Tapered ⅛ inch per foot, 4 feet by 4 feet stock. Supplied or approved by Roofing Materials Manufacturer.
- F. Fiber Crickets: Tapered Perlite.

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- G. Fiber Cants: Rigid perlite board, 3 inch minimum or as shown.

2.03 ROOF MEMBRANE MATERIALS

A. Membrane Properties:

1. Passes cyclic fatigue resistance for new material per ASTM D5849 (minimum 500 cycles @ 14 deg. F).
2. Passes cyclic fatigue resistance for over aged material per ASTM D5849 (minimum 200 cycles @ 14 deg. F).
3. Passes ASTM E108, for class A fire rating.

B. Roof Membrane Materials:

1. Base Ply Sheet: Random glass mat reinforced SBS modified asphalt sheet, minimum thickness 87 mils, smooth surface; Siplast Paradiene 20 TS SA.
2. Top Ply Sheet: Random glass mat reinforced SBS modified bitumen, minimum thickness 94 mils., granule surfaced, **Gray A9**, fire rated; Siplast Paradiene 30 FR.

- C. Reinforcing Sheet: Random glass mat reinforced SBS modified bitumen, minimum weight 62 pounds per 100 square feet; Siplast Paradiene 20 SA.

- D. Flashing Sheet: Granule surfaced, fiberglass or polyester reinforced SBS modified bitumen; Siplast Paradiene 40 FR.

- E. Cold Adhesive: Asphaltic adhesive with quick-drying solvents, ASTM D4479 Type II PA-311 M Adhesive.

- F. Flashing Cement: ASTM D 4586, Type II PA-828 Flashing Cement.

2.04 ACCESSORIES

A. Fasteners:

1. Corrosion resistant and cut resistant.
2. Approved by Roofing Materials Manufacturer.

- B. Insulation & Overlay Board Adhesive: Para-Stik.

- C. Walkway Pads: Modified bitumen coated polyester fabric with contrasting color granule surface. Siplast Paratread.

95% REVIEW

- D. Pipe Flashings: Four pound de-silverized lead.
- E. Plastic Cement: ASTM D 4586, Type II.
- F. Asphalt Primer: Comply with ASTM D41.
- G. Sealant: In contact with roof membrane materials, neoprene as approved by membrane Manufacturer.
- H. Pitch Pan Grout: Non-metallic type; Upson. Target acceptable.
- I. Pitch Pan Sealant: Two part chemical curing polyurethane base, black pitch pocket sealant.
- J. Liquid Applied Flashing System: ParaPro 123 Flashing System.
- K. Mineral Granules: Armor Gray to match top ply sheet granules.
- L. Pipe Supports: Miro; RAH Series Supports.
- M. Fall Protection Anchors: Guardian Fall Protection, CB Series Anchors, Model 00645, 12" or 18" height as required.
- N. Warning Line: Tremco AlphaGuard MT System. Base Coat and Safety Yellow Top Coat. Apply 3 inch wide lines. Mask to prevent seepage and obtain straight lines. Or approved equal.
- O. Cleaning Agent: TSP (trisodium phosphate).
- P. Metal Flashings: Specified under Section 07 62 00.
- Q. General: Provide all accessory products required for a complete and proper roofing system.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Make investigations as to conditions that will be encountered in performing

95% REVIEW

Work.

- B. Inspection: Verify substrate conditions are acceptable for product installation in accordance with manufacturer's instructions.
- C. Report to the Owner's Authorized Representative any deviations between Contract Documents and site conditions.
- D. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Notify the Owner's Authorized Representative at least 48 hours prior to any roofing Work.
- B. Protection:
 - 1. Provide temporary coverings and protection of adjacent work areas.
 - 2. Provide tarps or plastic sheeting to protect opened roofs and flashings and to prevent entrance of moisture into existing structure, until new roof is in a watertight condition; have handy in case of emergency.
 - 3. Do not open up more roof surface than can be covered and/or protected in event of sudden rainfall.
 - 4. Ensure that bitumen will not enter the building interior.
- C. Surface Preparation:
 - 1. Existing Roofing Removal: Specified under Section 02 41 10 - Selective Demolition.
 - 2. Substrate: Ensure surfaces are clean and dry, smooth, free of fins, raised edges, sharp edges, protruding or loose nails and free of foreign material.
 - 3. Prepare surfaces and details in accordance with manufacturer's instructions.
 - 4. Replace existing sheet metal counter flashings as shown. Prepare substrates as required to receive new material.

3.03 INSULATION INSTALLATION

- A. Adhere base layer of insulation to the concrete deck per FM 1-90 pattern and requirements.
- B. Adhere tapered polyiso insulation to the base layer per FM 1-90 pattern and requirements.

95% REVIEW

- C. Adhere overlay board to polyiso.

3.04 MEMBRANE INSTALLATION

A. Roofing Membrane Plies:

1. Adhere base ply sheet to overlay board.
2. Install membrane in accordance with manufacturer's application instructions, immediately following insulation assembly as a continuous operation where applicable.
3. Install membrane immediately following insulation assembly, as a continuous operation.
4. At low slope roofs, lay all plies of roofing free of wrinkles, creases or fish-mouths; at right angles to slope of deck.
5. Lay sheets directly into adhesive, behind applicator. Exert sufficient pressure during application to eliminate air pockets.
6. Fully bond sheets to prepared substrate, and to each other, with minimum 3 inch side and 6 inch end laps.
7. Do not stack lap seams.
8. All plies nominal 1½ gallons per 100 square feet of adhesive; total coverage, leaving no voids.
9. Set each ply sheet in solid uniform coating of adhesive. Laps: totally sealed, avoid buck water laps.
10. Fully bond top ply sheet to ply sheet surface, with minimum 3 inch side and 6 inch end laps.

B. Roofing Membrane Details:

1. Prime all metal flanges and concrete and masonry surfaces with uniform coating of asphalt primer.
2. Provide continuous reinforcing sheet in all waterways, including valleys and crickets.
3. Pay particular attention to manufacturer's seam sealing instructions.
4. Step in T-joints; fully sealed and without voids. (Other methods to improve T-joint seal include 45 degree cut and finishing mopping at joint area).
5. At end of day's Work or when precipitation is imminent, provide water cut-off at open edges. Use adhesive or plastic cement and non-porous roofing felts, constructed to withstand protracted periods of service. Completely remove cut-offs prior to resumption of roofing.

C. Granule Surface Cap:

95% REVIEW

1. Fully bond top ply sheet to ply sheet surface, with minimum 3 inch side and 6 inch end laps.
2. Apply granules at all laps to cover and protect all exposed adhesive.

D. Flashings:

1. Bridge all junctures of vertical and horizontal surfaces with 45 degree cant strips.
2. Install reinforcing sheet and flashing sheets as shown.
3. Secure top edge of flashing sheets at vertical surfaces at 8 inches on center using fasteners appropriate to substrate.
4. Provide corner patches or folded corners at base flashing corners. Blind cut corners are not acceptable.
5. Apply granules at all laps to cover and protect all exposed adhesive.

E. ParaPro 123 Flashings:

1. Prepare surface for application.
2. Mask area.
3. Apply catalyzed resin at a rate of 0.19 kg.sf.
4. Embed fleece before resin sets up, no air pockets.
5. Apply second layer of catalyzed resin, completely saturate fleece at a rate of 0.12 kg.sf.
6. Remove masking.

F. Install new primed lead flashing at all pipe penetrations. Set flange in plastic cement on top of base sheet. Provide reinforcing sheet.

G. Install new primed lead flashing in plastic cement and install reinforcing sheet at drain sumps as shown.

3.05 FIELD QUALITY CONTROL

A. Inspection:

1. Technical representative of roofing manufacturer: Periodically observe Work; observe deck preparation, general installation procedures.
2. Technical representative: Perform a punch list inspection of completed roofing, indicating items in need of attention, including conformance to manufacturer's instructions and Contract Documents; provide documentation.
3. Work shall not proceed until such observations have been made and conditions have been approved in writing by technical representative.

95% REVIEW

3.06 ADJUSTING

- A. Repair or replace damaged installed products.

3.07 CLEANING

- A. Remove temporary coverings and protection of adjacent work areas.
 - 1. Clean installed products in accordance with manufacturer's instructions prior to Final Completion. Remove excess asphalt and adhesives from finished surfaces.
 - 2. Remove equipment from site.
 - 3. Remove construction debris from site and legally dispose thereof.
 - 4. Leave job site in clean condition.

3.08 PROTECTION

- 1. Protect installed product and finish surfaces from damage during subsequent construction.

APPENDIX

95% REVIEW

SIPLAST CERTIFICATE OF ANALYSIS

DATE: 06/05/2000 LOT NUMBER : Q-2 157 1001-5012

MATERIAL TYPE: Paradiene 30 FR White


DIMENSIONS & MASS

	<u>MINIMUM SPECIFICATION</u>	<u>AVERAGE TESTED VALUE ±STANDARD DEVIATION</u>		<u>ACTUAL MINIMUM</u>
LENGTH (ft.):	33.5	33.6	± .0	33.5
WIDTH (in.):	39.0	39.4	± .0	39.4
THICKNESS AT SELVAGE (mils):	94	100	± 2.8	96
TOTAL THICKNESS (mils):	N/A	133	± 4.0	126
WEIGHT (lbs/roll):	90	95.9	± 2.2	91.3
SELVAGE WIDTH (in.):	2.2	2.5	± .1	2.4

PHYSICAL & MECHANICAL PROPERTIES¹

	<u>SPECIFICATION</u>	<u>AVERAGE TESTED VALUE ±STANDARD DEVIATION</u>	
LOW TEMP. FLEXIBILITY (°F):	-13	-13	± 0.0
GRANULE EMBEDMENT (avg. grams loss/sample):	1.50max	.6	± .2
BREAKING LOAD (lb/in.):	30avg	36	± 2.9
ULTIMATE ELONGATION ² (%):	55avg	61	± 2.5
COMPOUND STABILITY (°F):	248	248	± 0.0
DIMENSIONAL STABILITY (%):	n/a		
RESISTANCE TO THERMAL SHOCK ³ (%):	n/a		

¹Tested in Accordance with ASTM D-5147
²Defined as the point on the load-elongation curve where the load value has decreased to 5% of the maximum value obtained.
³Tested according to UEAtc (Union of European Agreement for technical construction)



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END OF SECTION

95% REVIEW

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Deck preparation.
2. SBS Modified Bitumen Roofing/Waterproofing (IRMA) System.
3. Drainage Course.
4. Extruded Polystyrene Roof Insulation system.
5. Aggregate Ballast Surface.
6. Paver Walkways.
7. Splash Blocks (concrete).
8. New Elevator Penthouse access ladder.

B. Related Sections:

1. Section 024110 - Selective Demolition.
2. Section 061010 - Rough Carpentry.
3. Section 076200 - Flashing and Sheet Metal.
4. Section 221426 - Roof Drains.

1.02 REFERENCES

- A. ASTM D41 - Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
- B. ASTM D2178 - Asphalt Glass Felt Used in Roofing and Waterproofing.
- C. ASTM D4479 - Asphalt Roof Coatings - Asbestos-Free.
- D. ASTM D4586 - Asphalt Roof Cement, Asbestos-Free.
- E. ASTM D5147 - Test Methods for Sampling and Testing Modified Bituminous Sheet Material.
- F. ASTM D5849 - Test Method for Evaluating Resistance of Modified, Bituminous Roofing Membranes to Cyclic Joint Displacement.
- G. ASTM D6163 - Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements.
- H. ASTM E84 - Test Method for Surface Burning Characteristics of Building

95% REVIEW

Materials.

- I. ASTM E108 - Test Methods for Fire Tests of Roof Coverings.
- J. ASTM E119 - Test Methods for Fire Tests of Building Construction and Materials.
- K. ASTM E136 - Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 degrees C.
- L. ASTM D488 – Specification for Clasification for Sizes of Aggregate for Road and Bridge Construction.
- M. ASTM C578 – Specification for Preformed, Cellular Polystyrene Thermal Insulation.
- N. ASTM D1621 - Test Method for Compressive Properties of Rigid Cellular Plastics.
- O. NRCA (National Roofing Contractors Association) - Roofing and Waterproofing Manual.
- P. FM (Factory Mutual) 1-90 for wind uplift and fastening.
- Q. ASHRAE (American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc.) for insulation R-values.
- R. UL (Underwriters Laboratories) - Roofing Materials and Systems Directory.

1.03 SYSTEM DESCRIPTION

- A. Design Requirements: Fully Warranted Class A.
- B. Performance Requirements: Provide products which have been manufactured, fabricated and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.

1.04 SUBMITTALS

- A. Submit in accordance with Section 013323.

95% REVIEW

- B. Product Data:
 - 1. Manufacturer's product sheets and installation instructions.
 - 2. Manufacturer's published specifications.
 - 3. Manufacturer's product data sheets for related components.
- C. Shop Drawings:
 - 1. Show layout, profiles, and product components, including anchorage, accessories, finish colors and textures.
- D. Samples: Selection and verification samples for finishes, colors and textures.
- E. Quality Control:
 - 1. Certified independent test reports, showing compliance with specified performance characteristics and physical properties.
 - 2. Evidence of UL Class A and FM Global 1-90 approvals.
 - 3. Certificate of Analysis indicating; Product Identification, Date of manufacture, Lot Number, Dimensions & Mass and Physical Properties, typical of Sample in the Appendix at end of this section.
 - 4. Product certificates, signed by manufacturer, certifying products comply with specified performance characteristics and physical requirements.
 - 5. Manufacturer's field reports.
 - 6. Copy of warranty.
- F. Closeout:
 - 1. Project Record Documents:
 - 2. Operation and maintenance data for installed products, including methods for maintaining, and precautions against cleaning materials and methods detrimental to finishes and performance.
 - 3. Warranty documents specified herein.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: All products furnished by or approved by roofing manufacturer for entire roof assembly.
- B. Installer Qualifications:
 - 1. Minimum 5 years commercial experience in performing this work, having specialized in installation of work similar to that required for this project.
 - 2. Approved by and certified in writing by roofing Manufacturer.
 - 3. Been in continuous business for past 3 years.
 - 4. Completed at least three successful installations of specified materials

95% REVIEW

- and systems on projects of similar scope.
5. Provide all personnel trained in application of materials and systems and maintain supervision as required.
 6. Foreman: Have at least five years experience supervising the installation of SBS Roof Systems of similar application and scope. Provide evidence in writing if requested by Owner.
 7. When requested, submit certificate indicating qualification.
- C. Standards: Comply with applicable requirements of NRCA Roofing and Waterproofing Manual.
- D. Regulatory Requirements: Comply with applicable Building Code requirements.
- E. Underwriter's Laboratories and/or Warnock Hersey tested and listed for a Class A rating when installed on noncombustible decks for roof slopes and application shown.
- F. Pre-Installation Meeting: Conduct meeting with Owner's Authorized Representative to verify project requirements, substrate conditions, manufacturer's installation instructions and warranty requirements.
- 1.06 DELIVERY, STORAGE AND HANDLING
- A. Delivery: Comply with manufacturer's ordering instructions and lead time requirements; deliver products in original, unopened, undamaged containers with identification labels intact.
- B. Storage:
1. Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
 2. Store materials in dry, protected areas.
 3. Store roll goods on end. 'Flattened' rolls are unacceptable.
 4. Control temperature of storage areas in accordance with manufacturer's instructions.
- C. Handling: Exercise care in handling, loading, unloading and storing products to avoid damage.
- 1.07 PROJECT CONDITIONS
- A. Environmental Requirements:

95% REVIEW

1. Do not apply materials during precipitation of any form (rain, dew, ice, frost, snow), or if such precipitation is imminent.
2. Do not apply materials when water in any form (i.e., rain, dew, ice, frost, snow) is present on deck.
3. Do not apply materials during ambient temperatures of 40°F and below (including wind chill).

1.08 WARRANTIES

A. Manufacturer's Warranty:

1. Manufacturer's standard warranty document executed by authorized company official.
2. Single source 20 year combined 10+10 renewable, no dollar limit warranty signed by a corporate officer covering roofing materials, insulation materials and installation of the materials, and related systems.
3. Include all roof related items and installations.

B. Installer:

1. 2 years material and labor, from date of Substantial Completion.
2. Warrant all roofing, flashing and roof insulation against defects.
3. Maintain roofed areas in watertight condition during this period.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Siplast: Paradiene 20 SA 20 PR TG
- B. Or approved equal.

2.02 INSULATION MATERIALS

A. Insulation Assembly:

1. Insulation Units: Extruded Polystyrene, 4 inch thick (6 inch @ paver walkway). Dow Styrofoam Roofmate, R-5 per inch.

2.03 ROOF MEMBRANE MATERIALS

A. Membrane Properties:

1. Passes cyclic fatigue resistance for new material per ASTM D5849

95% REVIEW

- (minimum 500 cycles @ 14 deg. F).
 2. Passes cyclic fatigue resistance for over aged material per ASTM D5849 (minimum 200 cycles @ 14 deg. F).
 3. Passes ASTM E108, for class A fire rating.
- B. Sheet Properties:
1. Minimum 40% elongation at 5% maximum load @ 73 deg. F., per ASTM D5147.
 2. Passes low temperature flexibility @ -13 deg. F. for new material, and 0 deg. F. for over aged material, per ASTM D5147.
- C. Roof Membrane Materials: (*gravel ballast*)
1. Base Ply Sheet: Random glass mat reinforced SBS modified asphalt sheet, minimum thickness 98 mils, minimum weight 72 pounds per 100 square feet, smooth surface; Paradiene 20 SA.
 2. Top Ply Sheet: Polyester mat/fiberglass scrim reinforced SBS modified bitumen, minimum thickness 138 mils at selvage edge, minimum weight 96 pounds per 100 square feet; Paradiene 20 PR TG.
- D. Reinforcing Sheet: Random glass mat reinforced SBS modified bitumen, minimum weight 72 pounds per 100 square feet; Paradiene 20 SA.
- E. Flashing Sheet: Granule surfaced, fiberglass or polyester reinforced SBS modified bitumen; Siplast Paradiene 40 FR.
- F. Cold Adhesive: SFT Adhesive.
- G. Flashing Cement: ASTM D 4586, Type II; PA-828 Flashing Cement.

2.04 ACCESSORIES

- A. Asphalt Primer: Comply with ASTM D41.
- B. Drainage Course: Paradrain Drainage Mat.
- C. Filter Fabric: Non woven Polyester Geotextile Fabric, Hydrotech System Filter SF; Phillips Rufon F38, Dupont Fabrene, International Confil 689H acceptable.
- D. Stone Ballast: Clean, smooth 1 inch to 1½ inch minimum, river washed stone graded to membrane manufacturer's standard specifications and meeting requirements of ASTM C136.

95% REVIEW

- E. Pavers:
 - 1. Walkway: Westile Gibraltar Plaza Paver #1102 or approved.
 - a. 16" x 16" x 1-3/16".
 - b. Compressive Strength: 8,000 psi - ASTM C140
 - c. Water Absorption: 5% max. - ASTM C140
 - d. Flexural Strength: 725 psi. - ASTM C293
 - e. Freeze Thaw: 1% loss of dry weight. - ASTM C67
 - f. Dimensional Tolerance: $\pm 1/16"$ (length, width, height, convex, concave).
- F. Pipe Flashings: Four pound de-silverized lead.
- G. Plastic Cement: ASTM D 4586, Type II.
- H. ParaPro 123 Flashing System.
- I. Sealant: In contact with roof membrane materials, moisture curing, non-slump elastomeric as approved by membrane Manufacturer.
- J. Mineral Granules: To match flashing sheet granules.
- K. Cleaning Agent: TSP (trisodium phosphate).
- L. Roof Access Ladders: IBC & OSHA approved; Cotterman Co. or A-Mezz Industrial Structures, Inc. or approved equal. Fixed Ladder Series FWC.
 - 1. Safety cages are designed to OSHA specifications with flared bottom opening for easy entry for ladders over 10 foot in height.
 - 2. Walk through handrails are made of 1" diameter tubing and spaced 24" apart for convenient pass through.
 - 3. 3/4" round corrugated rungs.
 - 4. 300 lbs. capacity.
 - 5. Cage begins 7' from bottom rung.
 - 6. Powder coated with high gloss polyester powder.
 - 7. Provide shop drawings & color chart for approval.
 - 8. Passover platform and rungs to within 12 inches of each roof.
 - 9. Wall mounted.
 - 10. Concrete Walls Expansion Anchors:
 - a. Powers Fasteners, Power-Stud.
 - b. Five inch (5") embed into masonry.

95% REVIEW

- M. Metal Flashings: Specified under Section 076200.
- N. Splash Blocks: Concrete splash blocks at all downspout locations.
- O. General: Provide all accessory products required for a complete and proper roofing system.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Make investigations as to conditions that will be encountered in performing Work.
- B. Inspection: Verify substrate conditions are acceptable for product installation in accordance with manufacturer's instructions.
- C. Report to the Owner's Authorized Representative any deviations between Contract Documents and site conditions.
- D. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Notify the Owner's Authorized Representative at least 48 hours prior to any roofing Work.
- B. Protection:
 - 1. Provide temporary coverings and protection of adjacent work areas.
 - 2. Provide tarps or plastic sheeting to protect opened roofs and flashings and to prevent entrance of moisture into existing structure, until new roof is in a watertight condition; have handy in case of emergency.
 - 3. Do not open up more roof surface than can be covered and/or protected in event of sudden rainfall.
 - 4. Ensure that bitumen will not enter the building interior.
- C. Surface Preparation:
 - 1. Existing Roofing Removal: Specified under Section 024110 - Selective Demolition.
 - 2. Prepare surfaces and details in accordance with manufacturer's

95% REVIEW

instructions.

3.03 MEMBRANE INSTALLATION

A. Roofing Membrane Plies:

1. Install membrane in accordance with manufacturer's application instructions, immediately following insulation assembly as a continuous operation.
2. Install membrane immediately following insulation assembly, as a continuous operation.
3. Lay all plies of roofing free of wrinkles, creases or fish-mouths; at right angles to slope of deck.
4. Exert sufficient pressure during application to eliminate air pockets.
5. Fully bond sheets to prepared substrate, and to each other, with minimum 3 inch side and 6 inch end laps.
6. Do not stack lap seams.
7. Fully bond top ply sheet to ply sheet surface, with minimum 3 inch side and 6 inch end laps.

B. Roofing Membrane Details:

1. Prime all flanges and concrete and masonry surfaces with uniform coating of asphalt primer.
2. Provide continuous reinforcing sheet in all waterways, including valleys and crickets.
3. Pay particular attention to manufacturer's seam sealing instructions.
4. Step in T-joints; fully sealed and without voids. (Other methods to improve T-joint seal include 45 degree cut and finishing mopping at joint area).
5. At end of day's Work or when precipitation is imminent, provide water cut-off at open edges. Use adhesive or plastic cement and non-porous roofing felts, constructed to withstand protracted periods of service. Completely remove cut-offs prior to resumption of roofing.

C. Flashings:

1. Bridge all junctures of vertical and horizontal surfaces with 45 degree cant strips.
2. Install reinforcing sheet and flashing sheets as shown.
3. Install base flashings in specified adhesive.
4. Secure top edge of flashing sheets at vertical surfaces at 8 inches on center using fasteners appropriate to substrate.
5. Provide corner patches or folded corners at base flashing corners. Blind

95% REVIEW

- cut corners are not acceptable.
6. Apply granules at all laps to cover and protect all exposed adhesive.
- D. ParaPro 123 Flashings:
1. Prepare surface for application.
 2. Mask area.
 3. Apply catalyzed resin at a rate of 0.19 kg.sf.
 4. Embed fleece before resin sets up, no air pockets.
 5. Apply second layer of catalyzed resin, completely saturate fleece at a rate of 0.12 kg.sf.
 6. Remove masking.
- E. Roof Drains: Refurbish as Specified in Section 221426.
- F. Install new primed lead flashing at all pipe penetrations. Set flange in plastic cement on top of base sheet. Provide reinforcing sheet.
- G. Install new primed drain lead flashing in plastic cement and install reinforcing sheet at drain sumps as shown.

3.04 INSULATION INSTALLATION

- A. Roof Insulation System:
1. Install Dow Roofmate Insulation over completed roof system.
 2. Install Drainage Course over insulation.
 3. Install Filter Fabric over Drainage Course.
- B. Ballast: Place river stone ballast at rate of 10 lbs. per square foot minimum, 12 lbs. per square foot at perimeter and 15 lbs. per square foot in corners.

3.05 ADJUSTING

- A. Repair or replace damaged installed products.
1. Verify that all drains are functioning properly, as specified elsewhere.

3.06 CLEANING

- A. Remove temporary coverings and protection of adjacent work areas.
1. Clean installed products in accordance with manufacturer's instructions prior to Final Completion.
 2. Remove excess asphalt and adhesives from finished surfaces.

95% REVIEW

3. Remove equipment from site.
4. Remove construction debris from site and legally dispose thereof.
5. Leave job site in clean condition.

3.07 PROTECTION

- A. Protect installed product and finish surfaces from damage during subsequent construction.

3.08 SCHEDULE

- A. Roof Area A:

APPENDIX ON FOLLOWING PAGE

95% REVIEW

SIPLAST CERTIFICATE OF ANALYSIS

DATE: 06/05/2000 LOT NUMBER : Q-2 157 1001-5012

MATERIAL TYPE: Paradiene 30 FR White


DIMENSIONS & MASS

	MINIMUM SPECIFICATION	AVERAGE TESTED VALUE ±STANDARD DEVIATION	ACTUAL MINIMUM
LENGTH (ft.):	33.5	33.6 ± .0	33.5
WIDTH (in.):	39.0	39.4 ± .0	39.4
THICKNESS AT SELVAGE (mils):	94	100 ± 2.8	96
TOTAL THICKNESS (mils):	N/A	133 ± 4.0	126
WEIGHT (lbs/roll):	90	95.9 ± 2.2	91.3
SELVAGE WIDTH (in.):	2.2	2.5 ± .1	2.4

PHYSICAL & MECHANICAL PROPERTIES¹

	SPECIFICATION	AVERAGE TESTED VALUE ±STANDARD DEVIATION
LOW TEMP. FLEXIBILITY (°F):	-13	-13 ± 0.0
GRANULE EMBEDMENT (avg. grams loss/sample):	1.50max	.6 ± .2
BREAKING LOAD (lb/in.):	30avg	36 ± 2.9
ULTIMATE ELONGATION ² (%):	55avg	61 ± 2.5
COMPOUND STABILITY (°F):	248	248 ± 0.0
DIMENSIONAL STABILITY (%):	n/a	
RESISTANCE TO THERMAL SHOCK ³ (%):	n/a	

¹Tested in Accordance with ASTM D-5147
²Defined as the point on the load-elongation curve where the load value has decreased to 5% of the maximum value obtained.
³Tested according to UEAtc (Union of European Agreement for technical construction)



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END OF SECTION

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PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Copings and Cap Flashings.
2. Metal Counter Flashings.
3. Metal Flashings.
4. Stainless Steel Reglet Flashings.

B. Related Sections:

1. Section 061010 - Rough Carpentry.
2. Section 075215 - SBS Modified Bitumen Roofing (Cold).
3. Section 075225 - SBS Modified
4. Section 079200 - Joint Sealers.
5. Section 099100 - Painting.
6. Section 230000 - Basic Mechanical.
7. Section 260000 - Basic Electrical.

1.02 REFERENCES

- A. ASTM A167 - Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip.
- B. ASTM A525 - Steel Sheet, Zinc Coated, (Galvanized) by the Hot-Dip Process.
- C. ASTM A792/A792M - Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
- D. ASTM B209 - Aluminum and Aluminum Alloy Sheet and Plate.
- E. AA (Aluminum Association) - Aluminum Construction Manual: Aluminum Sheet Metal Work and Building Construction.
- F. ANSI/ASTM B32 - Solder Metal.
- G. ASTM B749 - Lead and Lead Alloy Strip, Sheet, and Plate Products.
- H. ASTM D41 - Asphalt Primer.
- I. ASTM D226 - Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.

95% REVIEW

- J. ASTM D1970 - Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam.
- K. ASTM D4586 - Asphalt Roof Cement, Asbestos Free.
- L. AISI (American Iron and Steel Institute) - Stainless Steel: Uses in Architecture.
- M. NAAMM (National Association of Architectural Metal Manufacturers) - Metal Finishes Handbook.
- N. NRCA (National Roofing Contractors Association) - Roofing Manual.
- O. SMACNA (Sheet Metal and Air Conditioning Contractors' National Association) - Architectural Sheet Metal Manual.
- P. FS (Federal Specification) O-F-506 - Flux, Soldering, Paste and Liquid.

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide products which have been manufactured, fabricated and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.

1.04 SUBMITTALS

- A. Submit in accordance with Section 013323.
- B. Product Data: Manufacturer's product sheets and installation instructions.
- C. Shop Drawings:
 - 1. Show layout, profiles, and product components, including anchorage, accessories, finish colors and textures.
 - 2. Include jointing patterns, jointing details, fastening methods, and installation details.
- D. Samples:
 - 1. Selection and verification samples for finishes, colors and textures.
 - 2. Three (3) sets metal samples, illustrating full color range.
- E. Quality Control:
 - 1. Certified test reports, showing compliance with specified performance

95% REVIEW

- characteristics and physical properties.
- 2. Product certificates, signed by manufacturer, certifying products comply with specified performance characteristics and physical requirements.

F. Closeout:

- 1. Project Record Documents:
- 2. Operation and maintenance data for installed products, including methods for maintaining, and precautions against cleaning materials and methods detrimental to finishes and performance.
- 3. Warranty documents specified herein.
- 4. Per Section 017700, Contract Closeout.

1.05 QUALITY ASSURANCE

- A. Fabricator Qualifications: Minimum 5 years commercial experience in performing this work, having specialized in work similar to that required for this project. When requested, submit certificate indicating qualification.
- B. Installer Qualifications: Minimum 5 years commercial experience in performing this work, having specialized in installation of work similar to that required for this project. When requested, submit certificate indicating qualification.
- C. Standards: Comply with applicable requirements of NRCA Roofing Manual, and SMACNA Architectural Sheet Metal Manual.
- D. Regulatory Requirements: Comply with applicable Building Code requirements.
- E. Pre-Installation Meeting: Conduct meeting with Owner's Authorized Representative to verify project requirements, substrate conditions, manufacturer's installation instructions and warranty requirements.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Comply with manufacturer's ordering instructions and lead time requirements; deliver products in original, unopened, undamaged containers with identification labels intact.
- B. Storage:
 - 1. Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
 - 2. Stack preformed and Pre-coated material to prevent twisting, bending, or abrasion, and to provide ventilation.

95% REVIEW

3. Prevent contact with materials during storage which may cause discoloration, staining, or damage.

C. Handling: Handle products according to manufacturer' recommendations and so as not to damage them prior to installation.

1.07 WARRANTIES

A. Manufacturer: Manufacturer's standard Kynar Finish warranty, document executed by authorized company official, 25 years commencing on Date of Substantial Completion.

B. Installer: Provide 2 years, commencing on Date of Substantial Completion, including coverage of materials and installation and resulting damage to building resulting from failure to resist penetration of moisture.

PART 2 PRODUCTS

2.01 MATERIALS

A. Pre-Coated Galvanized Steel: ASTM A525, G90; 24 gauge core steel, pre-coated with "Kynar 500" or "Hylar 5000" coating of selected color. The color selected from manufacturer's full range of standard colors.

B. Stainless Steel: ASTM A 666, Type 304.

C. Aluminum: ASTM B209, 0.03 inch thick; "Kynar 500" or "Hylar 5000" coating color to match existing finish.

D. Lead: ASTM B749, 4 pounds per square foot minimum.

E. Zinc-Aluminum Coated Steel Sheet: ASTM A792, Zincolume, Coating class AZ55, 24 gauge.

2.02 ACCESSORIES

- A. Fasteners: Galvanized steel or Stainless steel with soft neoprene washers at exposed fasteners. Finish exposed fasteners same as flashing metal.
1. Rawl Zamac Nailins with EPDM washers at masonry/concrete substrates.
 2. Woodfast metal to wood screws at wood substrates.
 3. Self-tapping sheet metal screws at metal substrates.

95% REVIEW

- B. Underlayment: ASTM D226; No. 15 asphalt saturated roofing felt.
- C. Self Adhering Underlayment: Rubberized asphalt self-adhering sheet, with high strength polyethylene film on one side, minimum 40 mils thick; Carlisle WIP 300 High Temp, or approved equal.
- D. Plastic Cement: ASTM D4586, asbestos free, asphaltic.
- E. Sealant and Joint Filler: Specified under Section 079200.
- F. Reglets: Recessed stainless steel, spring lock design.
- G. Solder: FS QQ-S-571; ANSI/ASTM B32; 50/50 type.
- H. Flux: FS O-F-506. Special stainless steel flux.
- I. Provide various additional items as required for a complete and weatherproof installation.

2.03 FABRICATION

- A. Field measure site conditions prior to fabrication.
- B. Form sections true to shape, accurate in size, square, and free from distortion or defects.
- C. Fabricate cleats and starter strips of same material as sheet, 22 gauge, minimum 3 inches wide, inter-lockable with sheet, unless shown otherwise.
- D. Form pieces in longest practical lengths.
- E. Hem exposed edges on underside ½-inch; miter and seam corners.
- F. Form flashing material with flat seam.
- G. Form copings with standing seams.
- H. Form counter flashings with lapped seams.
- I. Seal metal joints. After soldering, remove flux. Wipe and wash solder joints clean.

95% REVIEW

- J. Fabricate vertical faces with bottom edge formed outward ¼-inch and hemmed to form drip.
- K. Scuppers: Stainless steel, with soldered lead flanges.

2.04 FINISHES

- A. Field Painted Where Indicated:
 - 1. Metal Paint Primer: Phosphoric acid etch followed by zinc oxide alkyd, flat finish.
 - 2. Shop prepare, prime and prime all exposed ferrous and galvanized metal surfaces.
- B. Metal Roof Primer: Asphaltic to comply with ASTM D41.
- C. Protective Back Paint: Zinc Chromate Alkyd.
- D. Protective Coating: FS-TT-C-494 Bituminous coating compound.
- E. Touch-up Paint: To match Pre-coated metal, from coating manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Inspection:
 - 1. Verify substrate conditions are acceptable for product installation in accordance with manufacturer's instructions.
 - 2. Verify roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set, cant strips and reglets in place, and nailing strips located.
 - 3. Verify membrane termination and base flashings are in place, sealed, and secure.
- B. Verify site conditions and measurements in the field.
- C. Report to the Owner's Authorized Representative any deviations between Contract Documents and site conditions.
- D. Do not proceed until unsatisfactory conditions have been corrected.

95% REVIEW

3.02 PREPARATION

- A. Protection: Provide temporary coverings and protection of adjacent work areas.
- B. Surface Preparation:
 - 1. Substrate: Ensure surfaces are clean and dry, smooth, free of fins, raised edges, sharp edges, protruding or loose nails and free of foreign material.
 - 2. Prepare surfaces and details in accordance with manufacturer's instructions.

3.03 INSTALLATION

- A. Comply with manufacturers' product data, technical bulletins, and catalog and carton installation instructions.
- B. Install Work in accordance with reviewed submittals.
- C. Install starter and edge strips, and cleats.
- D. Install reglets true to lines and levels. Seal top of reglets with sealant. Surface mounted reglets not acceptable unless indicated in the drawings.
- E. Provide self adhering underlayment and slip sheet behind all finish metal such as copings, and wall metal.
- F. Secure flashings in place using concealed fasteners. Use exposed fasteners only in locations indicated.
- G. Seam and seal all joints.
- H. Protective coat dissimilar metals and isolate from each other.
- I. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.

3.04 ADJUSTING

- A. Repair or replace damaged installed products.

3.05 CLEANING

- A. Remove temporary coverings and protection of adjacent work areas.
 - 1. Clean installed products in accordance with manufacturer's instructions prior

95% REVIEW

to Final Completion.

2. Promptly remove metal filings from sheet metal.
3. Promptly remove metal scraps from roofing.
4. Touch-up paint Pre-coated metal.
5. Leave sheet metal in clean, finished condition.
6. Remove construction debris from project site and legally dispose thereof.

3.06 PROTECTION

- A. Protect installed product and finish surfaces from damage during subsequent construction.

END OF SECTION

95% REVIEW

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Substrate preparation.
 - 2. Sealant and backing.
- B. Related Sections:
 - 1. Section 076200 - Flashing and Sheet Metal.

1.02 REFERENCES

- A. ASTM C920 - Elastomeric Joint Sealants.
- B. ASTM C1193 - Guide for Use of Joint Sealants.
- C. ASTM C1330 - Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants.
- D. ASTM D5893 - Cold Applied, Single Component, Chemically Curing Silicone Joint Sealant for Portland Cement Concrete Pavements.
- E. ANSI/ASTM D1056 - Flexible Cellular Materials: Sponge or Expanded Rubber.
- F. FS TT-S-001657 - Sealing Compound, Single Component, Butyl Rubber Based, solvent Release Type.
- G. FS TT-S-00227 - Sealing Compound: Elastomeric Type, Multi-Component.
- H. FS TT-S-00230 - Sealing Compound: Elastomeric Type, Single Component.
- I. SWRI (Sealing, Waterproofing and Restoration Institute) - Sealant and Caulking Guide Specification.
- J. SWRI – Applying Liquid Sealants: Applicator Training Program, Section 10 – Testing Sealant Work.

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide products which have been manufactured, fabricated and installed to maintain performance criteria stated by manufacturer

95% REVIEW

without defects, damage or failure.

1.04 SUBMITTALS

- A. Submit in accordance with Section 013323.
- B. Product Data:
 - 1. Manufacturer's product sheets and installation instructions.
 - 2. Indicate sealant chemical characteristics, performance criteria, limitations, color availability, manufacturer's installation instructions.
- C. Samples:
 - 1. Selection and verification samples for finishes, colors and textures.
- D. Quality Control:
 - 1. Certified test reports, showing compliance with specified performance characteristics and physical properties.
 - 2. Product certificates, signed by manufacturer, certifying products comply with specified performance characteristics and physical requirements.
- E. Closeout:
 - 1. Operation and maintenance data for installed products, including methods for maintaining, and precautions against cleaning materials and methods detrimental to finishes and performance.
 - 2. Warranty documents specified herein.
 - 3. Per Section 017700, Contract Closeout.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Capable of providing field service representation during construction, approving acceptable installer and approving application method; regularly engaged in manufacturing and marketing of specified products.
- B. Installer Qualifications: Minimum 5 years commercial experience in performing this work, having specialized in installation of work similar to that required for this project. When requested, submit certificate indicating qualification.
- C. Standard: Comply with applicable requirements of SWRI Guide Specification.
- D. Regulatory Requirements: Comply with applicable Building Code requirements.

95% REVIEW

- E. Pre-Installation Meeting: Conduct meeting with Owner's Authorized Representative to verify project requirements, substrate conditions, manufacturer's installation instructions and warranty requirements.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Comply with manufacturer's ordering instructions and lead time requirements; deliver products in original, unopened, undamaged containers with identification labels intact.
- B. Storage: Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.

1.07 PROJECT CONDITIONS

- A. Environmental Requirements:
 - 1. Do not install solvent curing sealants in enclosed building spaces.
 - 2. Maintain temperature and humidity recommended by sealant manufacturer during and after installation.
 - 3. Install sealants during periods of mean temperature; avoid temperature extremes which would cause maximum or minimum joint widths.

1.08 WARRANTIES

- A. Installer:
 - 1. Two (2) years commencing on Date of Substantial Completion.
 - 2. Include coverage of installed sealants and accessories which fail to achieve air tight and watertight seal, exhibit loss of adhesion or cohesion, or fail to properly cure.

PART 2 PRODUCTS

2.01 MANUFACTURER

- A. Vulkem 116.
- B. Pecora, Sika, Sonneborn, or approved equal.
- C. Dow Corning: Dow 790 where indicated.

2.02 MATERIALS

95% REVIEW

- A. Butyl Sealant: FS TT-S-001657 Single component, solvent release, non-skinning, non-sagging, black color.
- B. Polyurethane Sealant: FS TT-S-00230, Single component, chemical curing, non staining, non-bleeding, capable of continuous water immersion, non sagging type; color as selected.

2.03 ACCESSORIES

- A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.
- B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.
- C. Joint Backing: ANSI/ASTM D1056; round, closed cell polyethylene foam rod; oversized 30 to 50 percent larger than joint width; manufactured by sealant manufacturer.
- D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Inspection: Verify substrate conditions are acceptable for product installation in accordance with manufacturer's instructions.
- B. Verify that surfaces and joint openings are ready to receive Work and field measurements are as shown, and as recommended by manufacturer.
- C. Report to the Owner's Authorized Representative any deviations between Contract Documents and site conditions.
- D. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Protection:

95% REVIEW

1. Provide temporary coverings and protection of adjacent work areas.
2. Mask surfaces as necessary.

B. Surface Preparation:

1. Clean, prime, and back no more area than can be sealed in the same day.
2. Verify sealant and primer compatibility (non-reactive) and adhesion to all substrates. Notify Architect and Owner of any non-compatible materials.
3. Remove loose materials and foreign matter which might impair adhesion of sealant.
4. Clean joints in accordance with manufacturer's instructions.
5. Prime joint surfaces where required to achieve bond.
6. Verify that joint backing and release tapes are compatible with sealant.

3.03 APPLICATION

- A. Comply with manufacturer's product data, technical bulletins, and catalog and container application instructions.
- B. Measure joint dimensions and size materials to achieve required width/depth ratios.
- C. Install joint backing to achieve a neck dimension half the joint width.
- D. Install bond breaker where joint backing is not used.
- E. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- F. Apply sealant free of air pockets, foreign embedded matter, ridges, and sags.
- G. Unless otherwise shown, tool joints slightly concave and free draining.

3.04 ADJUSTING

- A. Repair or replace damaged installed products.

3.05 CLEANING

- A. Remove temporary coverings and protection of adjacent work areas.
- B. Clean installed products in accordance with manufacturer's instructions prior to

95% REVIEW

Final Completion.

- C. Clean adjacent soiled surfaces.
- D. Remove construction debris from project site and legally dispose thereof.

3.06 PROTECTION

- A. Protect installed product and finish surfaces from damage during subsequent construction.
- B. Protect sealants until cured.

3.07 SCHEDULE

- A. Sealant S1: Butyl (concealed locations).
- B. Sealant S2: Single-component polyurethane (exposed exterior locations).

END OF SECTION

95% REVIEW

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Surface preparation.
 - 2. Elevator Penthouse Doors & Frames.
 - 3. Elevator Penthouse Stairs.
 - 4. Exterior roof mounted equipment.

- B. Related Sections:
 - 1. Section 076200 - Flashing and Sheet Metal.

1.02 REFERENCES

- A. ASTM D523 - Test Method for Specular Gloss.

- B. ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.

- C. SSPC (Steel Structures Painting Council) - Steel Structures Painting Manual.

- D. NACE (National Association of Corrosion Engineers International) - Industrial Maintenance Painting.

- E. PDCA (Painting and Decorating Contractors of America) - Architectural Specification Manual, published by the Washington Council.

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide products which have been manufactured, fabricated and installed to maintain performance criteria stated by manufacturers without defects, damage or failure.

1.04 SUBMITTALS

- A. Submit in accordance with Section 013323.

- B. Product Data:
 - 1. Manufacturer's product sheets for each type of paint.
 - 2. Include performance data, application instructions and methods, including

95% REVIEW

mixing, surface preparation, compatible primers and top coats, recommended wet and dry film thickness.

C. Samples:

1. Selection and verification samples for finishes, colors and textures.
2. Apply to 8 inch by 10 inch panels, opaque finishes on cardboard.
3. Submit three displays of each color, finish, texture, and type.

D. Closeout:

1. Operation and maintenance data for installed products, including methods for maintaining, and precautions against cleaning materials and methods detrimental to finishes and performance.
2. Per Section 017700, Contract Closeout.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Minimum 5 years commercial experience in the manufacture and supply of materials used in this work.

1. Provide materials for each general purpose of same manufacturer; except for shop prime coats.

B. Installer Qualifications: Minimum 5 years commercial experience in performing this work, having specialized in installation of work similar to that required for this project. When requested, submit certificate indicating qualification.

C. Standard: Comply with applicable requirements of PDCA Architectural Specification Manual.

D. Regulatory Requirements:

1. Comply with applicable Building Code requirements.
2. Comply with governing agency's regulations for paint materials, including State requirements for volatile organic compounds (VOC).
3. Comply with applicable requirements of USDA (U.S. Department of Agriculture).
4. Comply with applicable requirements of UL (Underwriters Laboratories, Inc.).

E. Each Product Container Bear Manufacturer's label, including:

1. Type of material.
2. Manufacturer's name.
3. Product number.
4. Batch number.

95% REVIEW

5. Color.
6. Instructions for reducing.

F. Field Samples:

1. Apply where directed.
2. Use this sample to determine acceptability of workmanship, color and texture.
3. Acceptable sample will be used as standard, and may be retained as part of finished Work.
4. Remove and properly dispose of rejected samples.

- G. Pre-Installation Meeting: Conduct meeting with Owner's Authorized Representative to verify project requirements, substrate conditions, manufacturers' application instructions and warranty requirements.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Comply with manufacturers' ordering instructions and lead time requirements; deliver products in original, unopened, undamaged containers with identification labels intact.

B. Storage:

1. Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturers.
2. Store in unopened containers, in designated storage space.
3. Keep storage space neat, clean and accessible.
4. Protect floor from spillage.

1.07 PROJECT CONDITIONS

A. Environmental Requirements:

1. Do not paint when air is dust-laden or when weather or temperature conditions are unsuitable.
2. Maintain temperatures within building at minimum 60 degrees Fahrenheit during painting and drying periods.
3. Do not paint exterior surfaces in damp or rainy weather.
4. Do no exterior Work on unprotected surfaces if moisture from any source is present, or forecast before paints can attain proper cure.
5. Provide adequate ventilation for health, safety and drying requirements. Do not apply in areas where dust is being generated. Protect against damage from other areas and/or construction operations.

95% REVIEW

6. Apply coats to surfaces under environmental conditions and within the limitations recommended by material manufacturers. Minimum ambient air and surface temperature 40 degrees Fahrenheit for 24 hours before, during, and after application.

B. Fire Precaution: At the end of each Work day, place solvent soaked cloths, waste, and other materials which constitute fire hazard in metal containers and remove from premises.

1.08 WARRANTIES

A. Installer: Installer's Standard Warranty document executed by authorized company official, 2 years commencing on Date of Substantial Completion.

1.09 MAINTENANCE

A. Extra Materials:

1. Deliver to Project site the following items as directed. Store in unopened containers and in manner recommended by manufacturer.
2. One gallon each type and color used.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Exterior Paint:

1. Miller.
2. Sherwin Williams.
3. Benjamin Moore.
4. or approved equal.

2.02 MATERIALS

A. All Materials: Manufacturer's "top-of-the-line," best quality of generic type specified.

B. Paint Types:

1. Alkyd enamel (AE), oil based, exterior.

C. Specular Gloss: Ranges determined per ASTM D523. Sheen is specified to

95% REVIEW

establish required gloss range.

<u>Sheen</u>	<u>Designation</u>	<u>Geometry/Deg.</u>	<u>Gloss Range</u>
Flat	FL	85	Below 15
Eggshell	EG	60	5 to 20
Satin	SA	60	15 to 35
Semi-Gloss	SG	60	30 to 65
Gloss	GL	60	Over 65

- D. Final Coat Colors: Factory mix; no jobsite color matching permitted.
- E. Mildew Resistance: Add fungicidal agent to exterior paint at factory. Clearly indicate on labels that paint is mildew resistant.

2.03 Paint Systems

- A. Semi-gloss finish to match existing painted metal such as flashing and similar items.
 - First Coat: Rust inhibitive metal primer at bare metal.
 - Second Coat: Exterior alkyd.
 - Third Coat: Exterior alkyd.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Inspection:
 - 1. Examine substrates, adjoining construction and conditions under which Work is to be performed.
 - 2. Verify substrate conditions are acceptable for product installation in accordance with manufacturers' instructions.
 - 3. Examine substrate surfaces to assure that they are dry, clean, of uniform texture, free of bond inhibiting foreign substances or other conditions that would adversely affect adhesion, protective properties, or coating appearance.
- B. Measure moisture of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of interior and exterior surfaces is 12% or less.

95% REVIEW

- C. Report to the Owner's Authorized Representative any deviations between Contract Documents and site conditions.
- D. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Protection:
 - 1. Provide temporary coverings and protection of adjacent work areas.
 - 2. Provide drop cloths, barricades, other forms of protection necessary to safeguard adjacent Work, and to preserve painted Work free from damages of every nature. Post signs promptly following application.
- B. Fixtures: Remove and store, or protect hardware, accessories, plates, lighting fixtures and similar items installed prior to painting. Reinstall or remove protection upon completion.
- C. Surface Preparation:
 - 1. Ensure that all surfaces designated to be coated are properly prepared in accordance with Specifications, referenced standards, and manufacturers' recommendations.
 - 2. Remove scale, dirt, dust, grit, rust, wax, grease, efflorescence, loose material, and other foreign matter detrimental to proper adhesion of paint.
- D. Shop Painted Items: Touch-up abraded surfaces prior to painting; use same type of paint as shop coat. Feather edge abraded surfaces prior to touch-up.
- E. Ferrous Metal:
 - 1. Use suitable solvents, tools, and methods to clean surfaces.
 - 2. Un-coated Steel and Iron Surfaces: Remove grease, rust, scale, dirt and dust from steel and iron surfaces in accordance with SSPC-1. Where heavy coatings of scale are evident, remove by wire brushing (SSPC-SP2) or other SSPC-SP approved method.
 - 3. Shop Primed Steel Surfaces: Sand and scrape to remove loose primer and rust. Sand and feather edges to smooth surface. Clean areas with solvent and spot prime bare metal areas.
- F. Existing Painted Surfaces:
 - 1. Sand, wire brush, or scrape painted surfaces to remove loose, scaling paint and to reduce gloss. Feather edge abraded surfaces. Thoroughly clean, remove rust, and prepare existing surfaces, insure proper adhesion.

95% REVIEW

2. Existing lead-based coatings: See Section 011000; 1.05 Lead Based Paint.

3.03 APPLICATION

- A. Comply with manufacturers' product data, technical bulletins, and catalog and container application instructions.
- B. Paint all surfaces exposed to view, unless otherwise indicated. Where not indicated, paint as directed.
- C. Surfaces Not to be Painted: Furred spaces; trenches, tunnels, plenums, shafts and hoistways; storage tanks; concealed pipe, ductwork and conduit; concealed rough hardware; cast-iron and galvanized steel gratings, covers and frames; stainless steel, unless otherwise specified; factory finished surfaces, and other surfaces so indicated.
- D. Apply, as a minimum, specified number of coats; apply sufficient coats to produce specified mil dry film thickness.
- E. Apply paint and coating with suitable brushes, rollers, or spraying equipment as recommended by coating manufacturer and as specified. Do not exceed coating manufacturer's recommended drying time between succeeding coats.
- F. Apply finish coats smooth, free of brush marks, runs, drips, sags, streak laps, pile-up, and skipped or missed areas.
- G. Ensure that coating is so complete that additional coating will not change color or texture of painted surface. Apply additional coats as required to achieve this condition.

3.04 FIELD QUALITY CONTROL

- A. Site Tests:
 1. Where materials are being applied over previously painted surfaces, apply samples and perform in-place test to check for compatibility, adhesion and film integrity of new materials to existing painted surfaces.
 2. Painting may be tested, at the Owner's option, to determine materials quality and compliance with Contract Documents.
 3. Upon completion, if requested by the Owner, manufacturer's representative shall measure paint thickness with Tooke Dry Film Thickness System. Recoat Work not conforming to specified dry mil thickness until thickness is

95% REVIEW

that specified.

- B. Inspection:
 - 1. After paint and coating Work has been completed, make a detailed inspection of paint finish and touch-up or refinish non-complying Work.

3.05 ADJUSTING

- A. Repair or replace damaged installed products.
- B. Carefully remove splatters of paint materials from adjoining Work. Repair all damages that may be caused by such cleaning operations and other painting activities.

3.06 CLEANING

- A. Remove temporary coverings and protection of adjacent work areas.
 - 1. Clean installed products in accordance with manufacturers' instructions prior to Final Completion.
 - 2. Remove implements of service, and materials from premises and leave entire Project in clean condition.
 - 3. Remove construction debris from project site and legally dispose thereof.

3.07 PROTECTION

- A. Protect finished product and surfaces from damage during subsequent construction.

3.08 EXTERIOR PAINTING SCHEDULE

- A. Roof Mounted Equipment & New Entry Door:
 - Alkyd Enamel on Ferrous Metal:
 - Prime Coat: Rust inhibitive metal primer at bare metal.
 - Body Coat: Exterior alkyd.
 - Finish Coat: Exterior alkyd.
 - Thickness: 4 mils dry.
 - Sheen/Color: Semi-gloss.

END OF SECTION

95% REVIEW

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Disconnect, store and reconnect existing rooftop equipment.
 - 2. Heating, ventilating and air conditioning.
 - 3. Hangers and supports for mechanical piping, ducting and equipment.
 - 4. Pier pipe supports.

- B. Related Sections:
 - 1. Section 099100 – Painting.
 - 2. Section 221426 - Roof Drains.
 - 3. Section 230000 - Basic Mechanical.

1.02 REFERENCES

- A. ASTM A53/A53M - Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
- B. ASTM A123 - Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- C. ASTM C547 - Mineral Fiber Pipe Insulation.
- D. ANSI/ASME B31.9 - Building Services Piping.
- E. MSS (Manufacturers Standardization Society of The Valve and Fittings Industry) SP-58 - Pipe Hangers and Supports - Materials, Design and Manufacture.
- F. MSS SP-69 - Pipe Hangers and Supports - Selection and Application.
- G. MSS SP-89 - Pipe Hangers and Supports - Fabrication and Installation Practices.
- H. MSS SP-127 - Bracing for Piping Systems Seismic-Wind-Dynamic Design, Selection, Application.

1.03 SYSTEM DESCRIPTION

- A. Design Requirements:
 - 1. Incorporate in designs pipe hangers and supports to manufacturers'

95% REVIEW

- recommendations utilizing manufacturers' regular production components, parts and assemblies as detailed in manufacturers' pipe hanger catalog.
2. Establish maximum load ratings with consideration for allowable stresses prescribed by ASME B31.1 or MSS SP-58.

- B. Performance Requirements: Provide products which have been manufactured, fabricated and installed to maintain performance criteria stated by manufacturers without defects, damage or failure.

1.04 SUBMITTALS

- A. Submit in accordance with Section 013323.

- B. Product Data:

1. Manufacturers' product sheets and installation instructions.
2. Plumbing fixtures.

- C. Shop Drawings:

1. Show layout, profiles, and product components, including anchorage, accessories.
2. Plans illustrating piping, supports and related items.

- D. Closeout:

1. Project Record Documents: As-Built Drawings and Specifications - maintain at site one set of documents for recording "As-Built" conditions as Work progresses. Indicate locations of concealed elements by dimension from structure or building grid.
2. Operation and maintenance data for installed products, including methods for maintaining, and precautions against cleaning materials and methods detrimental to finishes and performance.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Supply materials of similar class by same manufacturer.

- B. Installer Qualifications: Minimum 5 years commercial experience in performing this work, having specialized in installation of work similar to that required for this project. When requested, submit certificate indicating qualification.

- C. Regulatory Requirements: Comply with applicable requirements of the following:

1. Building Code.

95% REVIEW

2. Plumbing: Oregon Plumbing Specialty Code.

D. Obtain applicable permits, licenses, inspections. OSU to pay Permit fees.

E. Pre-Installation Meeting: Conduct meeting to verify project requirements, substrate conditions, manufacturers' installation instructions and warranty requirements.

1.06 DELIVERY, STORAGE AND HANDLING

A. Delivery: Comply with manufacturers' ordering instructions and lead time requirements; deliver products in original, unopened, undamaged containers with identification labels intact.

B. Storage:

1. Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.

2. Store inside, protected from dirt and construction dust.

C. Handling: Exercise care in handling, loading, unloading and storing products to avoid damage.

1.07 PROJECT CONDITIONS

A. Hazardous Materials: If during the course of Work, Contractor observes existence of hazardous materials, immediately terminate further Work and notify Owner of the condition. Owner will, after consultation, determine a further course of action.

1.08 WARRANTIES

A. Installer:

1. Standard Workmanship Warranty - Two (2) years commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MATERIALS

A. Materials: New, standard, full weight, identical to products in successful operation for a minimum of two years.

B. Piping:

95% REVIEW

1. Cast iron pipe and fittings: Service weight; ASTM A74.
2. No hub piping system: Cast Iron Soil Pipe Institute Specification 301.
 - a. "Anaco", "Huskey SD 4000", or "Clamp -All" high torque heavy-duty couplings.
3. Steel pipe: Schedule 40, black and galvanized, ASTM A53.
4. Condensate Drain: PVC Schedule 40.

2.02 MANUFACTURED UNITS

- A. Structural Attachments: Carbon steel per ASTM A36/ASTM A515.
- B. Brackets: Malleable iron per ASTM A47/ASTM A126.
- C. U-Bolts and Straps: Malleable iron per ASTM A47/ASTM A126.
- D. Pipe Supports: Erico Nvent Pyramid 50.

2.03 ACCESSORIES

- A. Insulation Accessories:
 1. Insulation Bands: $\frac{3}{4}$ -inch wide; stainless steel.
 2. Metal Jacket Bands: $\frac{3}{8}$ -inch wide; thick stainless steel.
 3. Adhesives: Compatible with insulation.

2.04 FABRICATION

- A. Provide steel fabrications for support of mechanical equipment; base plates for stands.
- B. Use components for intended design purpose.
- C. Fabricate equipment supports not provided with equipment from structural grade steel.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Inspection: Verify substrate conditions are acceptable for product installation in accordance with manufacturers' instructions.

95% REVIEW

- B. Report to the Owner's Authorized Representative any deviations between Contract Documents and site conditions.
- C. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Protection: Provide temporary coverings and protection of adjacent work areas.
- B. Disconnect rooftop equipment as required.
- C. Close pipe openings with caps or plugs.
- D. Protect existing wiring, circuits, piping, conduits, control systems, from damage during course of Work.
- E. Layout: Make determination of the existence, location and condition of related utility services.
- F. Arrange Work to minimize interruption of any services. When interruptions are unavoidable, consult Owner and utilities involved; agree in writing upon a mutually satisfactory time and duration.
- G. Coordinate Work with related systems. Should rearrangement or re-routing be necessary, submit proposed revisions to Architect and Owner and obtain approval thereof.

3.03 INSTALLATION

- A. Comply with manufacturers' product data, technical bulletins, and catalog and carton installation instructions.
- B. Comply with reviewed submittals.
- C. Reconnect rooftop equipment as required.
- D. Set equipment to provide for ready access to any parts requiring inspection and/or service.

3.04 FIELD QUALITY CONTROL

- A. Site Tests: Prior to acceptance, operate all affected mechanical systems for a

95% REVIEW

period of at least five consecutive eight hour days.

- B. Inspection: Upon request, provide field service consisting of product use recommendations and site visit for inspection of product installation in accordance with manufacturer's instructions.

3.05 ADJUSTING

- A. Repair or replace damaged installed products.

3.06 CLEANING

- A. Remove temporary coverings and protection of adjacent work areas.
- B. Clean installed products in accordance with manufacturer's instructions prior to Final Completion.
- C. Clean all dirt, construction dust and debris from all mechanical systems. Touch up paint where finish has been damaged.
- D. Remove construction debris from project site and legally dispose thereof.

3.07 PROTECTION

- A. Protect installed products, systems and finish surfaces from damage during subsequent construction.

END OF SECTION

95% REVIEW

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. New overflow drains.
 - 2. Refurbish existing roof drains.
 - 3. Contractor Option: Replace existing drain bowls and components.

- B. Related Sections:
 - 1. Section 075215 - SBS Modified Bitumen Roofing (Cold).
 - 2. Section 075225 - SBS Modified Bitumen Roofing (IRMA).
 - 3. Section 220010 - Basic Plumbing.

1.02 REFERENCES

- A. ASTM A74 - Standard Specification for Cast Iron Soil Pipe and Fittings.
- B. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
- C. ASHRAE Equipment Handbook for pipe hanging.
- D. CISPI for no-hub piping.

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide products which have been manufactured, fabricated and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.

1.04 SUBMITTALS

- A. Submit in accordance with Section 013323.
- B. Product Data: Manufacturer's product sheets and installation instructions.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Minimum 5 years commercial experience in performing this work, having specialized in installation of work similar to that required for

95% REVIEW

this project. When requested, submit certificate indicating qualification.

- B. Regulatory Requirements: Comply with applicable Plumbing and Building Code requirements.
- C. Pre-Installation Meeting: Conduct meeting with Owner's Authorized Representative to verify project requirements, substrate conditions, manufacturer's installation instructions and warranty requirements.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Comply with manufacturer's ordering instructions and lead time requirements; deliver products in manufacturer's original, unopened, undamaged containers with identification labels intact.
- B. Storage: Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
- C. Handling: Exercise care in handling, loading, unloading and storing products to avoid damage.

1.07 WARRANTIES

- A. Installer:
 - 1. Standard Workmanship Warranty - Two (2) years commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Refurbishing Material:
 - 1. Rust-Oleum or approved equal.
- B. New Drains and/or Overflow Drains:
 - 1. Drains and Drain Accessories: Jay R. Smith; or approved equal.
 - 2. Hangers and Supports: Grinnell; Super Strut, Michigan or approved equal.
 - 3. Pipe:
 - a. Cast iron pipe and fittings: ASTM A74, Service weight.

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- b. No hub piping: Cast Iron Soil Pipe Institute Specification 301.
- c. Steel pipe: Schedule 40, black and galvanized to comply with ASTM A53/A53M.
- 4. Verify and match existing pipe sizes, unless noted otherwise.

2.02 MATERIALS

- A. Cold Galvanizing Compound:
 - 1. Rust-Oleum 700 System Cold Galvanizing Compound, or approved equal.

2.03 MANUFACTURED UNITS (CONTRACTOR OPTION)

- A. Roof Drains:
 - 1. Roof Drain: Cast iron with cast iron strainer. Smith 1310 or approved equal.
- B. Overflows:
 - 1. Overflow Roof Drain: Cast iron, with 2" high water dam collar (if necessary) with cast iron strainer. Smith 1310 or approved equal.
 - 2. Overflow Nozzle: Smith 1770 or approved.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Inspection: Verify substrate conditions are acceptable for product installation in accordance with manufacturer's instructions.
- B. Report to the Owner's Authorized Representative any deviations between Contract Documents and site conditions.
- C. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Protection: Provide temporary coverings and protection of adjacent work areas.

3.01 REFURBISH COMPONENTS

- A. Remove all waterproofing materials from the components.

95% REVIEW

- B. Run a tap in all threaded holes to clean existing threads.
 - C. Wire brush surface to remove corrosion and asphalt residue.
 - D. Prepare surface for application of Cold Galvanizing Compound according to the manufacturer's requirements.
 - E. Coat all components per manufacturer's instructions.
- 3.02 Reassemble with new hardware. Coordinate with waterproofing contractor.
- 3.03 ADJUSTING
- A. Repair or replace damaged installed products.
- 3.04 CLEANING
- A. Remove temporary coverings and protection of adjacent work areas.
 - B. Clean installed products in accordance with manufacturer's instructions prior to Final Completion
 - C. Remove construction debris from project site and legally dispose thereof.
- 3.05 PROTECTION
- A. Protect installed products from damage during subsequent construction.

END OF SECTION

95% REVIEW

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Disconnect, store and reconnect existing rooftop equipment as required to install new roof and insulation system.
2. Provide temporary exhaust venting and filtration as required during construction.

B. Related Sections:

1. Section 075215 - SBS Modified Bitumen Roofing (Cold).
2. Section 075225 - SBS Modified Roofing/Waterproofing (IRMA).
3. Section 076200 - Flashing and Sheet Metal.
4. Section 099100 - Painting.
5. Section 260000 - Basic Electrical.

1.02 REFERENCES

- A. ASTM A123 - Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- B. ASTM A53/A53M - Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
- C. ASTM A653/A653M - Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- D. ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers) - Fundamentals Handbook.
- E. SMACNA (Sheet Metal and Air Conditioning Contractors National Association) - Manual of HVAC Duct Construction Standards - Metal & Flexible.
- F. MSS SP-69 - Pipe Hangers and Supports - Selection and Application.
- G. MSS SP-127 - Bracing for Piping Systems Seismic-Wind-Dynamic Design, Selection, Application.

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide products which have been manufactured,

95% REVIEW

fabricated and installed to maintain performance criteria stated by manufacturers without defects, damage or failure.

1.04 SUBMITTALS

- A. Submit in accordance with Section 013323.
- B. Closeout:
 - 1. Project Record Documents: As-Built Drawings and Specifications - maintain at site one set of documents for recording "As-Built" conditions as Work progresses. Indicate locations of concealed elements by dimension from structure or building grid.
 - 2. Copies of certificates of Code Authority acceptance.
 - 3. Per Section 017700, Contract Closeout.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Minimum 5 years commercial experience in the manufacture and supply of materials used in this work.
- B. Installer Qualifications: Minimum 5 years commercial experience in performing this work, having specialized in installation of work similar to that required for this project. When requested, submit certificate indicating qualification.
- C. Standards: Comply with applicable requirements of the following:
 - 1. ASHRAE Handbook.
 - 2. NFPA 13.
 - 3. NFPA 90A.
 - 4. SMACNA Manual.
 - 5. Gauges, hanging, supporting and bracing per MSS and SMACNA.
- D. Regulatory Requirements: Comply with applicable requirements of the following:
 - 1. Building Code.
 - 2. Plumbing Code.
 - 3. HVAC: Oregon Mechanical Specialty Code.
- E. Obtain applicable permits, Owner reimburses for permits and fees.
- F. Pre-Installation Meeting: Conduct meeting with Owner's Authorized Representative to verify project requirements, substrate conditions, manufacturers' installation instructions and warranty requirements.

95% REVIEW

1.06 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Comply with manufacturers' ordering instructions and lead time requirements; deliver products in original, unopened, undamaged containers with identification labels intact.
- B. Storage:
 - 1. Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
 - 2. Store inside, protected from dirt and construction dust.
- C. Handling: Exercise care in handling, loading, unloading and storing products to avoid damage.

1.07 PROJECT CONDITIONS

- A. Hazardous Materials: If during the course of Work, Contractor observes existence of hazardous materials, immediately terminate further Work and notify the Owner's Authorized Representative of the condition. The Owner will, after consultation, determine a further course of action.

1.08 WARRANTIES

- A. Installer:
 - 1. Standard Workmanship Warranty - Two (2) years commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Materials: New, standard, full weight, identical to products in successful operation for a minimum of two years.
- B. Temporary Exhaust:
 - 1. North exhaust drop: 2,000 cfm minimum. 1.25" s.p., 1 ½ hp.
 - 2. East exhaust drop: 3,450 cfm minimum. 1.25" s.p., 1 ½ hp.
 - 3. South exhaust drop: 3,150 cfm minimum. 1.25" s.p., 1 hp.
- C. Provide filters on the open supply ducts.

95% REVIEW

PART 3 EXECUTION

3.01 EXAMINATION

- A. Inspection:
 - 1. Verify substrate conditions are acceptable for product installation in accordance with manufacturers' instructions.
 - 2. Before starting Work, carefully examine site and Contract Documents. Become thoroughly familiar with conditions governing Work.
- B. Report to the Owner's Authorized Representative any deviations between Contract Documents and site conditions.
- C. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Protection: Provide temporary coverings and protection of adjacent work areas.
- B. Disconnect and store existing roof mounted equipment as necessary to complete work as specified.
- C. Notify Owner's Authorized Representative of any conditions of non-compliance with current applicable codes.
- D. Close pipe openings with caps or plugs.
- E. Protect existing wiring, circuits, piping, conduits, control systems, from damage during course of Work.
- F. Arrange Work to minimize interruption of any services. When interruptions are unavoidable, consult Owner's Authorized Representative and utilities involved; agree in writing upon a mutually satisfactory time and duration.
- G. Coordinate Work with related systems. Should rearrangement or re-routing be necessary, submit proposed revisions and obtain approval thereof.

3.03 INSTALLATION / RECONNECTION

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- A. Comply with manufacturers' product data, technical bulletins, and catalog and carton installation instructions.
- B. Comply with reviewed submittals.
- C. Install equipment with minimum clearances indicated by manufacturer as required for proper maintenance, repair and service.
- D. Set equipment to provide for ready access to any parts requiring inspection and/or service.

3.04 FIELD QUALITY CONTROL

- A. Site Tests: Prior to acceptance, operate all affected mechanical systems for a period of at least five consecutive eight hour days.

3.05 ADJUSTING

- A. Repair or replace damaged installed products.

3.06 CLEANING

- A. Remove temporary coverings and protection of adjacent work areas.
- B. Clean installed products in accordance with manufacturer's instructions prior to Final Completion.
- C. Clean all dirt, construction dust and debris from all mechanical systems. Touch up paint where finish has been damaged.
- D. Remove construction debris from project site and legally dispose thereof.

3.07 PROTECTION

- A. Protect installed products from damage during subsequent construction.

END OF SECTION

95% REVIEW

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Disconnect and reconnect existing roof mounted equipment as necessary to complete work specified.
 - 2. Materials and methods.

- B. Related Sections:
 - 1. Section 024110 - Selective Demolition.
 - 2. Section 230000 - Basic Mechanical.

1.02 REFERENCES

- A. NFPA (National Fire Protection Association) 70 - National Electrical Code.

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide products which have been manufactured, fabricated and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.

- B. Closeout:
 - 1. Project Record Documents: As-built Drawings and Specifications.
 - 2. Copies of certificates of Code Authority acceptance.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications:
 - 1. Minimum 5 years commercial experience in performing this work, having specialized in installation of work similar to that required for this project. When requested, submit certificate indicating qualification.
 - 2. Provide journeyman electricians, equipped with required tools, meters, and instruments.

- B. Regulatory Requirements:
 - 1. Comply with applicable Building Code requirements.
 - 2. Comply with Rules, Regulations and Codes of the State and local Authorities Having Jurisdiction.
 - 3. Obtain applicable permits, Owner reimburses for permits and fees.

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- C. Pre-Installation Meeting: Conduct meeting with Owner's Authorized Representative to verify project requirements, substrate conditions, manufacturer's installation instructions and warranty requirements.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Delivery:
 - 1. Comply with manufacturer's ordering instructions and lead time requirements; deliver products in manufacturer's original, unopened, undamaged containers with identification labels intact.
 - 2. Transport products in manner to avoid distortion or damage.
- B. Storage:
 - 1. Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturers.
 - 2. Store products off ground and under cover.
- C. Handling: Exercise care in handling, loading, unloading and storing products to avoid damage.

1.06 WARRANTIES

- 1. Installer: Standard Contractor's Warranty for Workmanship - One (1) year commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MATERIALS

- A. New, listed by the Underwriter's Laboratories, bearing their label.
- B. Conductors: Soft drawn copper, number 12 minimum size, with 600 volt type THAN insulation.
- C. Splices: Scotchlok, Ideal wire nut or similar type connector.
- D. Above Grade Conduit: Zinc coated steel EMT in dry, protected locations. Flexible steel conduit only where flexibility is necessary.

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- E. Outlet Boxes: Weatherproof of code required size to accommodate wire, fittings and devices.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Inspection: Verify substrate conditions are acceptable for product installation in accordance with manufacturer's instructions.
- B. Report to the Owner's Authorized Representative any deviations between Contract Documents and site conditions.
- C. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Protection: Provide temporary coverings and protection of adjacent work areas.
- B. Coordinate electrical wiring and equipment with conditions of construction.

3.03 INSTALLATION / RECONNECTION

- A. Comply with manufacturer's product data, technical bulletins, and catalog and carton installation instructions.
- B. Install products in conformance with applicable codes and reviewed submittals.
- C. Locate all raceways, conduit, outlet boxes and wiring concealed from view, unless otherwise shown.

3.04 FIELD QUALITY CONTROL

- A. Inspection: Ensure that Work is not covered until reviewed and accepted by Code Authority.

3.05 ADJUSTING

- A. Repair or replace damaged installed products.

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3.06 CLEANING

- A. Remove temporary coverings and protection of adjacent work areas.
- B. Clean installed products in accordance with manufacturer's instructions prior to Final Completion.
- C. Remove electrical waste and debris from job site as Work progresses.
- D. Upon completion, remove all excess supplies, materials and tools.
- E. Leave the electrical Work clean, dust-free and in proper working order
- F. Remove construction debris from project site and legally dispose thereof.

3.07 PROTECTION

- A. Protect installed products from damage during subsequent construction.

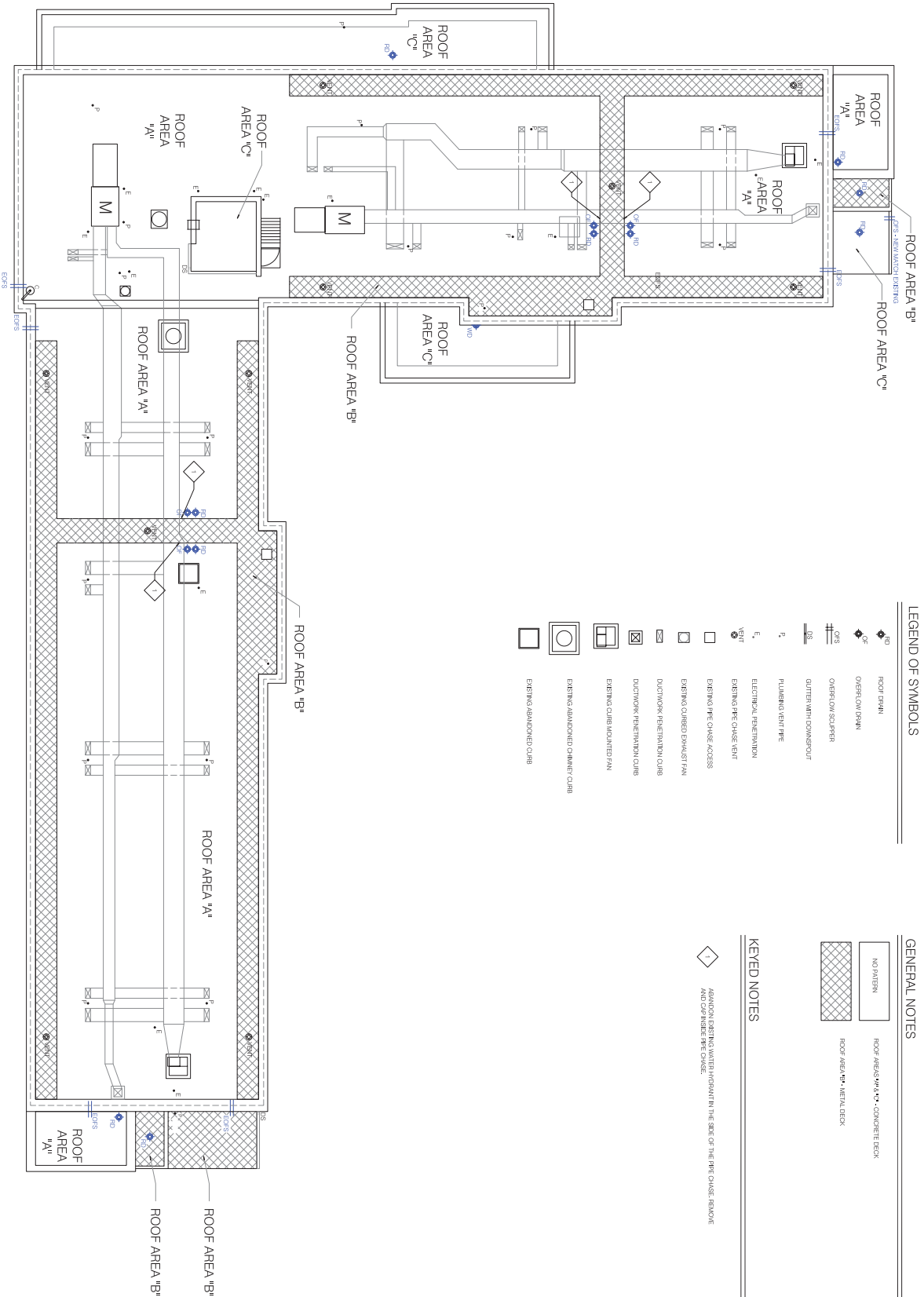
END OF SECTION

95% REVIEW



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





LEGEND OF SYMBOLS

- ROOF DRAIN
- OVER-CURTAIN WALL
- OVER-CURTAIN SCUPPER
- GUTTER WITH DOWNSPOUT
- PLUMBING VENT PIPE
- ELECTRICAL PENETRATION
- EXISTING FIRE CHASE ENTRY
- EXISTING FIRE CHASE ACCESS
- EXISTING CURBED EXHAUST FAN
- DUCTWORK PENETRATION CHUB
- DUCTWORK PENETRATION CHUB
- EXISTING CHUB MOUNTED FAN
- EXISTING ABANDONED CHIME/CLEAR
- EXISTING ABANDONED CHUB

GENERAL NOTES

- NO PATTERN
- ROOF AREAS WITH CONCRETE DECK
- ROOF AREA WITH METAL DECK

KEYED NOTES

- ABANDON EXISTING WATER HYDRANT IN THE BOIE OF THE FIRE CHASE. REMOVE AND CHANGE FIRE CHASE.

1 DEMOLITION ROOF PLAN
1/8" = 1'-0"

LINE DIMENSIONS AT FULL SCALE
IF NOT OTHERWISE INDICATED

A2.1

Project: 18020
SHEET NUMBER

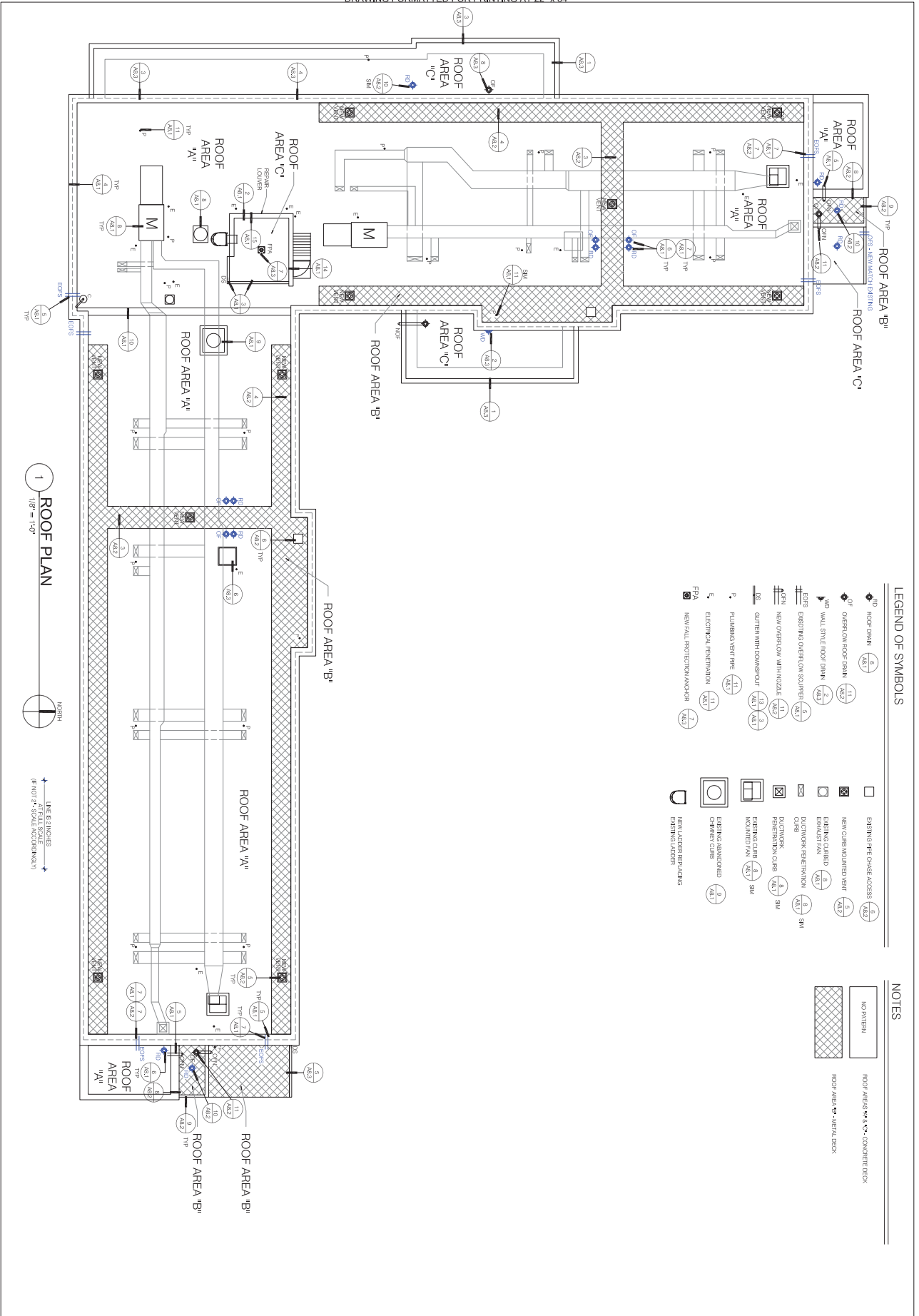
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Drawn by:	PHS
Checked by:	CFB
Title:	18020/A2.1

95%
REVIEW

SHEET TITLE:
DEMOLITION
ROOF PLAN

WEST HALL
REEROOFING
PROJECT







MA
McBRIDE
ARCHITECTURE P.C.



OSU
Oregon State
UNIVERSITY

UNIVERSITY
HOUSING
& DINING
SERVICES

WEST HALL
REEROOFING
PROJECT

SHEET TITLE:
ROOF PLAN

95%
REVIEW

DATE: 01/14/2019

REVISIONS:

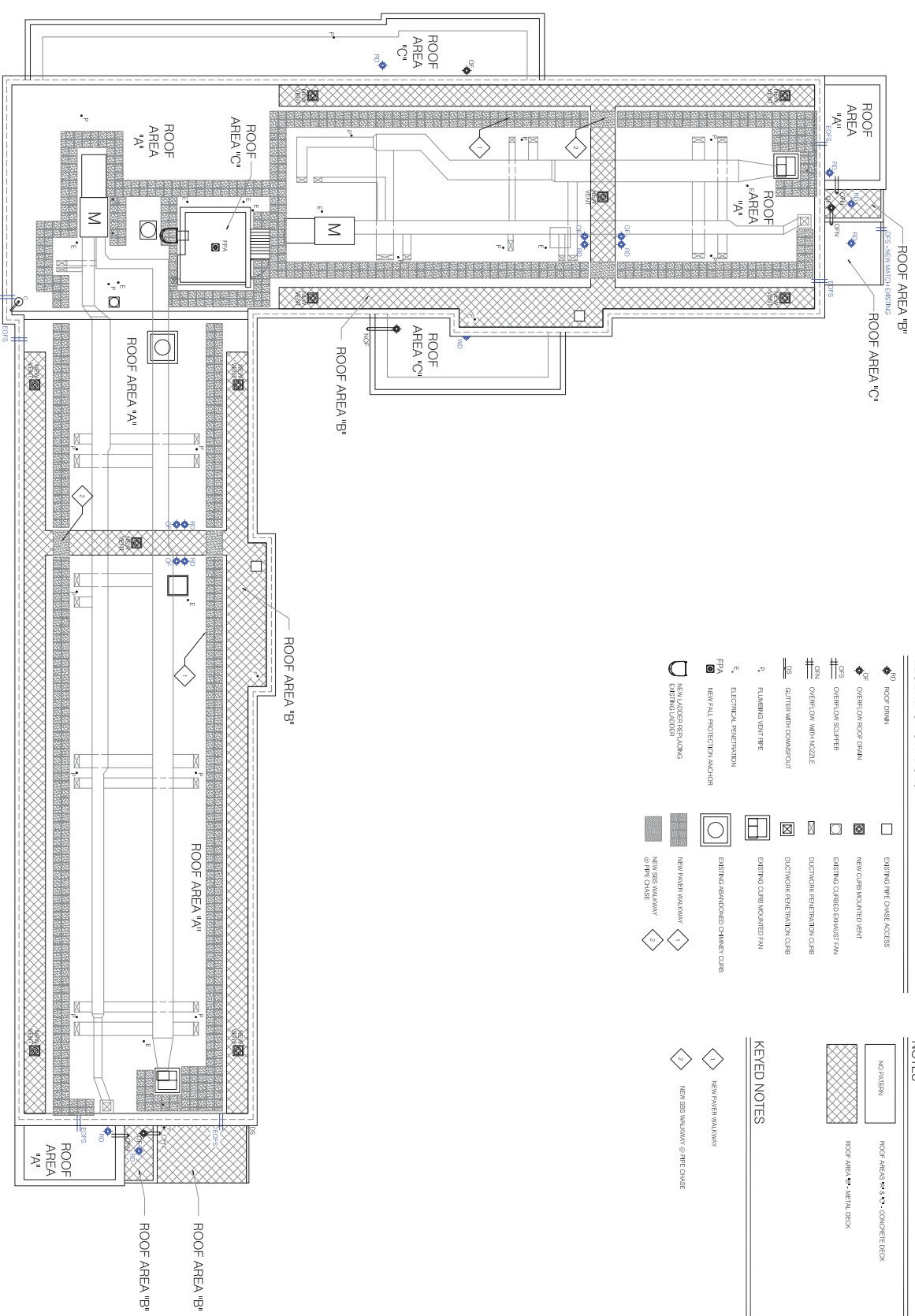
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01/14/2019	MS	ISSUE FOR PERMIT
01/14/2019	MS	ISSUE FOR PERMIT

PROJECT: 18020

SHEET NUMBER:

A2.2

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1 WALKWAY ROOF PLAN
1/8" = 1'-0"
NORTH

LINE 2 INCHES
AT FULL SCALE
IF NOT 2" SCALE ACCORDINGLY

LEGEND OF SYMBOLS

- ☐ ROOF DRAIN
- ☐ OVERFLOW ROOF DRAIN
- ☐ OVERFLOW SCUPPER
- ☐ OVERFLOW WITH NOZZLE
- ☐ GUTTER WITH DOWNSPOUT
- ☐ FLASHING ROOF FLE
- ☐ ELECTRICAL PENETRATION
- ☐ NEW FALL PROTECTION ANCHOR
- ☐ NEW LADDER REST LANDING
- ☐ EXISTING PRE-CAST ACCESS
- ☐ NEW CABE MOUNTED VENT
- ☐ EXISTING CABE MOUNTED FM
- ☐ DUCTWORK PENETRATION CABE
- ☐ DUCTWORK PENETRATION CABE
- ☐ EXISTING CABE MOUNTED FM
- ☐ EXISTING ABANDONED CHIMNEY CABE
- ☐ NEW FASTER WALKWAY
- ☐ NEW SIBS WALKWAY @ FIVE O'PALE
- ☐ NEW FASTER WALKWAY
- ☐ NEW SIBS WALKWAY @ FIVE O'PALE

NOTES

- NO PATTERN ROOF AREAS WITH CONCRETE DECK
- ROOF AREAS WITH HETAL DECK

KEYED NOTES

- 1 NEW FASTER WALKWAY
- 2 NEW SIBS WALKWAY @ FIVE O'PALE



UNIVERSITY HOUSING & DINING SERVICES
WEST HALL REROOFING PROJECT



SHEET TITLE:
WALKWAY ROOF PLAN

DATE: 01/24/2019

REVISIONS:

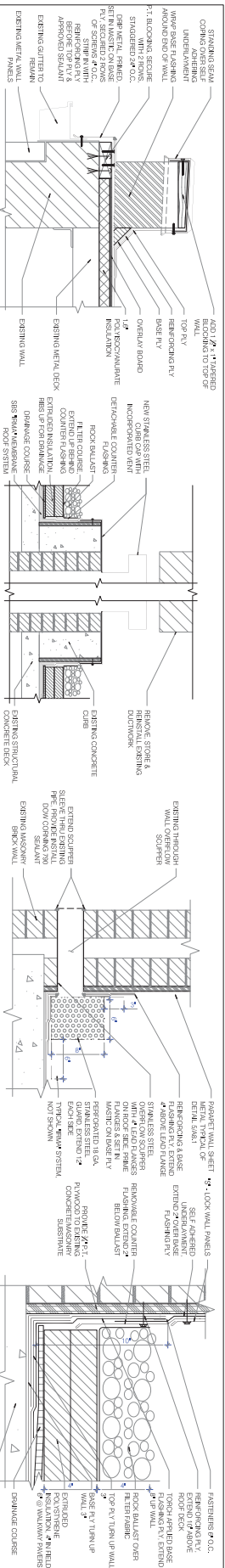
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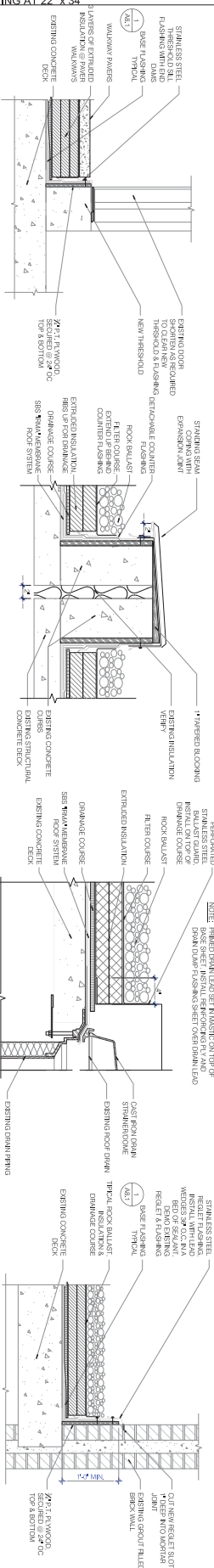
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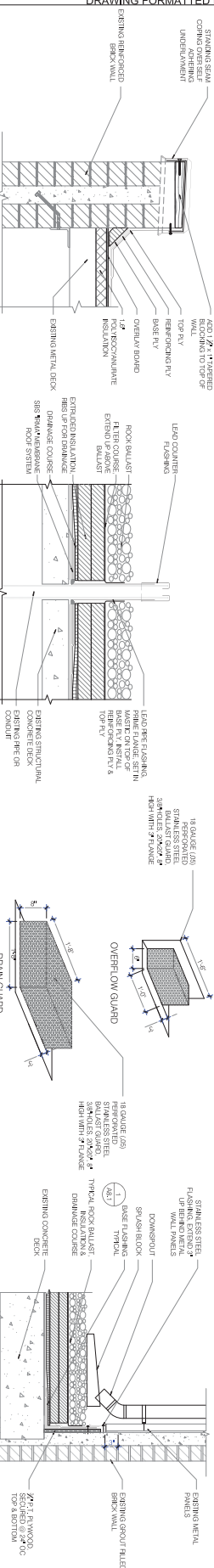
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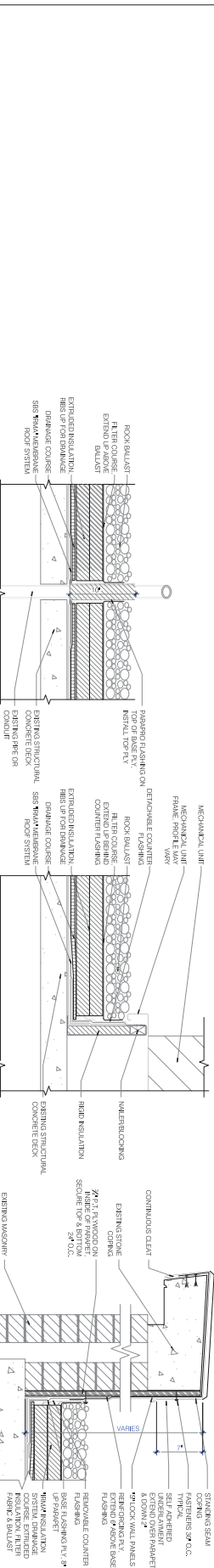
13 ELEVATOR PENTHOUSE GUTTER EDGE



14 PENTHOUSE DOOR THRESHOLD



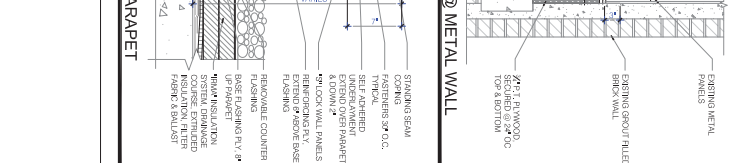
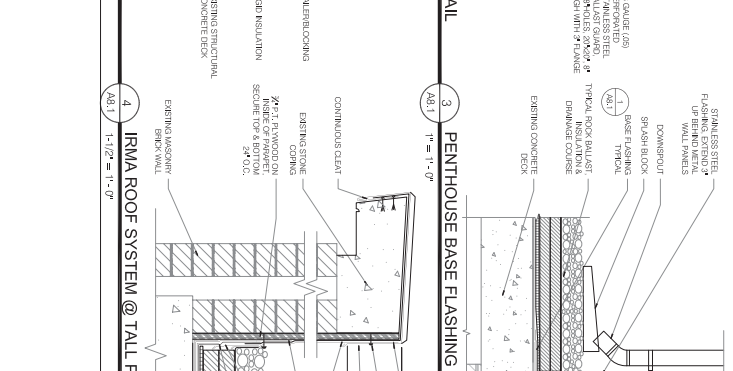
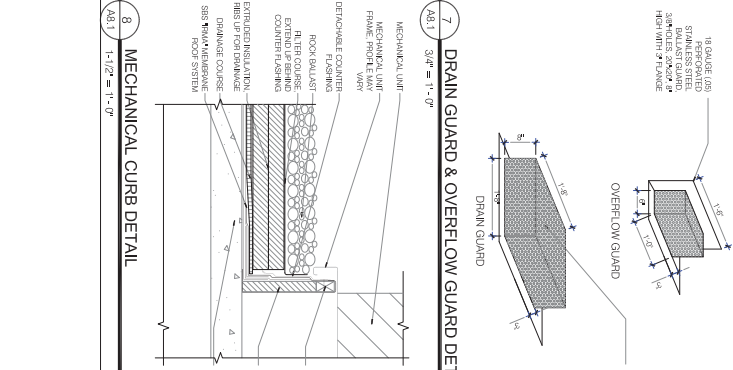
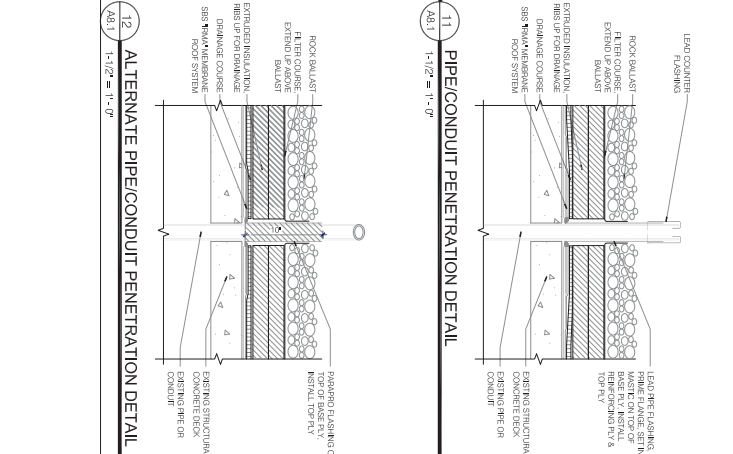
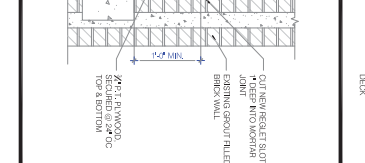
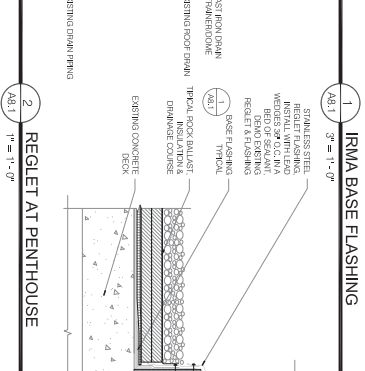
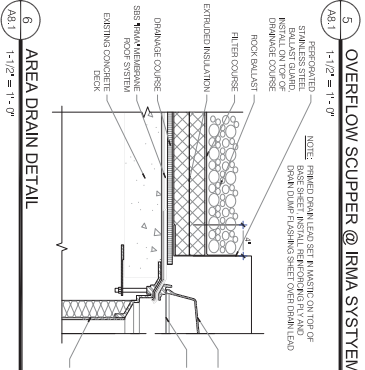
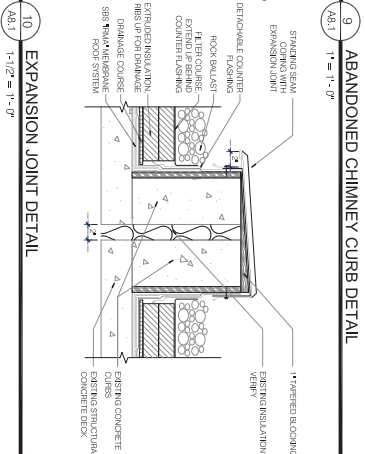
15 ELEVATOR PENTHOUSE PERIMETER CURB



12 ALTERNATE PIPE/CONDUIT PENETRATION DETAIL



9 ABANDONED CHIMNEY CURB DETAIL



MA
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ARCHITECTURE

OSU
Oregon State University

UNIVERSITY
HOUSING
& DINING
SERVICES

**WEST HALL
REROOFING
PROJECT**

95%
REVIEW

DATE: 01/04/2019
DRAWING NO: 18020-18.2

SHEET TITLE:
DETAILS

Project: 18020
SHEET NUMBER:
A8.1

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**OREGON STATE UNIVERSITY
CM/GC CONTRACT**

(Construction Manager/General Contractor)

THE CONTRACT IS BETWEEN:

OWNER: **Oregon State University**

And

**CONSTRUCTION MANAGER/
GENERAL CONTRACTOR**
(referred to as Contractor in the
OSU General Conditions and herein
referred to as "the CM/GC"):

The Project is:

The Architect is:

**The Owner's Authorized
Representative is:**

The Owner's Target GMP is:

OREGON STATE UNIVERSITY

CM/GC CONTRACT

TABLE OF CONTENTS

<i>ARTICLE</i>		<i>PAGE</i>
1	Definitions	p. 1
2	Contract Documents	p. 3
3	Work of This Contract	p. 4
4	Relationship and Role of the Parties	p. 10
5	Date of Commencement; Substantial and Final Completion	p. 11
6	Fees, Contract Sum and GMP	p. 13
7	Changes in the Work	p. 17
8	Cost of the Work (To Be Reimbursed)	p. 19
9	Costs Excluded From Cost of Work (Not To Be Reimbursed)	p. 22
10	Discounts, Rebates and Refunds	p. 23
11	Subcontracts and other Contracts	p. 24
12	Accounting Records	p. 27
13	Progress Payments	p. 26
14	Final Payment	p. 29
15	Termination or Suspension	p. 30
16	Representations and Warranties	p. 31
17	Miscellaneous	p. 32
	Exhibit A OSU General Conditions	p. 34
	Exhibit B Form of GMP Amendment	p. 35
	Exhibit C Direct Costs/ GC Work Costs Matrix	p. 39
	Exhibit D OSU Supplemental General Conditions	p.40
	Exhibit E Reimbursable Travel and Per Diem Expenses	p.41

The Owner and CM/GC agree as set forth below:

ARTICLE 1
DEFINITIONS

Except as expressly defined or modified below or elsewhere in this agreement (“CM/GC Contract”), all capitalized terms shall have the meanings set forth in Section A of the Oregon State University General Conditions for Public Improvement Contracts, June 30, 2017, attached as Exhibit A hereto (the "OSU General Conditions"). The terms below are expressly defined as follows:

- 1.1 Affiliate.** Affiliate shall mean any subsidiary of CM/GC, and any other entity in which CM/GC has a financial interest or which has a financial interest in CM/GC (including without limitation parent companies, related businesses under the same holding company, or any other business controlled by, under common control with, or which controls CM/GC).
- 1.2 Allowances.** Allowances shall mean the allowance amounts shown in the GMP Supporting Documents, together with such further allowances as may be developed by the parties as the Project progresses.
- 1.3 Amendment.** Amendment shall mean a written modification of the Contract (including without limitation any agreed change to the GMP), identified as an Amendment, and executed by CM/GC, the Owner’s Authorized Representative, and, where required, approved in writing by the Owner
- 1.4 Business Days.** Business Days shall mean every day except Saturday, Sunday, and legal holidays recognized for employees of Oregon State University.
- 1.5 Change Order.** Change Order shall mean a written modification of the Contract under Section D.1 of the OSU General Conditions (including without limitation any agreed change to GMP), identified as a Change Order and executed by the Owner’s Authorized Representative, CM/GC, where applicable.
- 1.6 CM/GC Field Work.** CM/GC Field Work shall mean customary layout, clean up, supervision, and portions of the Work of a minor nature and not included in subcontracted work, undeveloped design owing to deviations in Work performed or materials delivered by Subcontractors or suppliers that do not represent defective or nonconforming work, a breach or failure to perform by the Subcontractor or supplier, complexity of coordination of the Work, and other similar reasons typically providing cause for “pick-up” or GC Work under industry standards; provided, however, that (i) the CM/GC has reasonably determined that doing such portion of the Work itself is in the best interests of Owner, (ii) such Work is identified as CM/GC Field Work in monthly billings and (iii) CM/GC receives prior approval of Owner’s Authorized Representative as to the scope of such CM/GC Field Work.
- 1.7 CM Services.** CM Services shall have the meaning given in Article 3.3 below.

- 1.8 Construction Documents.** Construction Documents shall have the meaning given in the Oregon State University Architect's Agreement with the Architect for this Project. CM/GC acknowledges Owner has provided to it a copy of Oregon State University's Architect Agreement with the Architect for this Project.
- 1.9 Construction Phase.** The Construction Phase shall mean the period commencing on the earliest of the following: Owner's written notice to the CM/GC to proceed with the subcontractor solicitation process for Early Work prior to execution of an Early Work Amendment or GMP Amendment; Owner's execution of a GMP Amendment or Early Work Amendment, together with the earlier of (i) issuance by Owner of a Notice to Proceed with any on-site construction or (ii) execution of a subcontract or issuance of a purchase order for materials or equipment required for the Work.
- 1.10 Construction Phase Services.** Construction Phase Services shall mean all the Work other than the Preconstruction Phase Services.
- 1.11 Contract Documents.** Contract Documents shall have the meaning given in Section A of the OSU General Conditions, as supplemented by Article 2.1 below.
- 1.12 Design Development Documents.** Design Development Documents shall have the meaning given in the Oregon State University Architect's Agreement with the Architect for this Project.
- 1.13 Early Work.** Early Work shall mean Construction Phase Services authorized by Amendment that the parties agree should be performed in advance of establishment of the GMP. Permissible Early Work shall be limited to: early procurement of materials and supplies; early release of bid or proposal packages for site development and related activities; and any other advance work related to critical components of the Project for which performance prior to establishment of the GMP will materially affect the critical path schedule of the Project.
- 1.14 Early Work Amendment.** Early Work Amendment shall mean an Amendment to this CM/GC Contract executed by and between the parties to authorize Early Work.
- 1.15 Costs for General Conditions Work.** Costs for General Conditions Work shall mean those sums paid on a cost reimbursable maximum not-to-exceed price basis as described in Article 8.8 and as identified in Exhibit C, Direct Costs/General Conditions Work Costs Matrix.
- 1.16 General Conditions Work.** General Conditions Work ("GC Work") shall mean (i) that portion of the Work required to support construction operations that is not included within overhead or general expense but is called out as GC Work in Exhibit C, and (ii) any other specific categories of Work approved in writing through Amendment by the Owner's Authorized Representative as forming a part of the GC Work.
- 1.17 Guaranteed Maximum Price (GMP).** GMP shall mean the Guaranteed Maximum Price of the Contract, as stated in dollars within the GMP Amendment, as determined in

accordance with Article 6, and as it may be adjusted from time to time pursuant to the provisions of this CM/GC Contract.

- 1.18 GMP Amendment.** GMP Amendment shall mean an Amendment to the Contract, issued in the form of Exhibit B and executed by and between the parties, to establish the GMP and identify the GMP Supporting Documents for Construction Phase Services.
- 1.19 GMP Supporting Documents.** GMP Supporting Documents shall mean the documents referenced in the GMP Amendment as the basis for establishing the GMP. The GMP Supporting Documents shall expressly identify the Plans and Specifications, assumptions, qualifications, exclusions, conditions, allowances, unit prices, and alternates that form the basis for the GMP.
- 1.20 Preconstruction Phase.** The Preconstruction Phase shall mean the period commencing on the date of this CM/GC Contract and ending upon commencement of the Construction Phase; provided that if the Owner and CM/GC agree, the Construction Phase may commence before the Preconstruction Phase is completed, in which case both phases shall proceed concurrently, subject to the terms and conditions of the Contract Documents.
- 1.21 Preconstruction Phase Services.** Preconstruction Phase Services shall mean all services described in Article 3.1, and any similar services described in the Request for Qualifications (“RFQ”), including such similar services as are described in the CM/GC’s _____, 2017 RFQ proposal to the extent they are accepted by Owner in writing, but excluding any Early Work. Early Work shall be considered part of Construction Phase Services.
- 1.22 Schematic Design Documents.** Schematic Design Documents shall have the meaning given in the Oregon State University Architect’s Agreement with the Architect for this Project.
- 1.23 Scope Change.** Scope Change shall mean only (i) changed site conditions not reasonably inferable from information available to CM/GC at the time of execution of the GMP Amendment, and (ii) significant Work modifications (including additions, substitutions, and deletions), application of Allowances, and selection of alternates, all as approved by the Owner under the Contract Documents beyond that identified or inferable from the GMP Supporting Documents (but in the case of Allowance items, the GMP will increase only if the cost to Owner of the Allowance items exceeds the total amount of the Allowances).

ARTICLE 2 CONTRACT DOCUMENTS

- 2.1 Contract Documents.** For valuable consideration as stated below, Owner and the CM/GC agree to the terms of the Contract that are set forth in the Contract Documents. For purposes of this Project, the Contract Document identified as "OSU Public Improvement Agreement form" in the OSU General Conditions shall mean this CM/GC

Contract. The CM/GC Contract shall include all exhibits, as listed in the Table of Contents, attached hereto, which by this reference are incorporated herein. It is the intent of the Owner and CM/GC that the Contract Documents include all items necessary for proper execution and completion of the Work. Work not included in the Contract Documents, but reasonably inferable from the Contract Documents, will be included as part of the Work. Words and abbreviations that have well-known technical or trade meanings are used in the Contract Documents in accordance with such recognized meanings.

- 2.2 Effective Date.** The Contract shall become effective on the first date on which every party has signed this CM/GC Contract.
- 2.3 The Contract; Order of Precedence.** This CM/GC Contract, including all exhibits identified herein and by this reference incorporated in and made a part of this CM/GC Contract, together with the other Contract Documents, form the entire agreement between the parties. Except as expressly otherwise provided herein, the order of precedence of the Contract Documents is established in Section A.3 of the OSU General Conditions, if there are inconsistent or conflicting terms among the Contract Documents.

ARTICLE 3

WORK OF THE CONTRACT

- 3.1 Preconstruction Phase Services.** The CM/GC agrees to provide all of the Preconstruction Phase Services described below on an ongoing basis in support of, and in conformance with, the time frames described in the Request for Qualifications. Commencement of the Construction Phase shall not excuse CM/GC from completion of the Preconstruction Phase Services, if such services have not been fully performed at commencement of the Construction Phase. Preconstruction Phase Services shall include CM Services performed during the Preconstruction Phase.
- 3.1.1** The CM/GC shall provide a preliminary evaluation of the Owner's program and budget requirements, each in terms of the other.
- 3.1.2** The CM/GC shall provide the following services relating to design and preconstruction tasks:
- (a) The CM/GC shall consult with, advise, assist, and provide recommendations to the Owner and the design team on all aspects of the planning and design of the Work.
 - (b) The CM/GC shall jointly schedule and attend regular meetings with the Architect and Owner's Authorized Representative. The CM/GC shall consult with the Owner and Architect and Owner's Authorized Representative regarding site use and improvements, and the selection of materials, building systems and equipment.

- (c) The CM/GC shall provide recommendations on construction feasibility; actions designed to minimize adverse effects of labor or material shortages; time requirements for procurement, installation and construction completion; and factors related to construction cost including estimates of alternative designs or materials, preliminary budgets and possible economies.
- (d) The CM/GC shall review in-progress design documents, including the documents generally described in the industry as Schematic Development Documents, Design Development Documents, and Construction Documents and provide input and advice on construction feasibility, alternative materials, known inconsistencies, ambiguities, or errors, and availability, especially before it provides its proposed GMP and GMP Supporting Documents. CM/GC shall review these completed Schematic Development Documents, Design Development Documents, and Construction Documents and timely suggest modifications to improve completeness and clarity.

3.1.3 The CM/GC shall provide the following services related to the Project schedule:

- (a) The CM/GC shall prepare, and periodically update, a preliminary Project schedule for the Architect's and Owner's Authorized Representative's review and the Owner's Authorized Representative's approval.
- (b) The CM/GC shall coordinate and integrate the preliminary Project schedule with the services and activities of the Owner, Architect, and CM/GC. As design proceeds, CM/GC shall update the preliminary Project schedule to indicate proposed activity sequences and durations, milestone dates for receipt and approval of pertinent information, submittal of a GMP proposal, preparation and processing of shop drawings and samples, delivery of materials or equipment requiring long-lead time procurement, and Owner's occupancy requirements showing portions of the Project having occupancy priority, provided that the date(s) of Substantial Completion shall not be modified without Owner's prior written approval. If preliminary Project schedule updates indicate that previously approved schedules may not be met, the CM/GC shall make appropriate recommendations to the Owner's Authorized Representative and Architect. Consistent with the requirements set forth in Section H.2.1 of the OSU Supplemental General Conditions To The Public Improvement General Conditions, SG-4, CM/GC shall prepare the initial as-planned Construction Schedule for the Owner's acceptance by or before the pre-construction conference.

3.1.4 The CM/GC shall make recommendations to Architect and Owner's Authorized Representative regarding the phased issuance of Plans and Specifications to facilitate phased construction of the Work, if such phased construction is appropriate for the Project, taking into consideration such factors as economics, time of performance, availability of labor and materials, and provisions for temporary facilities.

3.1.5 The CM/GC shall provide the following services relating to cost estimating:

- (a) The CM/GC shall prepare, for the review by the Architect, Owner's Authorized Representative and Owner, a preliminary cost estimate utilizing area, volume or similar conceptual estimating techniques.
- (b) When Schematic Design Documents have been prepared by the Architect and approved by the Owner, the CM/GC shall prepare for the review of the Architect and Owner's Authorized Representative and approval of the Owner, a more detailed estimate with supporting data. During the preparation of the Design Development Documents, the CM/GC shall update and refine this estimate at appropriate intervals agreed to by the Owner, Architect and Owner's Authorized Representative and CM/GC.
- (c) When Design Development Documents have been prepared by the Architect and approved by the Owner, the CM/GC shall prepare a detailed estimate with supporting data for review by the Architect and Owner's Authorized Representative and approval by the Owner. During the preparation of the Construction Documents, the CM/GC shall update and refine this estimate at appropriate intervals agreed to by the Owner, Architect and Owner's Authorized Representative and CM/GC.
- (d) If any estimate submitted to the Owner exceeds previously approved estimates or the Owner's budget, the CM/GC shall make appropriate written recommendations to the Architect and Owner's Authorized Representative.
- (e) CM/GC shall notify the Owner and the design team immediately, in writing, if any construction cost estimate appears to be exceeding the Target GMP as identified on the title page of this Agreement.
- (f) The CM/GC otherwise shall work with the Architect and Owner to develop a GMP within the Target GMP Range and within Owner's schedule. The CM/GC shall notify the Architect and Owner's Authorized Representative when the Design Documents being developed by the Architect deviate from the Target GMP Range. The CM/GC shall provide the Owner with detailed VE, as that term is defined herein, evaluations, and recommendations to modify the Project design and Design Documents to correspond to the Target GMP Range and scheduled Substantial Completion Date(s).

3.1.6 The CM/GC shall perform the following services relating to Subcontractors and suppliers:

- (a) The CM/GC shall seek to develop Subcontractor and supplier interest in the Project, consistent with applicable legal requirements, and shall furnish to the Owner's Authorized Representative and Architect for their information a list of possible Subcontractors and suppliers, including suppliers who may furnish materials or equipment fabricated to a special design, from whom competitive bids, quotes, or proposals (collectively, "Offers") will be requested for each

principal portion of the Work. Submission of such list is for information and discussion purposes only and not for prequalification. The receipt of such list shall not require the Owner, Owner's Authorized Representative or Architect to investigate the qualifications of proposed Subcontractors and suppliers, nor shall it waive the right of the Owner or Architect later to object to or reject any proposed Subcontractor, supplier, or method of procurement.

- (b) The CM/GC shall provide input to the Owner and the design team regarding current construction market bidding climate, status of key subcontract markets, and other local economic conditions. CM/GC shall determine the division of work to facilitate bidding and award of trade contracts, considering such factors as bidding climate, improving or accelerating construction completion, minimizing trade jurisdictional disputes, and related issues. CM/GC shall advise Owner on subcontracting opportunities for minority/women/ESB firms.
- 3.1.7** The CM/GC shall recommend to the Owner's Authorized Representative and Architect a schedule for procurement of long-lead time items that will constitute part of the Work as required to meet the Project schedule, which shall be procured by the CM/GC upon execution of either a GMP Amendment or Early Work Amendment covering such procurement, and approval of such schedule by the Owner's Authorized Representative. The CM/GC shall expedite the delivery of long-lead time items.
- 3.1.8** The CM/GC shall work with the Owner in identifying critical elements of the Work that may require special procurement processes, such as prequalification of Offerors or alternative contracting methods, and must receive written authorization by the Owner to proceed with the selected process.
- 3.1.9** The CM/GC shall Work with the Owner and the design team to maximize energy efficiency in the Project, including without limitation providing estimating and value engineering support to the Owner's analysis and application for energy related incentive programs offered by local utilities.
- 3.1.10** The CM/GC shall work with the Owner and the design team to facilitate changes to the Project necessary to allow incorporation of works of art from the Project's 1% for Art program into the design and construction of the building. Owner's cost of the art objects is not included in the Cost of the Work or the GMP, but CM/GC's costs relating to facilitating changes to accommodate the handling and installation of the art are part of the Cost of the Work and are included in the GMP.
- 3.2 Construction Phase Services.**
- 3.2.1** Upon execution of an Early Work Amendment or GMP Amendment, the CM/GC shall provide Construction Phase Services as provided in the Contract Documents, including without limitation providing and paying for all materials, tools, equipment, labor and professional and non-professional services, and performing all other acts and supplying all other things necessary to fully and properly perform and complete the Work, as required by the Contract Documents, to furnish to Owner a complete, fully functional

Project, capable of being legally occupied and fully used for its intended purposes upon completion of the Contract (or, as to an Early Work Amendment, to furnish such Work as is described in the Early Work Amendment). Construction Phase Services shall include CM Services performed during the Construction Phase.

- 3.2.2** Notwithstanding any other references to Construction Phase Services in this CM/GC Contract, the Contract shall include Preconstruction Phase Services only unless (i) the parties execute a GMP Amendment or (ii) the parties execute an Early Work Amendment, defined below.
- 3.2.3** The parties may execute one or more Early Work Amendments identifying specific Construction Phase Services that must be performed in advance of establishment of the GMP, without exceeding a not-to-exceed budget, a not-to-exceed guaranteed maximum price, or a fixed price ("Early Work Price") to be stated in such Amendment, with such Amendment including all necessary approvals where required. If the Early Work Price is a not-to-exceed budget, then CM/GC shall be obligated to perform the Early Work only to the extent that the Cost of Work, defined herein, together with the CM/GC Fee, does not exceed the Early Work Price; however if CM/CG performs Early Work with a cost in excess of the Early Work Price the CM/GC shall pay such excess cost without reimbursement. If one or more Early Work Amendments are executed, the CM/GC shall diligently continue to work toward development of a GMP Amendment acceptable to Owner, which shall incorporate the Early Work Amendments. If Owner thereafter terminates the Contract prior to execution of a GMP Amendment, the provisions of Section J.5 of the OSU General Conditions for Public Improvement Contracts shall apply.
- 3.2.4** Prior to commencement of the Construction Phase, and in any event not later than mutual execution of the GMP Amendment, CM/GC shall provide to Owner a full performance bond and a payment security bond as required by Section G of the OSU General Conditions for Public Improvement Contracts in the amount of the GMP. If an Early Work Amendment is executed, CM/GC shall provide such bond in the amount of the Early Work Price under the Early Work Amendment not later than mutual execution of the Early Work Amendment. CM/GC shall provide to Owner additional or replacement bonds at the time of execution of any subsequent Early Work Amendment or GMP Amendment, in each case prior to execution of the Amendment and the supplying of any labor or materials for the prosecution of the Work covered by the Amendment, and in each case in a sufficient amount so that the total bonded sum equals or exceeds the total Early Work Price or the GMP, as the case may be. In the event of a Scope Change that increases the GMP, CM/GC shall provide to Owner an additional or supplemental bond in the amount of such increase prior to performance of the additional Work.
- 3.2.5** Without diminishing the CM/GC's obligation to meet all requirements of this Contract, the CM/GC agrees that its four most important requirements are as follows:
- .1** to achieve Substantial Completion of all or part of the Work on or before the dates set forth in the initial as-planned schedule prepared by the CM/GC and accepted by the Owner;

- .2 to minimize the Cost of the Work and to use its best efforts to complete the Work within the GMP;
 - .3 to complete the Work with the quality required by the Contract Documents; and
 - .4 to maintain the highest standards of safety on the Project site.
- 3.3 Construction Management (CM) Services.** Throughout the Preconstruction Phase and Construction Phase of the Project, the CM/GC shall provide CM Services, generally consisting of coordinating and managing the building process as an independent contractor, in cooperation with the Owner, Owner's Authorized Representative, Architect and other designated Project consultants (the "Construction Principals"). CM Services shall include, but are not limited to:
- 3.3.1** Providing all Preconstruction Phase Services described above;
 - 3.3.2** Developing and delivering schedules, preparing construction estimates, performing constructability review, analyzing alternative designs, studying labor conditions, coordinating and communicating the activities of the Construction Principals throughout the Construction Phase to all Construction Principals;
 - 3.3.3** Continuously monitoring the Project schedule and recommending adjustments to ensure completion of the Project in the most expeditious manner possible;
 - 3.3.4** Working with the Owner, Owner's Authorized Representative, and the Architect to analyze the design, participate in decisions regarding construction materials, methods, systems, phasing, and costs, and suggest modifications to achieve the goals of providing the Owner with the highest quality Project within the budget, GMP and schedule;
 - 3.3.5** Providing Value Engineering ("VE") services ongoing through the Project. CM/GC shall develop cost proposals, in the form of additions to or deductions from the GMP, including detailed documentation to support such adjustments and shall submit such proposals to Owner for its approval. CM/GC shall actively participate in a formal VE study anticipated to be held at the end of the Design Development phase. CM/GC acknowledges that VE services are intended to improve the value received by Owner with respect to cost reduction or life cycle of the Project;
 - 3.3.6** Reviewing, directing, and supervising construction of the Work;
 - 3.3.7** Holding and conducting periodic meetings with the Owner and the Architect to coordinate, update and ensure progress of the Work;
 - 3.3.8** Submitting monthly written report(s) to the Owner's Authorized Representative. Each report shall include, but shall not be limited to, Project updates including (i) actual costs and progress for the reporting period as compared to the estimate of costs; (ii) explanations of significant variations; (iii) work completed; (iv) work in progress; (v) changes in the work; and (vi) other information as determined to be appropriate by the

Owner. Oral or written updates shall be provided to the Owner as deemed appropriate by the CM/GC or as requested by the Owner;

- 3.3.9 Maintaining a daily log containing a record of weather, Subcontractors working on the site, number of workers, Work accomplished, problems encountered, safety violations and incidents of personal injury and property damage, and other similar relevant data as the Owner may reasonably require. The log shall be available to the Owner and Architect on request;
- 3.3.10 Developing and implementing a system of cost control for the Work acceptable to Owner's Authorized Representative, including regular monitoring of actual costs for activities in progress and estimates for uncompleted tasks and proposed changes. The CM/GC shall identify variances between actual and estimated costs and report the variances to the Owner and Architect at regular intervals;
- 3.3.11 Cooperating with any and all consultants and separate contractors hired by Owner;
- 3.3.12 At Owner's request, cooperating and performing warranty and inspection Work for the Project through the expiration date of the applicable warranty period;
- 3.3.13 Assisting Owner with start-up of the Project. Such start-up may occur in phases due to phased occupancy;
- 3.3.14 Incorporating commissioning and inspection agents' activities into the Project schedule and coordinating Subcontractors required to participate in the commissioning and inspection process;
- 3.3.15 Performing all other obligations and providing all other services set forth in the Contract Documents; and performing all other acts and supplying all other things necessary to fully and properly perform and complete the Work as required by the Contract. It is the CM/GC's responsibility to ensure that all Subcontractors and suppliers, including sub-subcontractors at every tier, performing any portion of the Work are familiar with all the terms and conditions of the Contract Documents and that their performance is in accordance therewith.

ARTICLE 4 RELATIONSHIP AND ROLES OF THE PARTIES

- 4.1 **Independent Contractor.** The CM/GC is an independent contractor and not an officer, employee, or agent of Owner as those terms are used in ORS 30.265.
- 4.2 **Performance of Work.** The CM/CG covenants with Owner to cooperate with the Architect and Owner's Authorized Representative and utilize the CM/GC's professional skill, efforts and judgment in furthering the interests of Owner; to perform all Work, without limitation, in accordance with the recognized standards of construction and construction management industry practices; to furnish efficient business administration and supervision; to furnish at all times an adequate supply of workers and materials; and to perform the Work in conformance with the terms and conditions of the Contract

Documents and in an expeditious and economical manner consistent with the interests of Owner. Consistent with its Standard of Care, the CM/GC shall furnish construction administration and management services and use the CM/GC's expertise and best efforts to perform the Work in an expeditious and economical manner and in furtherance of the Owner's interests ("CM/GC's Standard of Care").

- 4.3 Design Consultants.** Owner has a separate contract with the Architect related to the Project. Both the CM/GC and the Architect shall be given direction by Owner through Owner's Authorized Representative. The CM/GC agrees to support Owner's efforts to create a collaborative and cooperative relationship among the CM/GC, Architect, other Project consultants, and Owner's Authorized Representative.
- 4.4 Forms and Procedures.** The Owner has developed or may develop procedures and forms for the administration and tracking of the Contract. The CM/GC agrees to abide by those procedures and use those forms.
- 4.5 CM/GC's Project Staff.** The CM/GC's Project staff shall consist of the following personnel:
- 4.5.1 Project Manager and Assistant Project Manager:** _____ shall be the CM/GC's Project Manager and _____ shall be CM/GC's Assistant Project Manager and one or both will supervise and coordinate all Construction Phase and Preconstruction Phase Services of CM/GC and participate in all meetings throughout the Project term unless otherwise directed by Owner. CM/GC represents that each of the Project Manager and Assistant Project Manager has authority to execute Change Orders and Contract Amendments on behalf of CM/GC.
- 4.5.2 Job Superintendent:** If Construction Phase Services are requested and accepted by Owner, _____ shall be the CM/GC's on-site job superintendent throughout the Project term.
- 4.6 Key Persons.** The CM/GC's personnel identified in Article 4.5, and any other personnel identified by name in CM/GC's Proposal are Key Persons and shall not be replaced, reassigned, or assigned to additional projects during the Project without the written permission of Owner, which shall not be unreasonably withheld. If Key Persons die, become disabled, or otherwise leave the employ of the CM/GC, prior to completion of the Work, the CM/GC shall provide a replacement with another individual of comparable education and experience, and, if possible, provide the Owner with written notice of substitution at least 30 Days (or such shorter period as permitted by Owner) prior to the intended time of substitution. When replacements have been approved by Owner, the CM/GC shall, when possible, provide a transition period of at least 10 Business Days during which the original and replacement personnel shall be working on the Project concurrently. Once a replacement for any of these staff members is authorized, further replacement shall not occur without the written permission of Owner. The Owner shall have, in its sole discretion, the right to request the dismissal of the CM/GC's supervisors or any other personnel employed by the CM/GC and assigned to the Project or its Subcontractors of any tier and shall have approval rights over any such replacement

supervisors with such approval not to be unreasonably withheld. The CM/GC shall immediately comply with any such request by the CM/GC.

ARTICLE 5

DATE OF COMMENCEMENT; SUBSTANTIAL AND FINAL COMPLETION

- 5.1 Notice to Proceed.** If Construction Phase Services are added to the Contract as set forth in Article 3.2, then a notice to proceed will be issued by Owner to begin the designated or full Construction Phase Services (“Notice to Proceed”). It is anticipated that the Notice to Proceed will be issued on or about _____, 20___. A separate Notice to Proceed shall be issued for any and every Early Work Amendment.
- 5.2 Completion of Project.** The CM/GC shall achieve Substantial Completion of the Work not later than _____, and shall achieve Final Completion not later than 90 Days after the earlier of (i) Substantial Completion or (ii) the required date for Substantial Completion. Owner shall have the right to take possession and occupancy of the Project in phases, and the CM/GC agrees that such partial occupancy shall not be grounds for adjustment of the GMP or the Substantial or Final Completion Dates.
- 5.3 Time is of the Essence.** All Substantial Completion Date(s) and time limits stated in the Contract Documents are of the essence.
- 5.4 Time Extensions.** The CM/GC agrees any entitlement to Contract Time extensions to the Substantial Completion Date(s) or Final Completion are limited by Section D.3 of the OSU General Conditions.

ARTICLE 6

FEES, CONTRACT SUM AND GMP

- 6.1 Fees; Contract Sum; GMP.** Owner shall pay CM/GC the Preconstruction Fee described in Article 6.2. In addition, for each Early Work Amendment executed by CM/GC and Owner, Owner shall pay CM/GC, as payment for the Early Work, an amount equal to the sum of the CM/GC Fee attributable to the Early Work, and the actual cost of all Early Work completed and accepted by Owner, but not exceeding the Early Work Price.

If a GMP Amendment is executed, Owner shall pay CM/GC, as payment for the Work, the “Contract Sum” which shall equal the sum of the Preconstruction Fee, the CM/GC Fee, the actual cost of the Work including any Early Work, but not exceeding the GMP.

The GMP shall be determined in accordance with the formula set forth below and as described in Article 6.3. The "Cost of the Work" is defined in Article 8. Costs in excess of the GMP shall be paid by the CM/GC without reimbursement by Owner. Changes to the GMP shall only be authorized by Amendment or Change Order that includes any necessary OSU or OSU General Counsel approvals.

Preconstruction Fee	+	CM/GC Fee	+	Estimated Cost of the Work (Est. COW) = GMP*
Cost Reimbursement		___ % of Est. COW		Includes CM/GC's Contingency and the
\$ _____ Maximum		Becomes Lump Sum		Maximum Cost for GC Work

*Formula assumes no Early Work is performed.

6.2 Preconstruction Fee. The Preconstruction Fee shall be payable to CM/GC on a cost reimbursement basis up to a maximum sum of \$ _____, which shall cover constructability review, value engineering, cost estimating, development of GMP, and all other Preconstruction Phase Services, as described in Article 3. If CM/GC's costs for provision of Preconstruction Phase Services exceed the maximum Preconstruction Fee, CM/GC shall pay such additional cost without reimbursement. CM/GC shall not be entitled to any CM/GC Fee upon the Preconstruction Fee. Owner shall pay the Preconstruction Fee on a cost-reimbursement basis with each application for payment during the Preconstruction Phase. If the total actual Preconstruction Fee is less than the maximum Preconstruction Fee used for the CM/GC's initial calculation of the GMP as provided above, the GMP shall be reduced by the difference; provided that Owner may direct instead that any unapplied portion of the maximum Preconstruction Fee be applied to Construction Phase Services, in which case the GMP shall not be reduced by the portion so applied. Except to the extent the parties may expressly agree to the contrary in the GMP Amendment, no Preconstruction Fee or other fee, compensation or reimbursement shall be payable to CM/GC with respect to Preconstruction Services performed after execution of the GMP Amendment.

6.3 Establishment of CM/GC Fee; Adjustments to CM/GC Fee.

6.3.1 The "CM/GC Fee" shall be a fixed dollar lump sum to be identified in the GMP Amendment, and shall be calculated as ____% of the Estimated Cost of the Work at the time of establishment of the GMP. In making such calculation, the Estimated Cost of the Work shall exclude the Preconstruction Fee, the CM/GC Fee itself, and any other cost or charge which this CM/GC Contract states is not to be included in calculating the CM/GC Fee, but shall include Allowances, selected alternates, Maximum Not-to-Exceed Cost for GC Work, and reasonable CM/GC contingencies as designated in the GMP Supporting Documents. The CM/GC Fee is inclusive of profit, overhead, and all other indirect or non-reimbursable costs. No additional markup will be paid to the CM/GC for change order or force account work or for subcontracted labor or materials, notwithstanding anything to the contrary in the OSU General Conditions. Owner shall pay the CM/GC Fee ratably with each application for payment during the Construction Phase. In the case of Early Work, the CM/CG Fee shall be the above percentage multiplied by the actual Cost of the Early Work, until such time as a GMP Amendment is executed, at which time such CM/GC Fee payments shall be credited against the CM/GC Fee fixed therein.

6.3.2 Notwithstanding any provision of Section D.1.3 of the OSU General Conditions to the contrary, and unless the parties agree in writing to the contrary, any Amendment or Change Order that increases or decreases the GMP shall adjust the CM/GC Fee then in effect by the multiplying the percentage shown in Article 6.3.1 by the change in the Estimated Cost of the Work reflected in such approved Amendment or Change Order. In addition, if the Contract is terminated for any reason prior to full completion of the Work (including, without limitation, termination during or following performance of Early Work), the CM/GC Fee shall be limited to the total CM/GC Fee multiplied by the percentage of Work completed and accepted at the time of termination. The CM/GC Fee

shall not be subject to adjustment for any other reason, including, without limitation, schedule extensions or adjustments, Project delays, unanticipated costs, or unforeseen conditions.

6.4 Determination of GMP.

6.4.1 CM/GC shall deliver to Owner a proposed GMP and GMP Supporting Documents at a time designated by Owner during the Preconstruction Phase. If any actual subcontract Offers are available at the time the GMP is being established, CM/GC shall use those subcontract Offers in establishing the GMP.

6.4.2 As the Plans and Specifications may not be developed to the stage of biddable design documents at the time the GMP proposal is prepared, the CM/GC shall provide in the GMP for further development of the Plans and Specifications by the Architect that is consistent with the Contract Documents and reasonably inferable therefrom. Such further development does not include such things as changes in scope, systems, kinds and quality of materials, finishes or equipment, all of which, if required, shall be incorporated by Change Order or Amendment with a corresponding GMP adjustment.

6.4.3 The CM/GC shall include with its GMP proposal a written statement of its basis (the "GMP Supporting Documents"), which shall include:

(a) A list of the Plans and Specifications, including all addenda thereto and the conditions of the Contract, which were used in preparation of the GMP proposal.

(b) A list of allowances and a statement of their basis.

(c) A list of the clarifications and assumptions made by the CM/GC in the preparation of the GMP proposal to supplement the information contained in the Plans and Specifications.

(d) The proposed GMP, including a statement of the estimated cost organized by trade categories, allowances, contingency, and other items and the associated fees that comprise the GMP.

(e) The Date of Substantial Completion upon which the proposed GMP is based, and a schedule of the Construction Documents issuance dates upon which the date of Substantial Completion is based.

6.4.4 The CM/GC shall meet with the Owner and Architect to review the GMP proposal and the written statement of its basis. If the Owner or Architect discovers any inconsistencies or inaccuracies in the information presented, they shall promptly notify the CM/GC, who shall make appropriate adjustments to the GMP proposal, its basis or both.

6.4.5 Prior to the Owner's acceptance of the CM/GC's GMP proposal and issuance of a Notice to Proceed, the CM/GC shall not incur any cost to be reimbursed as part of the Cost of the Work, except as specifically provided in an Early Work Amendment.

- 6.4.6** The Owner shall authorize and cause the Architect to revise the Plans and Specifications to the extent necessary to reflect the agreed-upon assumptions and clarifications contained in the GMP Amendment. Such revised Plans and Specifications shall be furnished to the CM/GC in accordance with schedules agreed to by the Owner, Architect and CM/GC. The CM/GC shall promptly notify the Architect and Owner if such revised Plans and Specifications are inconsistent with the agreed-upon assumptions and clarifications.
- 6.4.7** The GMP shall include in the Estimated Cost of the Work only those taxes which are enacted at the time the GMP is established.
- 6.4.8** The Estimated Cost of the Work shall include the CM/GC's contingency, a sum established by the CM/GC for the CM/GC's exclusive use to cover additional development of Plans and Specifications and unanticipated costs and unforeseen conditions which are properly reimbursable as Cost of the Work but which are not the basis for a Change Order.
- 6.4.9** The CM/GC shall work with the Architect and Owner to identify and confirm components and systems not specifically shown but required for a complete, fully functional Project. Owner will direct the Architect to complete the final Construction Documents in accordance with the Project scope agreed upon by all parties at the time the GMP is established.
- 6.4.10** Notwithstanding the level of detail represented in the GMP Supporting Documents, the CM/GC shall represent and warrant, at the time that it submits the GMP, that the GMP includes the entire cost of all components and systems required for a complete, fully functional facility.
- 6.4.11** In developing the GMP, the CM/GC shall include and identify such contingencies within the GMP as may be necessary to pay for unanticipated costs and unforeseen conditions that are required for a complete, fully functional facility.
- 6.5 Failure to Furnish an Acceptable GMP.** If the CM/GC does not furnish a GMP acceptable to Owner within Owner's Target GMP Range, or if Owner determines at any time in its sole discretion that the parties may fail to reach a timely agreement on a GMP acceptable to Owner, Owner may terminate the Contract without liability, and the CM/GC shall not receive additional compensation beyond the Preconstruction Fee under the Contract and sums due under any Early Work Amendment. Termination under this provision shall proceed under Section J.5 of the OSU General Conditions as a termination for Owner's convenience. CM/GC further agrees that Owner shall not be liable for any damages whether actual, consequential or otherwise for termination of the Contract under this provision.
- 6.6 Acceptance of GMP.** Upon acceptance of the GMP by Owner, the parties shall execute a GMP Amendment.

- 6.7 Owner Savings.** If the sum of the Preconstruction Fee, plus the CM/GC Fee, plus the actual and final Cost of the Work (the Contract Sum as defined in Article 6.1), is less than the GMP, the savings shall accrue to the Owner.
- 6.8 Allowance Work.**
- 6.8.1** CM/GC shall not perform any Allowance Work without prior written authorization to proceed, followed by execution by Owner of a Change Order approving the Specifications for the Allowance Work and the price thereof.
- 6.8.2** Owner shall be entitled to apply any Allowance line items that are not been fully expended to other line item Allowances that have been fully expended, without any resulting increase in the GMP.
- 6.8.3** CM/GC has used its best efforts to estimate the price for each line item of the Allowances included in the GMP. If the total Cost of one line item of the Allowance Work exceeds the total price for such line item of the Allowance Work, CM/GC shall immediately notify Owner, and CM/GC shall not perform any more of the Allowance Work line item in excess of such line item price until either (i) the parties agree that the additional Allowance Work will be performed within the then-current line item price without any increase in the GMP or (ii) the parties agree that the Owner will apply other unused Allowance Work funds for another line item to the line item at issue, without any resulting increase in the GMP, or (iii) a Change Order is executed to increase the GMP by the excess cost of the Allowance Work line item, or (iv) the Owner directs in writing the CM/GC to proceed with such line item Allowance Work pending resolution otherwise under this Section 6.8.3.
- 6.8.4** The Contract Sum shall not include any Allowance items not identified in the GMP Amendment or the GMP Supporting Documents until such allowance item is reduced to a fixed price by Change Order or Amendment.
- 6.8.5** If at the Final Completion of the Project, any portion of the Allowance funds remains unexpended, the GMP shall be reduced by a corresponding amount via a Change Order or Amendment.
- 6.9 Reallocating Projected Cost Underruns after Bid (Offer) Buyout.** As soon as possible after the awarding of the Work to the primary Subcontractors, CM/GC shall review projected costs and provide the Owner with a buy-out status report showing any projected cost underruns, reconciling accepted Offers and other reasonably anticipated costs, to the cost estimate used by CM/GC to establish the GMP. CM/GC shall include with its report any underlying documentation requested by Owner used to develop or support such report. CM/GC shall also consider the reduced risk associated with known subcontracting costs, and the impact that reduced risk has on the amount of the CM/GC's Contingency. The parties shall negotiate in good faith to execute a Change Order transferring an appropriate portion of any projected cost underruns to an Owner-controlled contingency fund to be held within the GMP to pay for additional costs arising from (a) any Owner-directed or approved change to the Work, (b) schedule changes that

would otherwise entitle CM/GC to an increase in the GMP, (c) Allowance items after exhaustion of all Allowances, (d) selection by Owner of more expensive alternates than those used for calculation of the GMP, (e) Owner selection of substitutions that increase the Cost of the Work, or (f) any other costs which otherwise would entitle CM/GC to an increase in the GMP. Any transfer of projected cost underruns from CM/GC's contingency to the Owner-controlled contingency fund will not affect CM/GC's obligation to furnish Owner with a complete, fully functional facility within the GMP without use of the funds transferred to the Owner-controlled contingency fund unless such funds are released by Owner for the purposes set forth in (a) through (f) of this Article 6.9. Any transfer of funds to the Owner-controlled contingency fund will not reduce the CM/GC Fee, nor will any subsequent release and use of funds from the Owner-controlled contingency fund for the purposes set forth in (a) through (f) of this Article 6.9 increase the CM/GC Fee.

ARTICLE 7 **CHANGES IN THE WORK**

- 7.1 Price Adjustments.** Adjustments to the Estimated Cost of the Work required by changes in the Work shall be determined by any of the methods listed in Section D of the OSU General Conditions, except that, unless the adjustment is based upon fixed pricing or unit pricing:
- 7.1.1** The overhead and profit markup for the CM/GC shall be limited to the CM/GC Fee adjustment, if any, permitted under Article 6.3.2 of this CM/GC Contract;
 - 7.1.2** The increase or decrease in the Estimated Cost of the Work, other than for subcontract work, shall be calculated pursuant to Articles 8 and 9 of this CM/GC Contract, instead of being based on CM/GC's Direct Costs as defined in the OSU General Conditions; and
 - 7.1.3** In calculating adjustments to subcontracts, unless the parties agree otherwise, the change shall be limited to the Subcontractor's Direct Costs plus the supplemental mark-up provided in Section D of the OSU General Conditions, and shall not be modified by Articles 8 and 9 of this CM/GC Contract.
- 7.2 Adjustments to GMP.** Adjustments to the GMP after execution of the GMP Amendment may be made only (i) in the event of Scope Changes or (ii) as otherwise expressly provided in this CM/GC Contract, and then only in accordance with the following procedure:
- 7.2.1** CM/GC shall review subsequent iterations of the Plans and Specifications as they are prepared to determine whether, in the opinion of CM/GC, they result in a Scope Change so that it can be determined if an adjustment to the GMP is warranted.
 - 7.2.2** Changes to the GMP shall be initiated by written notice by one party to the other ("GMP Change Request"). CM/GC shall deliver any such GMP Change Request to Architect and Owner's Authorized Representative promptly after becoming aware of any Scope

Change if, in CM/GC's opinion, it constitutes grounds for adjustment of the GMP. Any GMP Change Request shall include a proposal as to the appropriate GMP adjustment with respect to the Scope Change at issue.

- 7.2.3** CM/GC shall submit its GMP Change Requests as soon as possible, and CM/GC shall not be entitled to claim a GMP increase unless CM/GC submitted a GMP Change Request to Owner's Authorized Representative and to Architect within the earlier of (a) 30 Days after CM/GC has received the information constituting the basis for the claim, or (b) as to Work not yet bid or proposed, prior to submission of solicitations for such Work and as to Work already solicited, prior to commencement of the portion of the Work for which CM/GC intends to claim a Scope Change; and (c) in any event, prior to CM/GC's signing of a Change Order for the Scope Change.
- 7.2.4** Owner may, at any time, submit a GMP Change Request requesting a reduction of the GMP, which shall include Owner's basis for such request, which may include, for example, reduction of the CM/GC's Contingency after further development of the Plans and Specifications that form the basis for the original GMP Amendment, and/or unused Allowances.
- 7.2.5** CM/GC shall work with Architect to reconcile all differences in its GMP Change Request with Architect within seven Days from the date of submission of the GMP Change Request. "Reconciled" means that the CM/GC and Architect have verified that their assumptions about the various categories are the same, and that they have identified the reason for differences in the GMP Change Request and the Architect's position. CM/GC shall submit the Reconciled GMP Change Request to Owner, which submission shall be a condition to any CM/GC claim for a GMP increase.
- 7.2.6** If the Reconciled GMP Change Request is not acceptable to Owner, CM/GC agrees to work with the Owner and the Architect to provide a GMP Change Request that is acceptable to Owner.
- 7.2.7** CM/GC agrees to make all records, calculations, drawings and similar items relating to GMP Change Request available to Owner and to allow Architect and Owner access and opportunity to view such documents at CM/GC's offices. Upon Owner's reasonable notice, CM/GC shall deliver two copies of such documents to Owner and Architect at any regular meeting or at the Site.
- 7.2.8** GMP increases, if any, shall not exceed the increased Cost of the Work arising from the Scope Change (whether based on agreed fixed pricing, or the estimated Cost of the Work increase based on cost-reimbursable pricing), reconciled in accordance with the above provisions, as arising from the incident justifying the GMP increase, plus or minus the CM/GC Fee applicable to such change in the Cost of the Work.
- 7.2.9** Except as provided in this Article 7.2, adjustments to the GMP shall be reconciled in accordance with Section D of the OSU General Conditions.
- 7.3 Execution by Owner.** If Architect is not the Owner's Authorized Representative, then notwithstanding any provision in the Contract to the contrary, Architect has no authority

to execute Change Orders or Amendments on behalf of Owner, and only duly authorized personnel of Owner may do so.

ARTICLE 8
COST OF THE WORK
(To Be Reimbursed)

- 8.1 Cost of the Work.** The term "Cost of the Work" shall mean the following costs. The Cost of the Work shall include only those items necessarily and reasonably incurred by CM/GC in the proper performance of the Work and specifically identified in this Article 8, and only to the extent that they are directly related to the Project. Except for rates and costs that are stated on the attached Exhibits, the Cost of the Work, including stipulated labor burdens, equipment rates, and insurance costs, are represented by the CM/GC to be actual costs paid by the CM/GC, less all discounts, rebates, or scrap values that shall be taken by the CM/GC, subject to Article 10 of this Contract.
- 8.2 Labor Costs.**
- 8.2.1** Actual wages of construction workers directly employed by the CM/GC to perform the construction of the Work at the site.
- 8.2.2** Actual wages and salaries of the CM/GC's supervisory and administrative personnel (i) stationed at the site, or (ii) engaged at factories, workshops or on the road, in expediting the production or transportation of materials or equipment required for the Work with Owner, or otherwise engaged and off the site when specifically related to the Project, and (iii) under either clause (i) or (ii), only with Owner's prior written approval, and only for that portion of their time directly required for the Work.
- 8.2.3** Actual fringe benefit costs paid or incurred by the CM/GC for taxes, insurance, contributions, assessments and benefits required by law or collective bargaining contracts and, for personnel not covered by such contracts, customary benefits such as sick leave, medical and health benefits, holidays, vacations and pensions, provided such costs are based on wages and salaries included in the Cost of the Work under Articles 8.2.1 through 8.2.2.
- 8.3 Subcontract Costs.**
- 8.3.1** CM/GC's actual payment to Subcontractors pursuant to CM/GC's contract with such Subcontractor for the Work on the Project. No amount paid by or payable to any such Subcontractor other than the fixed or cost reimbursement price of its subcontract shall be included in the Cost of the Work, unless otherwise approved in writing by Owner.
- 8.4 Costs of Materials and Equipment Incorporated in the Work or Stored On Site.**
- 8.4.1** Costs, including transportation, of materials and equipment incorporated or to be incorporated in the completed Work.

8.4.2 Costs of materials described in the preceding Article 8.4.1 in excess of those actually installed, but required to provide reasonable allowance for waste and for spoilage. Unused excess materials, if any, shall be delivered to Owner at the completion of the Work or, at Owner's option, shall be sold, recycled, or scrapped by the CM/GC. Any sale shall be commercially reasonable and CM/GC shall provide accounting for such a sale within 15 Days of the transaction. Net amounts realized, if any, from such sales shall be credited to Owner as a deduction from the Cost of the Work. The CM/GC shall maintain a complete record of all materials and equipment purchased by the CM/GC for the Work.

8.5 Costs of Miscellaneous Equipment and Other Items; Equipment Rental Charges.

8.5.1 Costs, including transportation, installation, maintenance, dismantling and removal, of materials, supplies, temporary facilities, machinery, equipment, and hand tools not customarily owned by the construction workers, which are provided by the CM/GC at the site and fully consumed in the performance of the Work; and cost less salvage value on such items if not fully consumed, whether sold to others or retained by the CM/GC; provided that Owner at Owner's option may require that CM/GC deliver to Owner (at no charge) at the end of the Project any of such items procured for this Project. Cost for items previously used by the CM/GC shall mean fair market value. CM/GC shall charge no additional administrative or other mark-up for purchased items. The CM/GC shall document all small tools purchased for the Project via invoices in monthly billing, and shall document the disposition of small tools which have an individual price that exceeds \$100. A copy of such disposition log shall accompany the payment application whenever these items are included in the application.

8.5.2 Rental charges for temporary facilities, machinery, equipment and hand tools not customarily owned by the construction workers, which are provided by the CM/GC at the site, whether rented from the CM/GC or others, and costs of transportation, installation, minor repairs and replacements, dismantling and removal thereof. Rates and quantities of equipment rented shall be according to industry standards, shall not exceed 100% of the rental rates published from time to time in the Rental Rate Blue Book for Construction Equipment, prepared by Machinery Information Division of Primedia Information Incorporated in effect at the time of rental, shall not exceed acquisition costs, and for individual items exceeding \$10,000, will be subject to Owner's prior approval. CM/GC shall deliver to Owner a list of published rates from time to time at Owner's request. For all items rented or leased, the CM/GC shall charge Owner only the rental charge incurred by CM/GC with no additional administrative or other mark-up. CM/GC shall make efforts and use its best skills and judgment to procure equipment in the most expeditious and economical manner consistent with the interest of the Owner. Efforts shall include, but not be limited to, providing Owner with a rent/buy analysis so that Owner may elect for CM/GC to procure the item in lieu of rental if the facility at issue is expected to be rented for six months or longer. Such rent/buy analysis shall include, where available, a leasing rate commensurate with the expected term of rental of the facility at issue. Inclusions to and exclusions from rental rates will be made in accordance with American Association of Equipment Dealer standards.

8.5.3 Costs of removal of debris from the site and its legal disposal.

8.5.4 Cost of telegrams and long-distance telephone calls, communication devices, postage and parcel delivery charges, telephone service at the site and reasonable petty cash expenses of the site office, which are solely for the benefit of the Work.

8.5.5 Except for personnel who reside within one-hundred miles of the Project site, that portion of the travel and per diem subsistence expenses of the CM/GC's personnel determined by Owner to be reasonable and necessary, at Owner approved rates, incurred while traveling in discharge of duties connected with the Work. These costs do not include daily travel to and from the job site. Main office staff travel shall not be reimbursed unless approved in advance by Owner. These travel expenses shall be reimbursed at cost, but not exceeding the rates stated in Exhibit E.

8.6 Other Costs.

8.6.1 That portion of premiums for insurance directly attributable to the Contract, including the deductible for builders all/risk insurance, and payment and performance bond premiums as required by Section G of the OSU General Conditions (but excluding premiums for Subcontractor bonds unless authorized by Owner). Insurance coverages will be reimbursed at their actual cost to the CM/GC assuming there will be no Owner Controlled Insurance Program.

8.6.2 Sales, use or similar excise taxes imposed by a governmental authority which are directly related to the Work and for which the CM/GC is liable.

8.6.3 Fees and assessments for the building permit and for other permits, licenses and inspections for which the CM/GC is required by the Contract Documents to pay.

8.6.4 CM/GC deposits when the loss is caused by Owner's fault or negligence.

8.6.5 Costs of drawings, Specifications and other documents required to complete the Work, except as provided by Owner or Architect.

8.6.6 Other costs incurred in the performance of the Work if and to the extent approved in advance in writing by Owner.

8.7 Costs to Prevent Damage or Injury in Emergencies. The Cost of the Work shall also include costs which are incurred by the CM/GC in taking action to prevent threatened damage, injury or loss in case of an emergency affecting the safety of persons and property.

8.8 Cost For General Conditions Work. CM/GC shall be paid on a cost reimbursable maximum not-to-exceed price basis as payment for the GC Work, including all labor, materials, and direct and indirect costs thereof. The maximum not-to-exceed amount for GC Work shall be established in each Early Work Amendment or the GMP Amendment, as applicable. To the extent any GC Work is otherwise described above in this Article 8, CM/GC's compensation for the same is included in the Cost for GC Work and shall not otherwise be charged as Cost of the Work. (See Exhibit C). The Cost for GC Work, less 5% retainage thereon, shall be paid monthly on a reimbursable basis over the number of

months of the scheduled Construction Phase, including any period of Early Work, commencing with the first progress billing after commencement of the scheduled Construction Phase or Early Work Period. However, no adjustment in the maximum amount payable for General Conditions Work will be made if the actual construction period or Early Work period is shorter or longer than the number of months scheduled for the Construction Phase or Early Work period, unless such period is extended because of an Owner-requested delay.

ARTICLE 9
COSTS EXCLUDED FROM COST OF WORK
(Not To Be Reimbursed)

- 9.1 Costs Excluded from Cost of Work.** The following shall not be included in the Cost of the Work or otherwise:
- 9.1.1** Salaries and other compensation of the CM/GC's personnel stationed at the CM/GC's principal office or offices other than the site office except as allowed under Articles 8.2.2 and 8.2.3.
 - 9.1.2** Expenses of the CM/GC's principal office and offices other than the Project site office.
 - 9.1.3** Any overhead and general expenses, except as may be expressly included in Article 8.
 - 9.1.4** CM/GC's capital expenses, including interest on the CM/GC's capital employed for the Work.
 - 9.1.5** Rental cost of machinery and equipment, except as provided in Article 8.5.2, and only when approved in advance in writing by the Owner.
 - 9.1.6** Any cost associated with the Project not specifically and expressly described in Article 8.
 - 9.1.7** Costs due to the fault or negligence of the CM/GC, Subcontractors, suppliers, anyone directly or indirectly employed by any of them, or for whose acts any of them may be liable.
 - 9.1.8** The cost of correction of any repair work, nonconforming or defective work or warranty work.
 - 9.1.9** Merit, safety, or other incentive payments, bonuses or awards, or any expenses in connection therewith, except as provided in Article 8.
 - 9.1.10** Fines and penalties.
 - 9.1.11** Except for Early Work, the cost of Preconstruction Phase Services.
 - 9.1.12** The Cost of the Work for GC Work in excess of the maximum not-to-exceed cost established for GC Work.

9.1.13 Any costs in excess of the GMP.

9.1.14 Any cost not specifically and expressly described in Article 8 hereof.

ARTICLE 10 **DISCOUNTS, REBATES AND REFUNDS**

10.1 Discounts, Rebates, and Refunds. Cash discounts obtained on payments made by the CM/GC shall accrue to Owner. Trade discounts, rebates, refunds and net amounts received from sales of surplus materials and equipment shall accrue to Owner, and the CM/GC shall make provisions so that they can be secured. The CM/GC shall notify the Owner of provisions that will be required of the Owner to secure trade discounts, rebates, and refunds as described in this Article 10.1. If it elects to do so, the Owner shall advance such funds in a timely manner as are required to take advantage of the discounts.

10.2 Amounts Credited to Owner. Amounts which accrue to Owner in accordance with the provisions of Article 10.1 shall be credited to Owner as a deduction from the Cost of the Work.

ARTICLE 11 **SUBCONTRACTS AND OTHER CONTRACTS**

11.1 General Subcontracting Requirements.

11.1.1 Other than Work performed pursuant to Articles 11.4 or 11.5 of this CM/GC Contract, CM/GC shall subcontract the Work to Subcontractors other than the CM/GC and its Affiliates.

11.1.2 The CM/GC shall comply with OSU Standards (“OSU STD.”) 580-061-0030 and OSU STD. 580-061-0035 in all respects for the solicitation of Minority, Women and Emerging Small Business Enterprises.

11.2 CM/GC's Obligations under Subcontracts.

11.2.1 No use of a Subcontractor or supplier shall relieve the CM/GC of any of its obligations or liabilities under the Contract. Except as may expressly otherwise be provided in the Contract, the CM/GC shall be fully responsible and liable for the acts or omissions of all Subcontractors and suppliers including persons directly or indirectly employed by them. The CM/GC shall have sole responsibility for managing and coordinating the operations of its Subcontractors and suppliers, including the settlement of disputes with or between the CM/GC and any such Subcontractor or supplier.

11.2.2 The CM/GC shall include in each subcontract and require each Subcontractor to include in any lower tier subcontract, all provisions necessary to make all of the provisions of the Contract Documents, including the OSU General Conditions, fully effective as applied to Subcontractors. CM/GC shall indemnify Owner for any additional cost based on a subcontractor claim which results from the failure of CM/GC to incorporate the provisions of this CM/GC Contract in each subcontract. The CM/GC shall provide all

necessary Plans, Specifications, and instructions to its suppliers and Subcontractors to enable them to properly perform their work.

11.2.3 Retainage from Subcontractors. Except with the Owner's prior approval, payments to Subcontractors shall be subject to retainage of no more than 5%. The Owner and the CM/GC shall agree upon a mutually acceptable procedure for review and approval of payments and retainage for Subcontractors.

11.3 Subcontractor Selection.

11.3.1 Unless otherwise provided under this Article 11, the selection of all Subcontractors and suppliers shall be made by competitive Offers in a manner that will not encourage favoritism or substantially diminish competition. While not subject to the competitive procurement requirements of ORS Chapter 279C, the process shall conform to the following procedures, in general compliance with the open and competitive nature of public procurement, taking into account industry subcontracting practices.

11.3.2 CM/GC shall submit to Owner's Authorized Representative its proposed procurement documents for review and comment before they are issued for solicitation. CM/GC shall consider and respond to all Owner comments regarding any proposed Offer packages. As Offers are received, CM/GC shall submit to the Owner an Offer comparison in a mutually agreeable form together with any specific back-up documentation requested by Owner. The competitive process used to award subcontracts by the CM/GC may be monitored by the Owner's Authorized Representative; provided that such monitoring shall not excuse CM/GC from compliance with the subcontracting requirements of this Contract. CM/GC shall cooperate in all respects with Owner's monitoring. The Owner's Authorized Representative shall be advised in advance of and be given the opportunity to be present at Offer openings, and CM/GC shall provide him or her with a summary or abstract of all Offers in form acceptable to the Owner's Authorized Representative, and copies of particular Offers if requested, prior to CM/GC's selection of Offerors. Prior to opening Offers, the CM/GC agrees to disclose in writing to Owner any financial interest it has in any such Subcontractor, supplier or other contracting party whenever such Subcontractor, supplier or contracting party intends to compete on any Project work, directly or indirectly, including whether such party is an Affiliate of CM/GC.

11.3.3 The following minimum requirements apply to the Subcontract solicitation process:

- (a) Solicitations will be advertised at least 10 Days prior to opening in the Daily Journal of Commerce and at least one other newspaper specifically targeted to reach the Minority, Women and Emerging Small Business audience. CM/GC also agrees to advertise in a local community newspaper in the area in which the Project is located, in order to allow for local participation in the solicitation process.
- (b) Unless specific other prior arrangement has been made with Owner, all Offers will be written, and submitted to a specific location at a specific time. CM/GC shall time-stamp all Offers as received. Subcontractors must be qualified to

perform the Work for this Project by being appropriately registered with the State of Oregon Construction Contractors Board.

- (c) If fewer than three (3) Offers are submitted in response to any solicitation (inclusive of any Offer submitted by CM/GC), prior written approval by Owner shall be required to accept an Offer.
- (d) CM/GC may develop and implement a prequalification process for particular solicitations, followed by selection of successful Offers among those Offerors that CM/GC determines meet the prequalification standards, with Owner's prior written approval of such prequalification process.
- (e) CM/GC shall comply, and require Subcontractor compliance with, State of Oregon Bureau of Labor & Industries prevailing wage rates as specified in the RFP.
- (f) Owner may, at its sole discretion, require CM/GC to re-solicit for Offers based on the same or modified documents.
- (g) CM/GC shall review all Offers and shall work with Offerors to clarify Offers, reduce exclusions, verify scope and quantities, and seek to minimize work subsequently awarded via the Change Order process.
- (h) The CM/GC will document any and all discussions with, questions received from, or answers and responses given to, any Offeror prior to the receipt of Offers, and will ensure that any information provided by CM/GC to any Offeror that might affect Offers submitted by other Offerors is shared with all Offerors prior to the Offer submittal date, and Owner shall be entitled to inspect such documentation on request.
- (i) CM/GC shall determine the lowest Offer for each solicitation that meets CM/GC's reasonable performance standards for the components of the Work at issue; provided that if CM/GC determines it is unable to execute a suitable subcontract with such Offeror, CM/GC may, with Owner's prior approval, execute a subcontract with the second-lowest Offeror pursuant to Article 11.3.4 below.

11.3.4 Under special circumstances and only with prior written authorization by Owner, Work may be subcontracted on other than a low price basis, including without limitation, through competitive negotiation. As a condition to its authorization, Owner may require CM/GC's agreement to establish and implement qualification and performance criteria for Offerors, including a scoring system within requests for proposals. Examples include: where there are single fabricators of materials; special packaging requirements for Subcontractor work; design-build work or, where an alternative contracting method can be demonstrated to clearly benefit Owner.

11.3.5 CM/GC shall notify Owner in writing in advance before award of any proposed Subcontract, which notice shall include summaries in a form acceptable to Owner of all

Offers received for the Subcontract at issue. Owner reserves the right to disapprove any proposed Subcontractors, suppliers and Subcontract or supply contract awards, based on legal standards of responsibility.

11.3.6 CM/GC's subcontracting records are not intended to be considered public records; provided, however, that Owner and other agencies of the State shall retain the right to audit and monitor the subcontracting process in order to protect the Owner's interests.

11.4 CM/GC Field Work.

11.4.1 The CM/GC or its Affiliate may provide CM/GC Field Work required to complete the Project with its own forces, without the necessity of subcontracting such work.

11.4.2 Except as provided in Article 11.4.1, any other portion of the Work proposed to be performed by CM/GC or any Affiliate, including without limitation provision of any materials, equipment, or supplies, shall be subject to the provisions of Article 11.5.

11.5 Subcontracting by CM/GC.

11.5.1 Except to the extent otherwise approved in advance in writing by Owner's Authorized Representative, the CM/GC or its Affiliates may submit an Offer in accordance with Article 11.3 to do Work with its own forces, provided at least 50% of the labor by such work unit is performed by employees of the CM/GC or such Affiliate. If CM/GC is selected to perform the work, the overhead and markup paid to CM/GC shall be limited to its CM/GC Fee percentage, and the markups applicable to Change Order Work set forth in the OSU General Conditions shall not apply.

11.5.2 For those items for which the CM/GC or any of its subsidiaries intends to submit an Offer, such intent must be publicly announced with the solicitation for Offers required by Article 11.3.1, and Owner notified in writing. All Offers for this work shall be delivered to Owner and publicly opened by Owner at an announced time, date, and place.

11.6 Protests. CM/GC, acting as an independent contractor, shall include in the competitive process to award all subcontracts, a protest process for Subcontractors and suppliers that are competing Offerors, which process shall be subject to approval by Owner. CM/GC shall be solely responsible for resolving the procurement protests of Subcontractors and suppliers. CM/GC shall indemnify, defend, protect and hold harmless Owner from and against any such procurement protests and resulting claims or litigation. CM/GC shall act as an independent contractor, and not an agent of Owner, in connection with any procurement protest. The provisions of this Article 11 are solely for the benefit of Owner, and do not grant any rights or remedies (including third party beneficiary rights) to any Offeror or other protester, in connection with any procurement protest or claim.

11.7 The CM/GC shall obligate each Subcontractor specifically to consent to all terms and conditions of this Contract and the OSU General Conditions and Supplemental General Conditions. All insurance provided by any Subcontractor shall be primary over and above any insurance provided by the Owner. The CM/GC shall require each

Subcontractor to enter into similar agreements with all sub-subcontractors. The CM/GC shall make available to each proposed Subcontractor, prior to the execution of the Subcontract, copies of the Contract Documents to which the Subcontractor will be bound.

ARTICLE 12 ACCOUNTING RECORDS

- 12.1 Accounting; Audit Access.** The CM/GC shall keep full and detailed accounts and exercise such controls as may be necessary for proper financial management under the Contract; the accounting and control systems shall be satisfactory to Owner. Owner and Owner's representatives, including the Oregon Secretary of State accountants and auditors, shall be afforded reasonable and regular access to the CM/GC's records, books, correspondence, instructions, drawings, receipts, subcontracts, purchase orders, vouchers, memoranda and other electronic and hard copy data relating to the CM/GC's right to payment under and the CM/GC's compliance with the terms and conditions of this Contract, and the CM/GC shall preserve these for a period of ten years after final payment, as set forth in Section B.9.2 of the OSU General Conditions, or for such longer period as may be required by law.
- 12.2 Periodic and Final Audits.** Owner may, at its discretion, perform periodic audits of the Cost of the Work and any other reimbursable costs associated with the Project. Owner intends to conduct a final audit of all Project books and records prior to the Contract closeout. The CM/GC shall cooperate fully with Owner in the performance of such audits. Disputes over audit findings or conclusions shall be subject to the process set forth in Article 14.4.

ARTICLE 13 PROGRESS PAYMENTS

- 13.1 Integration with OSU General Conditions.** The requirements of this Article 13 and Article 14 are in addition to, and not in lieu of, the requirements of Section E of the OSU General Conditions for Public Improvement Projects. In the event of conflict between the provisions of Articles 13 and 14 and Section E, the provision more favorable to Owner shall control. Without limitation, the provisions of Articles 13.3 and 13.4 shall control over the corresponding provisions of Section E.2.5 of the OSU General Conditions for Public Improvement Projects.
- 13.2 Progress Payments.** Based upon applications for payment submitted pursuant to Section E of the OSU General Conditions for Public Improvement Projects, Owner shall make progress payments on account of the Preconstruction Fee, Cost of the Work, and associated CM/GC Fee, less 5% retainage, to the CM/GC as provided below and elsewhere in the Contract Documents. A progress payment shall not be considered acceptance or approval of any Work or waiver of any defects therein.
- 13.3 Percentage of Completion.** Applications for payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the application for payment. The percentage of completion shall be the lesser of (i) the

percentage of that portion of the Work which has actually been completed; or (ii) the percentage obtained by dividing (a) the expense that has actually been incurred by the CM/GC on account of that portion of the Work for which the CM/GC has made or intends to make actual payment prior to the next application for payment by (b) the share of the GMP allocated to that portion of the Work in the Schedule of Values.

13.4 Calculation of Payment. Subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed and the calculations included in each Application for payment as follows:

- (a) Take that portion of the GMP properly allocable to completed Work as determined by multiplying the percentage of completion of each portion of the Work under the Schedule of Values by the share of the GMP allocated to that portion of the Work in the Schedule of Values. Pending final determination of cost to the Owner of changes in the Work, amounts not in dispute shall be included;
- (b) Add that portion of the GMP properly allocable to materials and equipment delivered and suitably stored and otherwise in compliance with Section E.2.3 of the OSU General Conditions;
- (c) Add the CM/GC's Fee. The portion of the CM/GC's Fee payable shall be an amount that bears the same ratio to CM/GC Fee as sum of the amounts in the two preceding Clauses bears to the estimated probable Cost of the Work described in Article 6.1.2, but in no event causing total CM/GC Fee payments to exceed the total CM/GC Fee;
- (d) Subtract the aggregate of previous payments made by and retained by the Owner;
- (e) Subtract the shortfall, if any, indicated by the documentation required to substantiate prior applications for payment, or resulting from errors subsequently discovered by the Owner in such documentation;
- (f) Subtract any amounts for which the Owner's Authorized Representative has withheld or denied payment as provided in the Contract Documents; and
- (g) Subtract 5% retainage on the entire progress payment.

ARTICLE 14 **FINAL PAYMENT**

14.1 Final Payment Accounting. CM/GC shall submit to Owner a final detailed accounting of the Cost of the Work together with CM/GC's final application for payment.

14.2 Calculation of Final Payment. The amount of the final payment shall be calculated as follows:

- 14.2.1** Take the sum of the CM/GC Fee, plus the Preconstruction Fee, plus the actual Cost of the Work substantiated by the CM/GC's final accounting. Said sum shall not exceed the GMP.
- 14.2.2** Subtract amounts, if any, for which the Owner's Authorized Representative withholds, in whole or in part, approval of payment.
- 14.2.3** Subtract the aggregate of previous payments made by Owner to CM/GC. If the aggregate of previous payments made by Owner exceeds the amount due the CM/GC, the CM/GC shall reimburse the difference to Owner within 30 Days with interest at the rate applicable to Owner payments under the OSU General Conditions.
- 14.3 Final Payment Review.** Owner or its accountants will review and report in writing on the CM/GC's final accounting within 30 Days after delivery of the final accounting by the CM/GC. Based upon such Cost of the Work as Owner or Owner's accountants report to be substantiated by the CM/GC's final accounting, and provided the other conditions of the Contract have been met, the Owner's Authorized Representative will, within 10 Days after receipt of the written report of Owner's accountants, either issue to Owner an approval of CM/GC's final application for payment with a copy to the CM/GC or notify the CM/GC and Owner in writing of the Owner's Authorized Representative's reasons for withholding approval of any part of the application for payment, which disapproval shall include Owner's Authorized Representative's estimate of the amount that is due CM/GC under the application for payment.
- 14.4 Payment Disputes.** If Owner's accountants report the Cost of the Work as substantiated by the CM/GC's final accounting to be less than claimed by the CM/GC or if Owner's Authorized Representative declines to approve any duly submitted payment request by CM/GC, the CM/GC shall be entitled to demand a review by the Owner's highest contracting authority of the disputed amount. Such demand shall be made by the CM/GC within 30 Days after the CM/GC's receipt of a copy of the rejection of the application for payment; failure to demand additional review within this 30-Day period shall result in the substantiated amount reported by Owner's accountants becoming binding on the CM/GC. In addition, If Owner or any other state agency performs a subsequent audit of the Cost of the Work and determines any item therein to have been unsubstantiated or that CM/GC was otherwise overpaid, CM/GC shall have 30 Days after delivery of request for reimbursement by Owner to demand additional review by Owner's highest contracting authority; failure to make such demand within this 30 Day period shall result in the requested reimbursement becoming unconditionally due and payable by CM/GC. If CM/GC timely submits a protest to the Agency's highest contracting authority, CM/GC's Claim shall be subject to the claims review process in Section D.3 of the OSU General Conditions. Pending a final resolution, Owner shall pay the CM/GC the amount of the application for payment approved by the Owner's Authorized Representative.
- 14.5 Effect of Payment.** Neither approval of an application for payment, a progress payment, release of retainage, final payment, or partial or entire use or occupancy of the Project by the Owner shall constitute acceptance of work not conforming to the Contract Documents, or waiver of the right to assert overpayment.

ARTICLE 15
TERMINATION OR SUSPENSION

- 15.1 Owner's Right to Terminate Prior to Execution of GMP Amendment.** Prior to execution by both parties of the GMP Amendment, the Owner may terminate the Contract at any time without cause. Upon such termination, the amount to be paid to the CM/GC shall not exceed the Preconstruction Fee payable to the date of termination, together with amounts payable for Early Work if an Early Work Amendment has been executed. If Owner terminates for convenience during the Preconstruction Phase, Owner shall be entitled to copies of, and shall have the right to use, all work product of CM/GC and its Subcontractors performed to the date of termination, and CM/GC shall deliver copies of the same to Owner on request.
- 15.2 Owner's Termination for Convenience after GMP Amendment.** After the GMP Amendment is executed by both parties, the Contract may be terminated by Owner without penalty for convenience pursuant to Section J.5 of the OSU General Conditions in which case CM/GC shall be entitled to payment of the amount stated in Article 15.1, together with the actual Cost of the Work completed, plus the CM/GC's Fee prorated based on the actual Cost of the Work completed prior to the date of termination, but in any event not in excess of the GMP.
- 15.3 Owner's Termination for Cause.** In the event of termination of this Agreement by Owner for cause pursuant to Section J.4 of the OSU General Conditions, the amount, if any, to be paid to the CM/GC after application of the OSU General Conditions and Owner's rights at law shall not exceed the amount the CM/GC would be entitled to receive under Article 15.2.
- 15.4 CM/GC Termination for Cause.** CM/GC acknowledges that disputes regarding payments and Change Orders may occur as part of the CM/GC process, and that Owner's declining to pay disputed amounts shall not be grounds for suspension of the Work or termination for cause by CM/GC. If CM/GC terminates the Contract for Owner's material breach, the amount to be paid to CM/GC shall not exceed the amount CM/GC would have been entitled to receive under Article 13 above through termination and demobilization from the Project, with the CM/GC Fee prorated based on the actual Cost of the Work through the date of termination.
- 15.5 Assignment of Subcontracts.** Each subcontract and supply contract for any portion of the Work is hereby irrevocably assigned by the CM/GC to the Owner, provided that such assignment is effective only after termination of the Contract by the Owner, and only for those subcontracts and supply contracts which the Owner accepts by notifying the Subcontractor/supplier and CM/GC in writing. For those subcontracts and supply contracts accepted by Owner, if the Work has been suspended for more than 30 Days, the Subcontractor's/supplier's compensation shall be equitably adjusted for increases in cost resulting from the suspension. CM/GC shall include a provision in each subcontract and supply agreement whereby the Subcontractor/supplier acknowledges Owner's rights under this Article 15.5. With respect to any subcontracts/supply contracts that are not

accepted by Owner, the provisions of Section J.6.1 of the OSU General Conditions shall apply.

ARTICLE 16
REPRESENTATIONS, WARRANTIES AND CERTIFICATIONS

- 16.1 Representations and Warranties.** CM/GC represents and warrants to Owner as of the effective date of the Contract:
- 16.1.1** it is qualified to do business as a licensed general contractor under the laws of the State of Oregon is registered to do business in Oregon, and has all requisite corporate power and corporate authority to carry on its business as now being conducted;
 - 16.1.2** it has full corporate power and corporate authority to enter into and perform the Contract and to consummate the transactions contemplated hereby; CM/GC has duly and validly executed and delivered this CM/GC Contract to Owner and that the Contract constitutes the legal, valid and binding obligation of CM/GC, enforceable against CM/GC in accordance with its terms, except as enforceability may be limited or affected by applicable bankruptcy, insolvency, reorganization, moratorium or other similar laws affecting creditors' rights generally and by general principles of equity (regardless of whether enforceability is considered in a proceeding in equity or at law);
 - 16.1.3** CM/GC's execution and delivery of this CM/GC Contract and the consummation of the transactions contemplated hereby will not conflict with or result in a material breach of any terms or provisions of, or constitute a material default under, (i) CM/GC's Articles of Incorporation or Bylaws; (ii) any note, bond, mortgage, indenture, license, lease, contract, commitment, agreement or other instrument or obligation to which CM/GC is a party or by which CM/GC may be bound; or (iii) any statute, order, writ, injunction, decree, rule or regulation applicable to CM/GC;
 - 16.1.4** no material consent, approval, authorization, declaration or other order of, or registration or filing with, any court or regulatory authority or any third person is required for the valid execution, delivery and performance of the Contract by CM/GC or its consummation of the transactions contemplated hereby;
 - 16.1.5** there is no action, proceeding, suit, investigation or inquiry pending that questions the validity of the Contract or that would prevent or hinder the consummation of the transactions contemplated hereby; and
 - 16.1.6** the CM/GC's Project Manager and Assistant Project Manager identified in Article 4 are duly appointed representatives and each has the authority to bind the CM/GC to any and all duties, obligations and liabilities under the Contract Documents and any Amendments thereto.

ARTICLE 17
MISCELLANEOUS

- 17.1 Headings.** The headings used in the CM/GC Contract are solely for convenience of reference, are not part of the Contract and are not to be considered in construing or interpreting the Contract.
- 17.2 Merger.** The Contract Documents constitute the entire contract between the parties. No waiver, consent, modification or change of terms of the Contract shall bind either party unless in writing and signed by the party to be bound. Such waiver, consent, modification or change, if made, shall be effective only in the specific instance and for the specific purpose given. There are no understandings, agreements, or representations, oral or written, not specified herein regarding the Contract. CM/GC, by signature of its representative, hereby acknowledges that it has read the Contract, understands it and agrees to be bound by its terms and conditions.
- 17.3 Notice; Parties' Representatives.** Except as otherwise expressly provided in the Contract Documents, any notices to be given hereunder shall be given in writing by personal delivery or mailing the same, by either United States Postal Service Registered or Certified Mail (return receipt requested and postage prepaid) or overnight courier (with all fees prepaid) to CM/GC or Owner at the address set forth below. Notice shall be deemed to be given when actually delivered at the address specified in this Article. Representatives for the CM/GC and the Owner for the purposes of notice and for other specific purposes provided for under this Agreement are:
- 17.3.1** CM/GC:
- 17.3.2** Owner: Anita Nina Azarenko, Associate Vice President for University Infrastructure and Operations, Oregon State University, 3015 SW Western Blvd, Corvallis, OR 97333
- (a) **With a Copy to:** _____, Project Manager, Capital Planning & Development, Oregon State University, 3015 SW Western Blvd, Corvallis, OR 97333
- 17.4 And with a Copy to: Construction Contracts Administration,** Oregon State University, 644 SW 13th Street, Corvallis, OR 97333-4238.
- 17.5 Legal Relations.** Nothing in this Contract shall create or is intended to create a contractual relationship with, or a cause of action in favor of, any third party against the Owner.
- 17.6 Construction Manager Performance.** The CM/GC understands and agrees that the Owner retains, at its choice, all rights under law and under the Contract Documents, including injunctive relief, specific performance, and the right to recover damages against the CM/GC caused directly or indirectly by the CM/GC's breach of the Contract Documents.

THIS CM/GC CONTRACT is executed in two original copies of which one is to be delivered to the CM/GC, and the other to Owner.

CM/GC:

Name of Firm:

Address:

CM/GC's Federal Tax I.D. #: _____

Construction Contractor's Board Registration No.:

Signature of Authorized Representative of CM/GC

Title _____

Date _____

OWNER:

Oregon State University

Michael J. Green

Title Interim Vice President for Finance and Administration

Date _____

EXHIBIT A

**OREGON STATE UNIVERSITY
GENERAL CONDITIONS FOR PUBLIC IMPROVEMENT CONTRACTS
June 30, 2017**

OREGON STATE UNIVERSITY GENERAL CONDITIONS FOR PUBLIC IMPROVEMENT CONTRACTS

June 30, 2017

INSTRUCTIONS: The attached **Oregon State University General Conditions for Public Improvement Contracts ("Public Improvement General Conditions")** apply to all designated Public Improvement contracts. Changes to the Public Improvement General Conditions (including any additions, deletions or substitutions) should only be made by attaching Public Improvement Supplemental General Conditions. The text of these Public Improvement General Conditions should not otherwise be altered.

TABLE OF SECTIONS

SECTION A **GENERAL PROVISIONS**

- A.1 DEFINITION OF TERMS
- A.2 SCOPE OF WORK
- A.3 INTERPRETATION OF CONTRACT DOCUMENTS
- A.4 EXAMINATION OF PLANS, SPECIFICATIONS, AND SITE
- A.5 INDEPENDENT CONTRACTOR STATUS
- A.6 RETIREMENT SYSTEM STATUS AND TAXES
- A.7 GOVERNMENT EMPLOYMENT STATUS

SECTION B **ADMINISTRATION OF THE CONTRACT**

- B.1 OWNER'S ADMINISTRATION OF THE CONTRACT
- B.2 CONTRACTOR'S MEANS AND METHODS
- B.3 MATERIALS AND WORKMANSHIP
- B.4 PERMITS
- B.5 COMPLIANCE WITH GOVERNMENT REGULATIONS
- B.6 SUPERINTENDENCE
- B.7 INSPECTION
- B.8 SEVERABILITY
- B.9 ACCESS TO RECORDS
- B.10 WAIVER
- B.11 SUBCONTRACTS AND ASSIGNMENT
- B.12 SUCCESSORS IN INTEREST
- B.13 OWNER'S RIGHT TO DO WORK
- B.14 OTHER CONTRACTS
- B.15 GOVERNING LAW
- B.16 LITIGATION
- B.17 ALLOWANCES
- B.18 SUBMITTALS, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES
- B.19 SUBSTITUTIONS
- B.20 USE OF PLANS AND SPECIFICATIONS
- B.21 FUNDS AVAILABLE AND AUTHORIZED
- B.22 NO THIRD PARTY BENEFICIARIES

SECTION C **WAGES AND LABOR**

- C.1 MINIMUM WAGES RATES ON PUBLIC WORKS
- C.2 PAYROLL CERTIFICATION AND FEE REQUIREMENTS, ADDITIONAL RETAINAGE
- C.3 PROMPT PAYMENT AND CONTRACT CONDITIONS
- C.4 PAYMENT FOR MEDICAL CARE
- C.5 HOURS OF LABOR

SECTION D **CHANGES IN THE WORK**

- D.1 CHANGES IN THE WORK
- D.2 DELAYS
- D.3 CLAIMS REVIEW PROCESS

SECTION E
PAYMENTS

- E.1 SCHEDULE OF VALUES
- E.2 APPLICATIONS FOR PAYMENT
- E.3 PAYROLL CERTIFICATION REQUIREMENT
- E.4 DUAL PAYMENT SOURCES
- E.5 RETAINAGE
- E.6 FINAL PAYMENT

SECTION F
JOB SITE CONDITIONS

- F.1 USE OF PREMISES
- F.2 PROTECTION OF WORKERS, PROPERTY, AND THE PUBLIC
- F.3 CUTTING AND PATCHING
- F.4 CLEANING UP
- F.5 ENVIRONMENTAL CONTAMINATION
- F.6 ENVIRONMENTAL CLEAN-UP
- F.7 FORCE MAJEURE

SECTION G
INDEMNITY, BONDING AND INSURANCE

- G.1 RESPONSIBILITY FOR DAMAGES/INDEMNITY
- G.2 PERFORMANCE AND PAYMENT SECURITY, PUBLIC WORKS BOND
- G.3 INSURANCE

SECTION H
SCHEDULE OF WORK

- H.1 CONTRACT PERIOD
- H.2 SCHEDULE
- H.3 PARTIAL OCCUPANCY OR USE

SECTION I
CORRECTION OF WORK

- I.1 CORRECTIONS OF WORK BEFORE FINAL PAYMENT
- I.2 WARRANTY WORK

SECTION J
SUSPENSION AND/OR TERMINATION OF THE WORK

- J.1 OWNER'S RIGHT TO SUSPEND THE WORK
- J.2 CONTRACTOR'S RESPONSIBILITIES
- J.3 COMPENSATION FOR SUSPENSION
- J.4 OWNER'S RIGHT TO TERMINATE CONTRACT
- J.5 TERMINATION FOR CONVENIENCE
- J.6 ACTION UPON TERMINATION

SECTION K
CONTRACT CLOSE-OUT

- K.1 RECORD DOCUMENTS
- K.2 OPERATION AND MAINTENANCE MANUALS
- K.3 COMPLETION NOTICES
- K.4 TRAINING
- K.5 EXTRA MATERIALS
- K.6 ENVIRONMENTAL CLEAN-UP
- K.7 CERTIFICATE OF OCCUPANCY
- K.8 OTHER CONTRACTOR RESPONSIBILITIES
- K.9 SURVIVAL

**SECTION A
GENERAL PROVISIONS**

A.1 DEFINITION OF TERMS

In the Contract Documents the following terms shall be as defined below:

AMENDMENT, means a writing which, when fully executed by the Parties to this Contract, constitutes a change to a Contract Document. Amendments shall be issued in accordance with the changes provisions of Section D and, if applicable, establish a Contract Price or Contract Time adjustment.

APPLICABLE LAWS, means federal, state and local laws, codes, rules, regulations and ordinances applicable to the Work and to the Contract.

ARCHITECT/ENGINEER, means the Person appointed by the Owner to make drawings and specifications and, to provide contract administration of the Work contemplated by the Contract to the extent provided herein or by supplemental instruction of Owner (under which Owner may delegate responsibilities to the Architect/Engineer), in accordance with ORS Chapter 671 (Architects) or ORS Chapter 672 (Engineers) and administrative rules adopted thereunder.

CHANGE ORDER, means a written order issued by the Owner to be later included as an Amendment. A Change Order shall not be effective until codified as an Amendment.

CLAIM, means a demand by Contractor pursuant to Section D.3 for review of the denial of Contractor's initial request for an adjustment of Contract terms, payment of money, extension of Contract Time or other relief, submitted in accordance with the requirements and within the time limits established for review of Claims in these Public Improvement General Conditions.

CONSTRUCTION CHANGE DIRECTIVE, means a written order by the Owner to the Contractor requiring a change in the Work within the general scope of the Contract Documents, issued under the changes provisions of Section D.

CONSTRUCTION SCHEDULE, means the schedule prepared by the Contractor in CPM format and approved by the Owner, and all adjustments thereto approved by the Owner, that describes sequence and timing of the Work.

CONTRACT, means the written agreement between the Owner and the Contractor comprised of the Contract Documents which describe the Work to be done and the obligations between the parties.

CONTRACT DOCUMENTS, means the Public Improvement Contract, Public Improvement General Conditions, Supplemental General Conditions if any, the accepted Offer, Plans, Specifications, Construction Change Directives, Solicitation Document and addenda thereto, Instructions to Offerors, and Supplemental Instructions to Offerors, the CM/GC's RFQ proposal, the GMP Amendment, and any other Amendment, the Construction Schedule prepared and approved in accordance with the Construction Documents, and all other required Submittals.

CONTRACT PERIOD, as set forth in the Contract Documents, means the total period of time beginning with the full execution of a Contract and, if applicable, the issuance of a Notice to Proceed and concluding upon Final Completion.

CONTRACT PRICE, means the total of the awarded Offer amount, as increased or decreased by the price of approved alternates, as indicated in the Contract Documents.

CONTRACT TIME, means any incremental period of time allowed under the Contract to complete any portion of the Work as reflected in the project schedule.

CONTRACTOR, means the Person awarded the Contract for the Work contemplated.

CPM, means a critical path method format to be used for the Construction Schedule.

DAYS, are calendar days, including weekdays, weekends and holidays, unless otherwise specified.

DIRECT COSTS, means, unless otherwise provided in the Contract Documents, the cost of materials, including sales tax, cost of delivery; cost of labor, including social security, Medicare and unemployment insurance, and fringe benefits required by agreement or custom; worker's compensation insurance; project specific insurance (including, without limitation, Builder's Risk Insurance and Builder's Risk Installation Floater); bond premiums, rental cost of equipment, and machinery required for execution of the Work; and the additional costs of field personnel directly attributable to the Work.

FINAL COMPLETION, means the final completion of all requirements under the Contract, including Contract Closeout as described in Section K but excluding Warranty Work as described in Section I.2, and the final payment and release of all retainage, if any, released.

FINAL PAYMENT, means the last payment to the Contractor, including retainage, in connection with the Work.

FORCE MAJEURE, means an act, event or occurrence caused by fire, riot, war, acts of God, nature, sovereign, or public enemy, strikes, freight embargoes or any other act, event or occurrence that is beyond the control of the party to this Contract who is asserting Force Majeure.

MWESB REPORT, means an accurate report by the Contractor to the Owner identifying all Minority, Women and Emerging Small Business (MWESB) enterprises, as those terms are defined in ORS 200.005, receiving contracts throughout the course of the Work. An initial MWESB report is required (see Section E.2.9) and MWESB Reports are required annually (see Section E.2.9) and as a condition of final payment (see Section K.1). The initial report shall include the total number of contracts and subcontracts awarded to MWESB enterprises and the dollar value of their respective contracts and subcontracts. The annual reports shall include the total number of contracts and subcontracts awarded to MWESB enterprises, the dollar value of each, and the expenditure toward each contract and subcontract during the previous twelve (12) months. The final report shall include the total number of contracts and subcontracts awarded to MWESB enterprises and the dollar value of their respective contracts and subcontracts including all Contracts and Amendments incorporated during the course of the project. The reports shall only include enterprises certified with the State of Oregon as MWESB enterprises and shall include individual identification of each enterprise as a Minority business enterprise, a Women business enterprise, and/or an Emerging Small Business Enterprise, as applicable.

NOTICE TO PROCEED, means the official written notice from the Owner stating that the Contractor is to proceed with the Work defined in the Contract Documents. Notwithstanding the Notice to Proceed, Contractor shall not be authorized to proceed with the Work until all initial Contract requirements, including the Contract, performance bond and payment bond, and certificates of insurance, have been fully executed and submitted to Owner in a suitable form.

OFFER, means a bid in connection with Instructions to Bidders or a proposal in connection with a Request for Proposals.

OFFEROR, means a bidder in connection with Instructions to Bidders or a proposer in connection with a Request for Proposals.

OVERHEAD, means those items which may be included in the Contractor's markup (general and administrative expense and profit) and that shall not be charged as Direct Cost of the Work, including without limitation such Overhead expenses as wages or salary of personnel above the level of foreman (i.e., superintendents and project managers), expenses of Contractor's offices and supplies at the job site (e.g. job trailer) and at Contractor's principal place of business and including expenses of personnel staffing the job site office and Contractor's principal place of business, and Commercial General Liability Insurance and Automobile Liability Insurance.

OWNER, means Oregon State University(OSU). Owner may elect, by written notice to Contractor, to delegate certain duties to more than one party, including without limitation, to an Architect/Engineer. However, nothing in these Public Improvement General Conditions is intended to abrogate the separate design professional responsibilities of Architects under ORS Chapter 671 or of Engineers under ORS Chapter 672.

PERSON, means a natural person or entity doing business as a sole proprietorship, a partnership, a joint venture, a corporation, a limited liability company or partnership, or any other entity possessing the legal capacity to contract.

PLANS, means the drawings which show the location, type, dimensions, and details of the Work to be done under the Contract.

PROJECT, means the development, design, construction

PUNCH LIST, means the list of Work yet to be completed or deficiencies which need to be corrected in order to achieve Final Completion of the Contract.

RECORD DOCUMENT, means the as-built Plans, Specifications, testing and inspection records, product data, samples, manufacturer and distributor/supplier warranties evidencing transfer of ownership to Owner, operational and maintenance manuals, shop drawings, Construction Change Directives, MWESB Reports, correspondence, certificate(s) of occupancy, and other documents listed in Subsection B.9.1 of these Public Improvement General Conditions, recording all Services performed.

SOLICITATION DOCUMENT, means Instructions to Bidders or Offerors or a Request for Proposal or a Request for Quotes.

SPECIFICATION, means any description of the physical or functional characteristics of the Work, or of the nature of a

supply, service or construction item. Specifications may include a description of any requirement for inspecting, testing or preparing a supply, service or construction item for delivery and the quantities or qualities of materials to be furnished under the Contract. Specifications generally will state the results or products to be obtained and may, on occasion, describe the method and manner of doing the Work to be performed. Specifications may be incorporated by reference and/or may be attached to the Contract.

SUBCONTRACT, means a contract between the Contractor and a subcontractor for the performance of a portion of the Work.

SUBCONTRACTOR, means a Person having a direct contract with the Contractor, or another Subcontractor, to perform one or more items of the Work.

SUBMITTAL, means a shop drawing, product data, sample, catalog cut, or similar item for specific portions of the Work as required by the Construction Documents.

SUBSTANTIAL COMPLETION, means the date when the Owner accepts in writing the construction, alteration or repair of the improvement to real property constituting the Work or any designated portion thereof as having reached that state of completion when it may be used or occupied for its intended purpose. Substantial Completion of facilities with operating systems occurs only after thirty (30) continuous Days of successful, trouble-free operation of the operating systems as provided in Section K.3.2.

SUBSTITUTIONS, means items that in function, performance, reliability, quality, and general configuration are the same or better than the product(s) specified. Approval of any substitute item shall be solely determined by the Owner. The decision of the Owner is final.

PUBLIC IMPROVEMENT SUPPLEMENTAL GENERAL CONDITIONS, means those conditions that remove from, add to, or modify these Public Improvement General Conditions. Public Improvement Supplemental General Conditions may be included in the Solicitation Document or may be a separate attachment to the Contract.

WORK, means the furnishing of all materials, equipment, labor, transportation, services and incidentals necessary to successfully complete any individual item or the entire Contract and the carrying out of duties and obligations imposed by the Contract Documents.

A.2 SCOPE OF WORK

The Work contemplated under this Contract includes all labor, materials, transportation, equipment and services for, and incidental to, the completion of all construction work in connection with the project described in the Contract Documents. The Contractor shall perform all Work necessary so that the project can be legally occupied and fully used for the intended use as set forth in the Contract Documents. Execution of the Contract by the Contractor is an express representation (1) that the Contractor understands the intent stated herein with respect to the Preconstruction Phase Services, and (2) the Contractor's execution of an Amendment, including the GMP Amendment, shall be an express and unqualified representation that the Contractor understands the intent stated herein and therein.

A.3 INTERPRETATION OF CONTRACT DOCUMENTS

A.3.1 Unless otherwise specifically defined in the Contract

Documents, words which have well-known technical meanings or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings. Contract Documents are intended to be complementary. Whatever is called for in one, is interpreted to be called for in all. However, in the event of conflicts or discrepancies among the Contract Documents, interpretations will be based on the following descending order of precedence:

- (a) Amendments and Construction Change Directives, with those of later date having precedence over those of an earlier date;
 - (b) The Supplemental General Conditions;
 - (c) Public Improvement General Conditions;
 - (d) The Public Improvement Contract;
 - (e) Construction Change Directive;
 - (f) Division One (General Requirements) of the Specifications;
 - (g) Detailed Schedules of finishes, equipment and other items included in the Specifications;
 - (h) Plans and Specifications (other than Division One and the Detailed Schedules to the Specifications);
 - (i) Large-scale drawings on Plans;
 - (j) Small-scale drawings on Plans;
 - (k) Dimension numbers written on Plans which shall prevail and take precedence over dimensions scaled from Plans;
 - (l) The Solicitation Document, and any addenda thereto.
 - (m) The Contractor's RFQ proposal.
- A.3.2 In the case of an inconsistency between Plans and Specifications or within either document not clarified by addendum, the better quality or greater quantity of Work shall be provided in accordance with the Owner's interpretation in writing.
- A.3.3 If the Contractor finds discrepancies in, or omissions from the Contract Documents, or if the Contractor is in doubt as to their meaning, the Contractor shall at once notify the Owner in writing. Matters concerning and interpretation of requirements of the Contract Documents will be decided by the Owner, who may delegate that duty in some instances to the Architect/Engineer. Responses to Contractor's requests for interpretation of Contract Documents will be made in writing by Owner (or the Architect/Engineer) within any time limits agreed upon or otherwise with reasonable promptness. Interpretations and decisions of the Owner (or Architect/Engineer) will be consistent with the intent of and reasonably inferable from the Contract Documents. Contractor shall not proceed without direction in writing from the Owner (or Architect/Engineer).
- A.3.4 References to standard specifications, manuals, codes of any technical society, organization or association, to the laws or regulations of any governmental authority, whether such reference be specific or by implication,

shall mean the latest standard specification, manual, code, laws or regulations in effect in the jurisdiction where the project is occurring on the first published date of the Solicitation Document, except as may be otherwise specifically stated.

A.4 EXAMINATION OF PLANS, SPECIFICATIONS, AND SITE

- A.4.1 It is understood that the Contractor, before submitting an Offer, has made a careful examination of the Contract Documents; has become fully informed as to the quality and quantity of materials and the character of the Work required; and has made a careful examination of the location and conditions of the Work and the sources of supply for materials. The Owner will in no case be responsible for any loss or for any unanticipated costs that may be suffered by the Contractor as a result of the Contractor's failure to acquire full information in advance in regard to all conditions pertaining to the Work. No oral agreement or conversation with any officer, agent, or personnel of the Owner, or with the Architect/Engineer either before or after the execution of this Contract, shall affect or modify any of the terms or obligations herein contained.
- A.4.2 Should the Plans or Specifications fail to particularly describe the materials, kind of goods, or details of construction of any aspect of the Work, Contractor shall have the duty to make inquiry of the Owner and Architect/Engineer as to what is required prior to performance of the Work. Absent Specifications to the contrary, the materials or processes that would normally be used to produce first quality finished Work shall be considered a part of the Contract requirements.
- A.4.3 Any design errors or omissions noted by the Contractor shall be reported promptly to the Owner and confirmed in writing, including without limitation, any nonconformity with Applicable Laws.
- A.4.4 If the Contractor believes that adjustments to cost or Contract Time is involved because of clarifications or instructions issued by the Owner (or Architect/Engineer) in response to the Contractor's notices or requests for information, the Contractor must submit a written request to the Owner, setting forth the nature and specific extent of the request, including all time and cost impacts against the Contract as soon as possible, but no later than thirty (30) Days after receipt by Contractor of the clarifications or instructions issued. If the Owner denies Contractor's request for additional compensation, additional Contract Time, or other relief that Contractor believes results from the clarifications or instructions, the Contractor may proceed to file a Claim under Section D.3, Claims Review Process. If the Contractor fails to perform the obligations of Sections A.4.1 to A.4.3, the Contractor shall pay such costs and damages to the Owner as would have been avoided if the Contractor had performed such obligations.

A.5 INDEPENDENT CONTRACTOR STATUS

The service or services to be performed under this Contract are those of an independent contractor as defined in ORS 670.600.

Contractor represents and warrants that it is not an officer, employee or agent of the Owner as those terms are used in ORS 30.265.

A.6 RETIREMENT SYSTEM STATUS AND TAXES

Contractor represents and warrants that it is not a contributing member of the Public Employees' Retirement System and will be responsible for any federal or state taxes applicable to payment received under this Contract. Contractor will not be eligible for any benefits from these Contract payments of federal Social Security, employment insurance, workers' compensation or the Public Employees' Retirement System, except as a self-employed individual. Unless the Contractor is subject to backup withholding, Owner will not withhold from such payments any amount(s) to cover Contractor's federal or state tax obligations.

A.7 GOVERNMENT EMPLOYMENT STATUS

- A.7.1 If this payment is to be charged against federal funds, Contractor represents and warrants that it is not currently employed by the Federal Government. This does not preclude the Contractor from holding another contract with the Federal Government.
- A.7.2 Contractor represents and warrants that Contractor is not an employee of the State of Oregon for purposes of performing Work under this Contract

SECTION B ADMINISTRATION OF THE CONTRACT

B.1 OWNER'S ADMINISTRATION OF THE CONTRACT

- B.1.1 The Owner shall administer the Contract as described in the Contract Documents (1) during construction (2) until Final Payment is due and (3) during the one-year period for correction of Work. The Owner will act as provided in the Contract Documents, unless modified in writing in accordance with other provisions of the Contract. In performing these tasks, the Owner may rely on the Architect/Engineer or other consultants to perform some or all of these tasks.
- B.1.2 The Owner will visit the site at intervals appropriate to the stage of the Contractor's operations (1) to become generally familiar with and to keep the Owner informed about the progress and quality of the portion of the Work completed, (2) to endeavor to guard the Owner against defects and deficiencies in the Work, and (3) to determine in general if Work is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. The Owner will not make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Owner will neither have control over or charge of, nor be responsible for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work. Inspection of the progress, quantity, or quality of the Work done by the Owner, any Owner representative, and public agency, the Architect/Engineer, or any inspector, shall not relieve the Contractor of any responsibility for the compliance of all Work with the Contract Documents.
- B.1.3 Except as otherwise provided in the Contract Documents or when direct communications have been specifically authorized, the Owner and Contractor shall communicate with each other about matters arising out of or relating to the Contract. Communications by and with the Architect/Engineer's consultants shall be through the Architect/Engineer. Communications by

and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner.

B.2 Based upon the Architect/Engineer's evaluations of the Contractor's Application for Payment, or unless otherwise stipulated by the Owner, the Architect/Engineer will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts. CONTRACTOR'S MEANS AND METHODS; MITIGATION OF IMPACTS

- B.2.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless the Contract Documents give other specific instructions concerning these matters. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the jobsite safety thereof and, except as stated below, shall be fully and solely responsible for the jobsite safety of such means, methods, techniques, sequences or procedures.
- B.2.2 The Contractor is responsible to protect and maintain the Work during the course of construction and to mitigate any adverse impacts to the project, including those caused by authorized changes, which may affect cost, schedule, or quality.
- B.2.3 The Contractor is responsible for the actions of all its personnel, laborers, suppliers, and Subcontractors on the project. The Contractor shall enforce strict discipline and good order among Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of persons who are unfit or unskilled for the tasks assigned to them.

B.3 MATERIALS AND WORKMANSHIP

- B.3.1 The intent of the Contract Documents is to provide for the construction and completion in every detail of the Work described. All Work shall be performed in a professional manner and unless the means or methods of performing a task are specified elsewhere in the Contract Documents, Contractor shall employ methods that are generally accepted and used by the industry, in accordance with industry standards.
- B.3.2 The Contractor is responsible to perform the Work as required by the Contract Documents. Defective Work shall be corrected at the Contractor's expense.
- B.3.3 Work done and materials furnished shall be subject to inspection and/or observation and testing by the Owner to determine if they conform to the Contract Documents. Inspection of the Work by the Owner does not relieve the Contractor of responsibility for the Work in accordance with the Contract Documents.
- B.3.4 Contractor shall furnish adequate facilities, as required, for the Owner to have safe access to the Work including without limitation walkways, railings, ladders, tunnels, and platforms. Producers, suppliers, and fabricators shall also provide proper facilities and access to their

facilities.

- B.3.5 The Contractor shall furnish Samples of materials for testing by the Owner and include the cost of the Samples in the Contract Price.

B.4 PERMITS

Contractor shall obtain and pay for all necessary permits, licenses and fees, except for those specifically excluded in the Supplemental General Conditions, for the construction of the Work, for temporary obstructions, enclosures, opening of streets for pipes, walls, utilities, environmental Work, etc., as required for the project.

Contractor shall be responsible for all violations of the law, in connection with the construction or caused by obstructing streets, sidewalks or otherwise. Contractor shall give all requisite notices to public authorities.

B.5 COMPLIANCE WITH GOVERNMENT REGULATIONS

- B.5.1 Contractor shall comply with Applicable Laws pertaining to the Work and the Contract. Failure to comply with such requirements shall constitute a breach of Contract and shall be grounds for Contract termination. Without limiting the generality of the foregoing, Contractor expressly agrees to comply with the following, as applicable: (i) Title VI and VII of Civil Rights Act of 1964, as amended; (ii) Section 503 and 504 of the Rehabilitation Act of 1973, as amended; (iii) the Health Insurance Portability and Accountability Act of 1996; (iv) the Americans with Disabilities Act of 1990, as amended; (v) ORS Chapter 659; as amended; (vi) ORS Chapter 659A; as amended; (vii) all regulations and administrative rules established pursuant to the foregoing laws; and (viii) all other applicable requirements of federal and state civil rights and rehabilitation statutes, rules and regulations.

- B.5.2 Contractor shall comply with all applicable requirements of federal and state civil rights and rehabilitation statutes, rules and regulations, and

- (a) Contractor shall not discriminate against Disadvantaged, Minority, Women or Emerging Small Business enterprises, as those terms are defined in ORS 200.005, or a business enterprise that is owned or controlled by or that employs a disabled veteran, as that term is defined in ORS 408.225, in the awarding of subcontracts.
- (b) Contractor shall maintain, in current and valid form, all licenses and certificates required by Applicable Laws or this Contract when performing the Work.

- B.5.3 Unless contrary to federal law, Contractor shall certify that it shall not accept a bid from Subcontractors to perform Work as described in ORS 701.005 under this Contract unless such Subcontractors are registered with the Construction Contractors Board in accordance with ORS 701.021 to 701.068 at the time they submit their bids to the Contractor.

- B.5.4 Unless contrary to federal law, Contractor shall certify that each landscape contractor, as defined in ORS 671.520(2), performing Work under this Contract holds a valid landscape contractor's license issued pursuant to

ORS 671.560.

- B.5.5 The following notice is applicable to Contractors who perform excavation Work. ATTENTION: Oregon law requires you to follow rules adopted by the Oregon Utility Notification Center. Those rules are set forth in OAR 952-001-0010 through OAR 952-001-00100. You may obtain copies of the rules by calling the center at (503)232-1987.

- B.5.6 Failure to comply with any or all of the requirements of B.5.1 through B.5.5 shall be a breach of Contract and constitute grounds for Contract termination. Damages or costs resulting from such noncompliance shall be the responsibility of Contractor.

B.6 SUPERINTENDENCE

Contractor shall keep on the site, during the progress of the Work, a competent superintendent and any necessary assistants who shall be satisfactory to the Owner and who shall represent the Contractor on the site. Directions given to the superintendent by the Owner shall be confirmed in writing to the Contractor.

B.7 INSPECTION

- B.7.1 Owner shall have access to the Work at all times.

- B.7.2 Inspection of the Work will be made by the Owner at its discretion. The Owner will have authority to reject Work that does not conform to the Contract Documents. Any Work found to be not in conformance with the Contract Documents, in the discretion of the Owner, shall be removed and replaced at the Contractor's expense.

- B.7.3 Contractor shall make or obtain at the appropriate time all tests, inspections and approvals of portions of the Work required by the Contract Documents or by Applicable Laws or orders of public authorities having jurisdiction. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work. The Contractor shall give the Owner timely notice of when and where tests and inspections are to be made so that the Owner may be present for such procedures. Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Owner.

- B.7.4 As required by the Contract Documents, Work done or material used without required inspection or testing and/or without providing timely notice to the Owner may be ordered removed at the Contractor's expense.

- B.7.5 If directed to do so any time before the Work is accepted, the Contractor shall uncover portions of the completed Work for inspection. After inspection, the Contractor shall restore such portions of Work to the standard required by the Contract. If the Work uncovered is unacceptable or was done without required testing or inspection or sufficient notice to the Owner, the uncovering and restoration shall be done at the Contractor's expense. If the Work uncovered is acceptable and was done with sufficient notice to the

Owner, the uncovering and restoration will be paid for pursuant to an Amendment.

- B.7.6 If any testing or inspection reveals failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Owner's and Architect/Engineer's services and expenses, shall be at the Contractor's expense.
- B.7.7 When the United States government participates in the cost of the Work, or the Owner has an agreement with other public or private organizations, or if any portion of the Work is being performed for a third party or in close proximity to third party facilities, representatives of these organizations shall have the right to inspect the Work affecting their interests or property. Their right to inspect shall not make them a party to the Contract and shall not interfere with the rights of the parties of the Contract. Instructions or orders of such parties shall be transmitted to the Contractor, through the Owner.

B.8 SEVERABILITY

If any provision of this Contract is declared by a court to be illegal or in conflict with any law, the validity of the remaining terms and provisions shall not be affected and the rights and obligations of the parties shall be construed and enforced as if the Contract did not contain the particular provision held to be invalid.

B.9 ACCESS TO RECORDS

- B.9.1 Contractor shall keep, at all times on the Work site, one record copy of the complete Contract Documents, including the Plans, Specifications, Construction Change Directives and addenda, in good order and marked currently to record field changes and selections made during construction, and one record copy of Shop Drawings, Product Data, Samples and similar Submittals, and shall at all times give the Owner access thereto.
- B.9.2 Contractor shall retain and the Owner and its duly authorized representatives shall have access, for a period not less than ten (10) years, to all Record Documents, financial and accounting records, and other books, documents, papers and records of Contractor which are pertinent to the Contract, including records pertaining to Overhead and indirect costs, for the purpose of making audit, examination, excerpts and transcripts. If for any reason, any part of the Work or this Contract shall be subject to litigation, Contractor shall retain all such records until all litigation is resolved and Contractor shall continue to provide Owner and/or its agents with full access to such records until such time as all litigation is complete and all periods for appeal have expired and full and final satisfaction of any judgment, order or decree is recorded and Owner receives a record copy of documentation from Contractor.

B.10 WAIVER

Failure of the Owner to enforce any provision of this Contract shall not constitute a waiver or relinquishment by the Owner of the right to such performance in the future nor of the right to enforce any other provision of this Contract.

B.11 SUBCONTRACTS AND ASSIGNMENT

- B.11.1 Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound by the terms and conditions of these Public Improvement General Conditions, and to assume toward the Contractor all of the obligations and responsibilities which the Contractor assumes toward the Owner thereunder, unless (1) the same are clearly inapplicable to the subcontract at issue because of legal requirements or industry practices, or (2) specific exceptions are requested by Contractor and approved in writing by Owner. Where appropriate, Contractor shall require each Subcontractor to enter into similar agreements with sub-subcontractors at any level.
- B.11.2 At Owner's request, Contractor shall submit to Owner prior to their execution either Contractor's form of subcontract, or the subcontract to be executed with any particular Subcontractor. If Owner disapproves such form, Contractor shall not execute the form until the matters disapproved are resolved to Owner's satisfaction. Owner's review, comment upon or approval of any such form shall not relieve Contractor of its obligations under this Agreement or be deemed a waiver of such obligations of Contractor.

- B.11.3 Contractor shall not assign, sell, or transfer its rights, or delegate its responsibilities under this Contract, in whole or in part, without the prior written approval of the Owner. No such written approval shall relieve Contractor of any obligations of this Contract, and any transferee shall be considered the agent of the Contractor and bound to perform in accordance with the Contract Documents. Contractor shall remain liable as between the original parties to the Contract as if no assignment had occurred.

B.12 SUCCESSORS IN INTEREST

The provisions of this Contract shall be binding upon and shall accrue to the benefit of the parties to the Contract and their respective permitted successors and assigns.

B.13 OWNER'S RIGHT TO DO WORK

Owner reserves the right to perform other or additional work at or near the project site with other forces than those of the Contractor. If such work takes place within or next to the project site, Contractor shall coordinate work with the other contractors or forces, cooperate with all other contractors or forces, carry out the Work in a way that will minimize interference and delay for all forces involved, place and dispose of materials being used so as not to interfere with the operations of another, and join the Work with the work of the others in an acceptable manner and perform it in proper sequence to that of the others. The Owner will resolve any disagreements that may arise between or among Contractor and the other contractors over the method or order of doing all work (including the Work). In case of unavoidable interference, the Owner will establish work priority (including the Work) which generally will be in the sequence that the contracts were awarded.

B.14 OTHER CONTRACTS

In all cases and at any time, the Owner has the right to execute other contracts related to or unrelated to the Work of this

Contract. The Contractor of this Contract shall fully cooperate with any and all other contractors without additional cost to the Owner in the manner described in section B.13.

B.15 GOVERNING LAW

This Contract shall be governed by and construed in accordance with the laws of the State of Oregon without regard to principles of conflict of laws.

B.16 LITIGATION

Any Claim between Owner and Contractor that arises from or relates to this Contract and that is not resolved through the Claims Review Process in Section D.3 shall be brought and conducted solely and exclusively within the Circuit Court of Benton County for the State of Oregon; provided, however, if a Claim must be brought in a federal forum, then it shall be brought and conducted solely and exclusively within the United States District Court for the District of Oregon. In no event shall this section be construed as a waiver by the State of Oregon on any form of defense or immunity, whether sovereign immunity, governmental immunity, immunity based on the Eleventh Amendment to the Constitution of the United States or otherwise, from any claim or from the jurisdiction of any court. CONTRACTOR, BY EXECUTION OF THIS CONTRACT, HEREBY CONSENTS TO THE IN PERSONAM JURISDICTION OF THE COURTS REFERENCED IN THIS SECTION B.16.

B.17 ALLOWANCES

B.17.1 The Contractor shall include in the Contract Price all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct.

B.17.2 Unless otherwise provided in the Contract Documents:

- (a) when finally reconciled, allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- (b) Contractor's costs for unloading and handling at the site, labor, installation costs, Overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Price but not in the allowances;
- (c) whenever costs are more than or less than allowances, the Contract Price shall be adjusted accordingly by Amendment. The amount of the Amendment shall reflect
 - (i) the difference between actual costs and the allowances under Section B.17.2(a) and (2)
 - changes in Contractor's costs under Section B.17.2(b).
- (d) Unless Owner requests otherwise, Contractor shall provide to Owner a proposed fixed price for any allowance work prior to its performance.

B.18 SUBMITTALS, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

B.18.1 The Contractor shall prepare and keep current, for the Architect's/Engineer's approval (or for the approval of Owner if approval authority has not been delegated to the Architect/Engineer), a schedule and list of

Submittals which is coordinated with the Contractor's construction schedule and allows the Architect/Engineer reasonable time to review Submittals. Owner reserves the right to finally approve the schedule and list of Submittals. Submittals include, without limitation, Shop Drawings, product data, and samples which are described below:

- (a) Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor (including any sub-subcontractor), manufacturer, supplier or distributor to illustrate some portion of the Work.
- (b) Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.
- (c) Samples are physical examples which illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

B.18.2 Shop Drawings, Product Data, Samples and similar Submittals are not Contract Documents. The purpose of their Submittal is to demonstrate for those portions of the Work for which Submittals are required by the Contract Documents the way by which the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents. Review of Submittals by the Architect/Engineer is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, or for approval of safety precautions or, unless otherwise specifically stated by the Architect/Engineer, of any construction means, methods, techniques, sequences or procedures, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect/Engineer's review of the Contractor's Submittals shall not relieve the Contractor of its obligations under the Contract Documents. The Architect/Engineer's approval of a specific item shall not indicate approval of an assembly of which the item is a component. Informational Submittals upon which the Architect/Engineer is not expected to take responsive action may be so identified in the Contract Documents. Submittals which are not required by the Contract Documents may be returned by the Architect/Engineer without action.

B.18.3 The Contractor shall review for compliance with the Contract Documents, approve and submit to the Architect/Engineer Shop Drawings, Product Data, Samples and similar Submittals required by the Contract Documents with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors. Submittals which are not marked as reviewed for compliance with the Contract Documents and approved by the Contractor may be returned by the Architect/Engineer without action.

B.18.4 Approving and submitting shop drawings, product data, samples and similar Submittals, the Contractor represents that the Contractor has determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and has checked and coordinated the information contained within such Submittals with the requirements of the Work and of the Contract Documents.

B.18.5 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples or similar Submittals until the respective Submittal has been approved by the Architect/Engineer.

B.18.6 The Work shall be in accordance with approved Submittals except that the Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect/Engineer's review or approval of Shop Drawings, Product Data, Samples or similar Submittals unless the Contractor has specifically informed the Architect/Engineer in writing of such deviation at the time of submittal and (i) the Architect/Engineer has given written approval to the specific deviation as a minor change in the Work, or (ii) an Amendment or Construction Change Directive has been executed by Owner authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar Submittals by the Architect/Engineer's review or approval thereof.

B.18.7 In the event that Owner elects not to have the obligations and duties described under this Section B.18 performed by the Architect/Engineer, or in the event no Architect/Engineer is employed by Owner on the project, all obligations and duties assigned to the Architect/Engineer hereunder shall be performed by the Owner.

B.19 SUBSTITUTIONS

The Contractor may make Substitutions only with the written consent of the Owner, after evaluation by the Owner and only in accordance with an Amendment or Construction Change Directive. Substitutions shall be subject to the requirements of the bid documents. By making requests for Substitutions, the Contractor: represents that the Contractor has personally investigated the proposed substitute product; represents that the Contractor will provide the same warranty for the Substitution that the Contractor would for the product originally specified unless approved otherwise; certifies that the cost data presented is complete and includes all related costs under this Contract including redesign costs, and waives all claims for additional costs related to the Substitution which subsequently become apparent; and will coordinate the installation of the accepted Substitution, making such changes as may be required for the Work to be completed in all respects.

B.20 USE OF PLANS AND SPECIFICATIONS

Plans, Specifications and related Contract Documents furnished to Contractor by Owner or Owner's Architect/Engineer shall be used solely for the performance of the Work under this Contract. Contractor and its Subcontractors and suppliers are authorized to use and reproduce applicable portions of such documents appropriate to the execution of the Work, but shall not claim any ownership or other interest in them beyond the scope of

this Contract, and no such interest shall attach. Unless otherwise indicated, all common law, statutory and terminate the Contract.

B.21 FUNDS AVAILABLE AND AUTHORIZED

If Owner fails to receive funding, appropriations, allocations or other expenditure authority as contemplated by Owner's budget and Owner determines, in its assessment and ranking of the policy objectives explicit or implicit in Owner's budget, Owner may other reserved rights, in addition to copyrights, are retained by Owner.

B.22 NO THIRD PARTY BENEFICIARIES

Owner and Contractor are the only parties to this Contract and are the only parties entitled to enforce its terms. Nothing in this Contract gives, is intended to give, or shall be construed to give or provide any benefit or right, whether directly, indirectly, or otherwise, to third persons unless such third persons are individually identified by name herein and expressly described as intended beneficiaries of the terms of this Contract.

SECTION C WAGES AND LABOR

C.1 MINIMUM WAGE RATES ON PUBLIC WORKS

Contractor shall comply fully with the provisions of ORS 279C.800 through 279C.870. Documents establishing those conditions, as determined by the Commissioner of the Bureau of Labor and Industries (BOLI), are included as attachments to or are incorporated by reference in the Contract Documents. Pursuant to ORS 279C.830(1)(c), Contractor shall pay workers at not less than the specified minimum hourly rate of wage, and shall include that requirement in all subcontracts. If the Work is subject to both the state prevailing wage rate law and the federal Davis-Bacon Act, Contractor shall pay the higher of the applicable state or federal prevailing rate of wage. Contractor shall provide written notice to all workers of the number of hours per day and days per week such workers may be required to work.

C.2 PAYROLL CERTIFICATION AND FEE REQUIREMENTS

C.2.1 In accordance with ORS 279C.845, the Contractor and every Subcontractor shall submit written certified statements to the Owner, on the form prescribed by the Commissioner of the Bureau of Labor and Industries, certifying the hourly rate of wage paid each worker which the Contractor or the Subcontractor has employed on the project and further certifying that no worker employed on the project has been paid less than the prevailing rate of wage or less than the minimum hourly rate of wage specified in the Contract, which certificate and statement shall be verified by the oath of the Contractor or the Subcontractor that the Contractor or Subcontractor has read the certified statement, that the Contractor or Subcontractor knows the contents of the certified statement, and, that to the Contractor's or Subcontractor's best knowledge and belief, the certified statement is true. The certified statements shall set out accurately and completely the payroll records for the prior week, including the name and address of each worker, the worker's correct classification, rate of pay, daily and weekly number of

hours worked, deductions made, and actual wages paid. Certified statements for each week during which the Contractor or Subcontractor has employed a worker on the project shall be submitted once a month, by the fifth business day of the following month. The Contractor and Subcontractors shall preserve the certified statements for a period of ten (10) years from the date of completion of the Contract.

C.2.2 Pursuant to ORS 279C.845(7), the Owner shall retain 25 percent of any amount earned by the Contractor on this public works project until the Contractor has filed the certified statements required by section C.2.1. The Owner shall pay to the Contractor the amount retained under this subsection within 14 days after the Contractor files the required certified statements, regardless of whether a Subcontractor has failed to file certified statements. Pursuant to ORS 279C.845(8), the Contractor shall retain 25 percent of any amount earned by a first-tier Subcontractor on this public works project until the first-tier Subcontractor has filed with the Owner the certified statements required by C.2.1. Before paying any amount retained under this subsection, the Contractor shall verify that the first-tier Subcontractor has filed the certified statement. Within 14 days after the first-tier Subcontractor files the required certified statement the Contractor shall pay the first-tier Subcontractor any amount retained under this subsection.

C.2.3 In accordance with statutory requirements and administrative rules promulgated by the Commissioner of the Bureau of Labor and Industries, the fee required by ORS 279C.825(1) will be paid by Owner to the Commissioner.

C.3 PROMPT PAYMENT AND CONTRACT CONDITIONS

C.3.1 As a condition to Owner's performance hereunder, the Contractor shall:

C.3.1.1 Make payment promptly, as due, to all persons supplying to Contractor labor or materials for the prosecution of the Work provided for in this Contract.

C.3.1.2 Pay all contributions or amounts due the State Industrial Accident Fund from such Contractor or Subcontractor incurred in the performance of the Contract.

C.3.1.3 Not permit any lien or claim to be filed or prosecuted against the Owner on account of any labor or material furnished. Contractor will not assign any claims that Contractor has against Owner, or assign any sums due by Owner, to Subcontractors, suppliers, or manufacturers, and will not make any agreement or act in any way to give Subcontractors a claim or standing to make a claim against the Owner.

C.3.1.4 Pay to the Department of Revenue all sums withheld from employees pursuant to ORS 316.167.

C.3.2 As a condition to Owner's performance hereunder, if Contractor fails, neglects or refuses to make prompt payment of any claim for labor or services furnished to the Contractor of a Subcontractor by any person in connection with the project as such claim becomes due, the proper officer(s) representing the Owner may pay the claim and charge the amount of the payment against funds due or to become due Contractor under this Contract.

Payment of claims in this manner shall not relieve the Contractor or the Contractor's surety from obligation with respect to any unpaid claims.

C.3.3 Contractor shall include in each subcontract for property or services entered into by the Contractor and a first-tier subcontractor, including a material supplier, for the purpose of performing a construction contract, a payment clause that obligates the Contractor to pay the first-tier Subcontractor for satisfactory performance under its subcontract within ten (10) Days out of such amounts as are paid to the Contractor by the public contracting agency under such contract.

C.3.4 All employers, including Contractor, that employ subject workers who work under this contract in the State of Oregon shall comply with ORS 656.017 and provide the required Workers' Compensation coverage, unless such employers are exempt under ORS 656.126. Contractor shall ensure that each of its Subcontractors complies with these requirements.

C.4 PAYMENT FOR MEDICAL CARE

As a condition to Owner's performance hereunder, Contractor shall promptly, as due, make payment to any person, partnership, association or corporation furnishing medical, surgical, and hospital care or other needed care and attention, incident to sickness or injury, to the employees of such Contractor, all sums of which the Contractor agrees to pay for such services and all moneys and sums which the Contractor has collected or deducted from the wages of personnel pursuant to any law, contract or agreement for the purpose of providing or paying for such services.

C.5 HOURS OF LABOR

As a condition to Owner's performance hereunder, no person shall be employed to perform Work under this Contract for more than ten (10) hours in any one day or forty (40) hours in any one week, except in cases of necessity, emergency or where public policy absolutely requires it. In such instances, Contractor shall pay the employee at least time and a half pay:

(a) For all overtime in excess of eight (8) hours a day or forty (40) hours in any one week when the work week is five consecutive Days, Monday through Friday; or

(b) For all overtime in excess of ten (10) hours a day or forty (40) hours in any one week when the work week is four consecutive Days, Monday through Friday; and

(c) For all Work performed on Saturday and on any legal holiday specified in ORS 279C.540.

This section C.5 will not apply to Contractor's Work under this Contract to the extent Contractor is currently a party to a collective bargaining agreement with any labor organization.

This Section C.5 shall not excuse Contractor from completion of the Work within the time required under this Contract.

**SECTION D
CHANGES IN THE
WORK**

D.1 CHANGES IN WORK

D.1.1 The terms of this Contract shall not be waived, altered, modified, supplemented or amended in any manner whatsoever, without prior written agreement and then only after any necessary approvals have been obtained. An Amendment or Change Order is required, which shall not be effective until its execution by the parties to this Contract and all approvals required by public contracting laws have been obtained.

D.1.2 It is mutually agreed that changes in Plans, quantities, or details of construction are inherent in the nature of construction and may be necessary or desirable during the course of construction. Within the general scope of this Contract, the Owner may at any time, without notice to the sureties and without impairing the Contract, require changes consistent with this Section D.1. All changes to the Work shall be documented and Amendments shall be executed under the conditions of the Contract Documents. Such changes may include, but are not limited to:

- (a) Modification of specifications and design.
- (b) Increases or decreases in quantities.
- (c) Increases or decreases to the amount of Work.
- (d) Addition or elimination of any Work item.
- (e) Change in the duration of the project.
- (f) Acceleration or delay in performance of Work.
- (g) Deductive changes,
- (h) Changed conditions.

Deductive changes are those that reduce the scope of the Work, and shall be made by mutual agreement whenever feasible. In cases of suspension or partial termination under Section J, Owner reserves the right to unilaterally impose a deductive change and to self-perform such Work, for which the provisions of B.13 (Owner's Right to Do Work) shall then apply. Adjustments in compensation shall be made under the provisions of D.1.3, in which costs for deductive changes shall be based upon a Direct Costs adjustment together with the related percentage markup specified for profit, Overhead and other indirect costs, unless otherwise agreed to by Owner.

D.1.3 The Owner and Contractor agree that adjustments to or deletions from the Work shall be administered and compensated according to the following:

- (a) Unit pricing may be utilized at the Owner's option when unit prices or solicitation alternates were provided that established the cost for adjustments to Work, and a binding obligation exists under the Contract on the parties covering the terms and conditions of the adjustment to Work.
- (b) If the Owner elects not to utilize unit pricing, or in the event that unit pricing is not available or appropriate, fixed pricing may be used for adjustments to or deletions from the Work. In fixed pricing, the basis of payments or total price shall be agreed upon in writing between the parties to the Contract, and shall be established before the Work is done whenever feasible. Notwithstanding the foregoing, the mark-ups set forth in D.1.3(c) shall

be utilized in establishing fixed pricing, and such mark-ups shall not be exceeded. Cost and price data relating to adjustments to or deletions from the Work shall be supplied by Contractor to Owner upon request, but Owner shall be under no obligation to make such requests.

- (c) In the event that unit pricing and fixed pricing are not utilized, then adjustments to or deletions from the Work shall be performed on a cost reimbursement basis for Direct Costs. Such Work shall be compensated on the basis of the actual, reasonable and allowable cost of labor, equipment, and material furnished on the Work performed. In addition, the following markups shall be added to the Contractor's or Subcontractor's Direct Costs as full compensation for profit, Overhead and other indirect costs for Work directly performed with the Contractor's or Subcontractor's own forces:

On Labor.....	15%
On Equipment.....	10%
On Materials.....	10%

- (d) When adjustments to or deletions from the Work under D.1.3(c) are invoiced by an authorized Subcontractor at any level, each ascending tier Subcontractor or Contractor will be allowed a supplemental mark-up on each piece of subcontract Work covered by an Amendment as follows:

\$0.00 - \$5,000.00	10%,
and then Over \$5,000.00	5%

Notwithstanding the foregoing, the maximum aggregate markup to be billed shall not exceed 10% regardless of the number of Subcontract tiers.

Payments made to the Contractor shall be complete compensation for Overhead, profit, and all costs that were incurred by the Contractor or by other forces furnished by the Contractor, including Subcontractors, for adjustments to or deletions from the Work pursuant to an Amendment or Change Order. Owner may establish a maximum cost for additional Work under this Section D.1.3, which shall not be exceeded for reimbursement without additional written authorization from Owner in the form of an Amendment or Change Order. Contractor shall not be required to complete such additional Work without additional authorization.

- D.1.4 Any necessary adjustment of Contract Time that may be required as a result of adjustments to or deletions from the Work must be agreed upon by the parties before the start of the revised Work unless Owner authorizes Contractor to start the revised Work before agreement on Contract Time adjustment. Contractor shall submit any request for additional compensation (and additional Contract Time if Contractor was authorized to start Work before an adjustment of Contract Time was approved) as soon as possible but no later than thirty (30) Days after receipt of Owner's request for additional Work. Contractor agrees that this thirty (30) Day notice period is adequate time for it to request and document the amount of additional compensation or adjustment of Contract Time. If Contractor's request for additional compensation or adjustment of Contract Time is not made within the

thirty (30) Day time limit, Contractor agrees its requests pertaining to that additional Work shall be barred. The thirty (30) Day time limit for making requests shall not be extended for any reason, including without limitation Contractor's claimed inability to determine the amount of additional compensation or adjustment of Contract Time, unless an extension is granted in writing by Owner. If the Owner denies Contractor's timely request for additional compensation or adjustment of Contract Time, Contractor may proceed to file a Claim under Section D.3, Claims Review Process. No other reimbursement, compensation, or payment will be made, except as provided in Section D.1.5 for impact claims.

- D.1.5 If any adjustment to Work under Section D.1.3 causes an increase or decrease in the Contractor's cost of, or the Contract Time required for the performance of any other part of the Work under this Contract, Contractor shall submit a written request to the Owner, setting forth the nature and specific extent of the request, including all time and cost impacts against the Contract as soon as possible, but no later than thirty (30) Days after receipt of Owner's request for adjustments to or deletions from the Work by Contractor.

The thirty (30) Day time limit applies to claims of Subcontractors, suppliers, or manufacturers who may be affected by Owner's request for adjustments to or deletions from the Work and who request additional compensation or an extension of Contract Time to perform; Contractor has responsibility for contacting its Subcontractors, suppliers, or manufacturers within the thirty (30) Day time limit, and including their requests with Contractor's requests. If the request involves Work to be completed by Subcontractors, or materials to be furnished by suppliers or manufacturers, such requests shall be submitted to the Contractor in writing with full analysis and justification for the adjustments to compensation and Contract Time requested. The Contractor shall analyze and evaluate the merits of the requests submitted by Subcontractors, suppliers, and manufacturers to Contractor prior to including those requests and Contractor's analysis and evaluation of those requests with Contractor's requests for adjustments to compensation or Contract Time that Contractor submits to the Owner. Failure of Subcontractors, suppliers, manufacturers or others to submit their requests to Contractor for inclusion with Contractor's requests submitted to Owner within the time period and by the means described in this section shall constitute a waiver of these Subcontractor claims. The Owner will not consider direct requests or claims from Subcontractors, suppliers, manufacturers or others not a party to this Contract. The consideration of such requests and claims under this section does not give any Person, not a party to the Contract the right to bring a claim against Owner, whether in this claims process, in litigation, or in any dispute resolution process.

If the Owner denies the Contractor's request for adjustment to compensation or Contract Time and the request is timely as set forth herein, the Contractor may proceed to file a Claim under Section D.3, Claims Review Process.

- D.1.6 Contractor agrees that no request or Claim for additional costs or an adjustment of Contract Time shall be allowed if made after receipt of Final Payment application under this Contract. Final Payment

application must be made by Contractor within the time required under Section E.6.4.

- D.1.7 It is understood that changes in the Work are inherent in construction of this type. The number of changes, the scope of those changes, and the effect they have on the progress of the original Work cannot be defined at this time. The Contractor is notified that numerous changes may be required and that there will be no compensation made, unless and only to the extent otherwise provided in the Contract Documents, to the Contractor directly related to the number of changes. Each change will be evaluated for extension of Contract Time and increase or decrease in compensation based on its own merit.

D.2 DELAYS

- D.2.1 Delays in construction include "Avoidable Delays", which are defined in Section D.2.1.1, and "Unavoidable Delays", which are defined in Section D.2.1.2. The effect of Avoidable Delays is described in Section D.2.2 and the effect of Unavoidable Delays is described in Section D.2.3.

- D.2.1.1 Avoidable Delays include any delays other than Unavoidable Delays, and include delays that otherwise would be considered Unavoidable Delays but that:

- (a) Could have been avoided by the exercise of care, prudence, foresight, and diligence on the part of the Contractor or its Subcontractors.
- (b) Affect only a portion of the Work and do not necessarily prevent or delay the prosecution of other parts of the Work or the completion of the whole Work within the Contract Time.
- (c) Do not impact activities on the accepted CPM Construction Schedule.
- (d) Are associated with the reasonable interference of other contractors employed by the Owner that do not necessarily prevent the completion of the whole Work within the Contract Time.

- D.2.1.2 Unavoidable Delays include delays other than Avoidable Delays that are:

- (a) To the extent caused by any actions of the Owner, or any other employee or agent of the Owner, or by separate contractor employed by the Owner.
- (b) To the extent caused by any site conditions that differ materially from what was represented in the Contract Documents or from conditions that would normally be expected to exist and be inherent to the construction activities defined in the Contract Documents. The Contractor agrees to notify the Owner immediately of differing site conditions before the area has been disturbed. The Owner will investigate the area and make a determination as to whether the conditions differ materially from either the conditions stated in the Contract Documents or those that could reasonably be expected in execution of this particular Contract. If Contractor and the Owner agree that a differing site condition exists, any adjustment to compensation or Contract Time will be determined based on the process set forth in Section D.1.5 for adjustments to or deletions from Work. If the Owner disagrees that a differing site

condition exists and denies Contractor's request for additional compensation or Contract Time, Contractor may proceed to file a Claim under Section D.3, Claims Review Process.

- (c) To the extent caused by Force Majeure acts, events or occurrences that could not have been avoided by the exercise of care, prudence, foresight, and diligence on the part of the Contractor or its Subcontractors.
- (d) To the extent caused by adverse weather conditions. Any adverse weather conditions must be substantiated by documentary evidence that weather conditions were abnormal for the specific time period claimed, could not have been anticipated by the Contractor, and adversely impacted the Project in a manner that could not be avoided by rescheduling the Work or by implementing measures to protect against the weather so that the Work could proceed. A rain, windstorm, high water, or other natural phenomenon for the specific locality of the Work, which might reasonably have been anticipated from the previous 10-year historical records of the general locality of the Work, shall not be construed as abnormal. The parties agree that rainfall greater than the following levels cannot be reasonably anticipated:

- (i) Daily rainfall equal to, or greater than, 0.50 inch during a month when the monthly rainfall exceeds the normal monthly average by twenty- five percent (25 %) or more.
- (ii) daily rainfall equal to, or greater than, 0.75 inch at any time.

The Office of the Environmental Data Service of the National Oceanic and Atmospheric Administration of the U.S. Department of Commerce nearest the Project site shall be considered the official agency of record for weather information.

D.2.2 Contractor agrees it is not entitled to additional compensation or additional Contract Time for Avoidable Delays.

D.2.3 In the event of Unavoidable Delays, based on principles of equitable adjustment, Contractor may be entitled to the following:

- (a) Contractor may be entitled to additional compensation or additional Contract Time, or both, for Unavoidable Delays described in Section D.2.1.2 (a) and (b).
- (b) Contractor may be entitled to additional Contract Time for Unavoidable Delays described in Section D.2.1.2(c) and (d).

In the event of any requests for additional compensation or additional Contract Time, or both, as applicable, arising under this Section D.2.3 for Unavoidable Delays, other than requests for additional compensation or additional Contract Time for differing site conditions for which a review process is established under Section D.2.1.2 (b), Contractor must submit a written notification of the delay to the Owner within two (2) Days of the occurrence of the cause of the delay. This

written notification shall state the cause of the potential delay, the project components impacted by the delay, and the anticipated additional Contract Time extension or the additional compensation, or both, as applicable, resulting from the delay. Within seven (7) Days after the cause of the delay has been mitigated, or in no case more than thirty (30) Days after the initial written notification, the Contractor agrees to submit to the Owner, a complete and detailed request for additional compensation or additional Contract Time, or both, as applicable, resulting from the delay. If the Owner denies Contractor's request for additional compensation or adjustment of Contract Time, the Contractor may proceed to file a Claim under Section D.3, Claims Review Process, provided Contractor has complied with the requirement in this Section D.2.3. Contractor agrees any Claim it may have is barred if Contractor does not comply with the requirements herein.

If Contractor does not timely submit the notices required under this Section D.2, then unless otherwise prohibited by law, Contractor's Claim shall be barred.

D.3 CLAIMS REVIEW PROCESS

D.3.1 All Contractor Claims shall be referred to the Owner for review. Contractor's Claims, including Claims for adjustments to compensation or Contract Time, shall be submitted in writing by Contractor to the Owner within five (5) Days after a denial of Contractor's initial request for an adjustment of Contract terms, payment of money, extension of Contract Time or other relief, provided that such initial request has been submitted in accordance with the requirements and within the time limits established in these Public Improvement General Conditions. Within thirty (30) Days after the initial Claim, Contractor shall submit to the Owner a complete and detailed description of the Claim (the "Detailed Notice") that includes all information required by Section D.3.2. Contractor agrees that, unless the Claim is made in accordance with these time requirements, Contractor voluntarily waived all rights to prosecute its Claim.

D.3.2 The Detailed Notice of the Claim shall be submitted in writing by Contractor and shall include a detailed, factual statement of the basis of the Claim, pertinent dates, Contract provisions which support or allow the Claim, reference to or copies of any documents which support the Claim, the dollar value of the Claim, and the Contract Time adjustment requested for the Claim. If the Claim involves Work to be completed by Subcontractors, the Contractor will analyze and evaluate the merits of the Subcontractor claim prior to forwarding it and that analysis and evaluation to the Owner. The Owner will not consider direct claims from Subcontractors, suppliers, manufacturers, or others not a party to this Contract. Contractor agrees that it will make no agreement, covenant, or assignment, nor will it commit any other act that will permit or assist any Subcontractor, supplier, manufacturer, or other to directly or indirectly make a claim against Owner.

D.3.3 The Owner will review all Claims and take one or more of the following preliminary actions within ten (10) Days of receipt of the Detailed Notice of a Claim: (1) request additional supporting information from the Contractor; (2) inform the Contractor and Owner in writing of the time required for adequate review and response; (3) reject the Claim in whole or in part and identify the reasons for rejection; (4) based on principles of equitable adjustment,

recommend approval of all or part of the Claim; or
(5) propose an alternate resolution.

D.3.4 The Owner's decision shall be final and binding on the Contractor unless appealed by written notice to the Owner within fifteen (15) Days of receipt of the decision. The Contractor must present written documentation supporting the Claim within fifteen (15) Days of the notice of appeal. After receiving the appeal documentation, the Owner shall review the materials and render a decision within thirty (30) Days after receiving the appeal documents.

D.3.5 The decision of the Owner shall be final and binding unless the Contractor delivers to the Owner its request for mediation, which shall be a non-binding process, within fifteen (15) Days of the date of the Owner's decision. The mediation process will be considered to have commenced as of the date the Contractor delivers the request. Both parties acknowledge and agree that participation in mediation is a prerequisite to commencement of litigation of any disputes relating to the Contract. Both parties further agree to exercise their best efforts in good faith to resolve all disputes within sixty (60) Days of the commencement of the mediation through the mediation process set forth herein.

In the event that a lawsuit must be filed within this sixty (60) Day period in order to preserve a cause of action, the parties agree that, notwithstanding the filing, they shall proceed diligently with the mediation to its conclusion prior to actively prosecuting the lawsuit, and shall seek from the Court in which the lawsuit is pending such stays or extensions, including the filing of an answer, as may be necessary to facilitate the mediation process. Further, in the event settlements are reached on any issues through mediation, the plaintiff shall promptly cause to be entered by the Court a stipulated general judgment of dismissal with prejudice, or other appropriate order limiting the scope of litigation as provided in the settlement.

D.3.6 Should the parties arrive at an impasse regarding any Claims or disputed Claims, it is agreed that the parties shall participate in mediation as specified in Section D.3.5. The mediation process will be considered to have been commenced as of the date one party delivers to the other its request in writing to mediate. The mediator shall be an individual mutually acceptable to both parties, but in the absence of agreement each party shall select a temporary mediator and the temporary mediators shall jointly select the permanent mediator. 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. Both parties agree to exercise their best effort in good faith to resolve all disputes in mediation. Participation in mediation is a mandatory requirement of both the Owner and the Contractor. The schedule, time and place for mediation will be mutually acceptable, or, failing mutual agreement, shall be as established by the mediator. The parties agree to comply with Owner's administrative rules governing the confidentiality of mediation, if any, and shall execute all necessary documents to give effect to such confidentiality rules. In any event, the parties shall not subpoena the mediator or otherwise require the mediator to produce records, notes or work product, or to testify in any future proceedings as to information disclosed or representations made in the course of mediation, except to the extent disclosure is required by law.

D.3.7 Unless otherwise directed by Owner, Contractor shall proceed with the Work while any Claim, or mediation or litigation arising from a Claim, is pending. Regardless of the review period or the final decision of the Owner, the Contractor shall continue to diligently pursue the Work as identified in the Contract Documents. In no case is the Contractor justified or allowed to cease or Delay Work, in whole or in part, without a written stop work order from the Owner.

SECTION E PAYMENTS

E.1 SCHEDULE OF VALUES

The Contractor shall submit, at least ten (10) Days prior to submission of its first application for progress payment, a schedule of values ("Schedule of Values") for the contracted Work. This schedule shall provide a breakdown of values for the contracted Work and will be the basis for progress payments. The breakdown shall demonstrate reasonable, identifiable, and measurable components of the Work.

Unless objected to by the Owner, this schedule shall be used as the basis for reviewing Contractor's applications for payment. If objected to by Owner, Contractor shall revise the schedule of values and resubmit the same for approval of Owner.

E.2 APPLICATIONS FOR PAYMENT

E.2.1 Owner shall make progress payments on the Contract monthly as Work progresses, in accordance with the requirements of this Section E.2. Applications for payment shall be based upon estimates of Work completed and the Schedule of Values. As a condition precedent to Owner's obligation to pay, all applications for payment shall be approved by the Owner. A progress payment shall not be considered acceptance or approval of any Work or waiver of any defects therein. Owner shall pay to Contractor interest for overdue invoices at the rate of two-thirds of one percent per month on the progress payment, not including retainage, due the Contractor. Overdue invoices will be those that have not been paid within forty-five (45) days from the latest of:

- (a) The date of the receipt of the accurate invoice;
- (b) The date Owner receives the correct application for payment if no invoice is received;
- (c) The date all goods and services have been received;
or
- (d) The date a Claim is made certain by agreement of the parties or by operation of law.

Notwithstanding the foregoing, in instances when an application for payment is filled out incorrectly, or when there is any defect or impropriety in any submitted application or when there is a good faith dispute, Owner shall so notify the Contractor within fifteen (15) Days stating the reason or reasons the application for payment is defective or improper or the reasons for the dispute. A defective or improper application for payment, if corrected by the Contractor within seven (7) Days of being notified by the Owner, shall not cause a payment to be made later than specified in this section unless interest is also paid. Payment of interest will be postponed when payment on the principal is delayed because of disagreement between the Owner and the Contractor.

Owner reserves the right, instead of requiring the Contractor to correct or resubmit a defective or improper application for payment, to reject the defective or improper portion of the application for payment and pay the remainder of the application for such amounts which are correct and proper.

Owner, upon written notice to the Contractor, may elect to make payments to the Contractor only by means of Electronic Funds Transfers (EFT) through Automated Clearing House (ACH) payments. If Owner makes this election, the Contractor shall arrange for receipt of the EFT/ACH payments.

E.2.2 .2 Contractor shall submit to the Owner an application for each payment and, if required, receipts or other vouchers showing payments for materials and labor including payments to Subcontractors. Contractor shall include in its application for payment a schedule of the percentages of the various parts of the Work completed, based on the Schedule of Values which shall aggregate to the payment application total, and shall include, on the face of each copy thereof, a certificate in substantially the following form:

"I, the undersigned, hereby certify that the above bill is true and correct, and the payment therefore, has not been received.

Signed: _____
Dated: _____"

E.2.3 Generally, applications for payment will be accepted only for materials that have been installed. Under special conditions, applications for payment for stored materials will be accepted at Owner's sole discretion. Such a payment, if made, will be subject to the following conditions:

(a) The request for stored material shall be submitted at least thirty (30) Days in advance of the application for payment on which it appears. Applications for payment shall be entertained for major equipment, components or expenditures only.

(b) The Contractor shall submit applications for payment showing the quantity and cost of the material stored.

(c) The material shall be stored in a bonded warehouse and Owner shall be granted the right to access the material for the purpose of removal or inspection at any time during the Contract Period.

(d) The Contractor shall name the Owner as co-insured on the insurance policy covering the full value of the property while in the care and custody of the Contractor until it is installed. A certificate noting this coverage shall be issued to the Owner.

(e) Payments shall be made for materials and equipment only. The submitted amount in the application for payment shall be reduced by the cost of transportation from the storage site to the project site and for the cost of an inspector to verify delivery and condition of the goods at the storage site. The cost of storage and inspection shall be borne solely by the Contractor.

(f) Within sixty (60) Days of the application for payment, the Contractor shall submit evidence of

payment covering the material and/or equipment stored and of payment for the storage site.

(g) Payment for stored materials and/or equipment shall in no way indicate acceptance of the materials and/or equipment or waive any rights under this Contract for the rejection of the Work or materials and/or equipment not in conformance with the Contract Documents.

(h) All required documentation shall be submitted with the respective application for payment.

E.2.4 The Owner reserves the right to withhold all or part of a payment, or may nullify in whole or part any payment previously made, to such extent as may be necessary in the Owner's opinion to protect the Owner from loss because of:

(a) Work that is defective and not remedied, or that has been demonstrated or identified as failing to conform with Applicable Laws or the Contract Documents,

(b) third party claims filed or evidence reasonably indicating that such claims will likely be filed unless security acceptable to the Owner is provided by the Contractor;

(c) failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment (in which case Owner may issue checks made payable jointly to Contractor and such unpaid persons under this provision, or directly to Subcontractors and suppliers at any level under Section C.3.2.);

(d) reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Price;

(e)) damage to the Work, Owner or another contractor;

(f) reasonable evidence that the Work will not be completed within the Contract Time required by the Contract, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay;

(g) failure to carry out the Work in accordance with the Contract Documents; or

(h) assessment of liquidated damages, when withholding is made for offset purposes.

E.2.5 Subject to the provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

(a) Take that portion of the Contract Price properly allocable to completed Work as determined by multiplying the percentage completion of each portion of the Work by the share of the total Contract Price allocated to that portion of the Work in the Schedule of Values, less retainage as provided in Section E.5. Pending final determination of cost to the Owner of changes in the Work, no amounts for changes in the Work can be included in applications for payment until the Contract Price has been adjusted by an Amendment or Change Order;

- (b) Add that portion of the Contract Price properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction (or, if approved in advance by the Owner pursuant to Section E.2.3, suitably stored off the site at a location agreed upon in writing), less retainage as provided in Section E.5;
- (c) Subtract the aggregate of previous payments made by the Owner; and
- (d) Subtract any amounts for which the Owner has withheld or nullified payment as provided in the Contract Documents.

E.2.6 Contractor's applications for payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay to a Subcontractor or material supplier.

E.2.7 The Contractor warrants to Owner that title to all Work covered by an application for payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an application for payment all Work for which payments are received from the Owner shall be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided financing, labor, materials and equipment relating to the Work.

E.2.8 If Contractor disputes any determination by Owner with regard to any application for payment, Contractor nevertheless shall continue to expeditiously perform the Work. No payment made hereunder shall be or be construed to be final acceptance or approval of that portion of the Work to which such partial payment relates or shall relieve Contractor of any of its obligations hereunder.

E.2.9 Contractor shall submit its initial MWESB Report within ten (10) Days of Contractor's execution of the Contract, or if there will be a Guaranteed Maximum Price (GMP) Amendment, then within ten (10) Days of Contractor's execution of the GMP Amendment. Contractor shall submit annual MWESB Reports on June 30 of each year the Contract is active. Contracts (or GMP Amendments) first executed by Contractor within ninety (90) Days before June 30 of the year of execution by Contractor may at the discretion of Owner be exempt from submitting the annual MWESB Report otherwise due on that June 30. The final MWESB Report shall be filed with the application for final payment. Timely receipt of MWESB Reports by Owner shall be a condition precedent to Owner's obligation to pay any progress payments or final payment otherwise due.

E.3 PAYROLL CERTIFICATION REQUIREMENT

Owner's receipt of payroll certification pursuant to Section C.2 of this Contract shall be a condition precedent to Owner's obligation to pay any progress payments or final payment otherwise due.

E.4 DUAL PAYMENT SOURCES

Contractor shall not be compensated for Work performed

under this Contract from any state agency other than the agency that is a party to this Contract.

E.5 RETAINAGE

E.5.1 Retainage shall be withheld and released in accordance with the requirements set forth in OSU Standard 580-063-0045.

E.5.1.1 Owner may reserve as retainage from any progress payment an amount not to exceed five percent of the payment. As Work progresses, Owner may reduce the amount of retainage on or may eliminate retainage on any remaining monthly Contract payments after 50 percent of the Work under the Contract is completed if, in the Owner's discretion, such Work is progressing satisfactorily. Elimination or reduction of retainage shall be allowed at Owner's sole discretion and only upon written application by the Contractor, which application shall include written approval of Contractor's surety; except that when the Work is 97-1/2 percent completed the Owner may, at its discretion and without application by the Contractor, reduce the retained amount to 100 percent of the value of the Work remaining to be done. Upon receipt of written application by the Contractor, Owner shall respond in writing within a reasonable time.

E.5.1.2 Contractor may request in writing:

- (a) to be paid amounts which would otherwise have been retained from progress payments where Contractor has deposited acceptable bonds and securities of equal value with Owner or in a custodial account or other mutually-agreed account satisfactory to Owner, with an approved bank or trust company to be held in lieu of the cash retainage for the benefit of Owner;
- (b) for construction projects over \$1,000,000, that retainage be deposited in an interest bearing account, established through the State Treasurer for state agencies, in a bank, savings bank, trust company or savings association for the benefit of Owner, with earnings from such account accruing to the Contractor; or
- (c) that the Owner allow Contractor to deposit a surety bond for the benefit of Owner, in a form acceptable to Owner, in lieu of all or a portion of funds retained, or to be retained. Such bond and any proceeds therefrom shall be made subject to all claims in the manner and priority as set forth for retainage.

When the Owner has accepted the Contractor's election of option

(a) or (b), Owner may recover from Contractor any additional costs incurred through such election by reducing Contractor's final payment. Where the Owner has agreed to Contractor's request for option (c), Contractor shall accept like bonds from Subcontractors and suppliers on the project from which Contractor has required retainages.

E. 5.1.3 The retainage held by Owner shall be included in and paid to the Contractor as part of the Final Payment of the Contract Price. The Owner shall pay to Contractor interest at the rate of two-thirds of one percent per month on the final payment due Contractor, interest to commence forty-five (45) Days after the date which Owner receives Contractor's final approved application

for payment and Work under the Contract has been completed and accepted and to run until the date when final payment is tendered to Contractor. The Contractor shall notify Owner in writing when the Contractor considers the Work complete and deliver to Owner its final application for payment and Owner shall, within fifteen (15) Days after receiving the written notice and the application for payment, either accept the Work or notify the Contractor of Work yet to be performed on the Contract. If Owner does not within the time allowed notify the Contractor of Work yet to be performed to fulfill contractual obligations, the interest provided by this subsection shall commence to run forty-five (45) Days after the end of the 15- Day period.

E.5.1.4 Owner will reduce the amount of the retainage if the Contractor notifies the controller of the Owner that the Contractor has deposited in an escrow account with a bank or trust company, in a manner authorized by the Owner, bonds and securities of equal value of a kind approved by the Owner and such bonds and securities have in fact been deposited.

E.5.1.5 Contractor agrees that if Contractor elects to reserve a retainage from any progress payment due to any Subcontractor or supplier, such retainage shall not exceed five percent of the payment, and such retainage withheld from Subcontractors and suppliers shall be subject to the same terms and conditions stated in Subsection E.5 as apply to Owner's retainage from any progress payment due to Contractor.

E.6 FINAL PAYMENT

E.6.1 Upon completion of all the Work under this Contract, the Contractor shall notify the Owner, in writing, that Contractor has completed Contractor's obligations under the Contract and shall prepare its application requesting final payment. Upon receipt of such notice and application for payment, the Owner will inspect the Work, and, if acceptable, submit to the Owner a recommendation as to acceptance of the completed Work and the final estimate of the amount due the Contractor. If the Work is not acceptable, Owner will notify Contractor within fifteen (15) Days of Contractor's request for Final Payment. Upon approval of this final application for payment by the Owner and compliance by the Contractor with provisions in Section K, and Contractor's satisfaction of other provisions of the Contract Documents as may be applicable, the Owner shall pay to the Contractor all monies due under the provisions of these Contract Documents.

E.6.2 Neither Final Payment nor any remaining retained percentage shall become due until the Contractor submits to the Owner (1) a certificate evidencing that insurance required by the Contract Documents to remain in force after Final Payment is currently in effect and will not be canceled or allowed to expire until at least thirty (30) Days' prior written notice has been given to the Owner, (2) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (3) consent of surety, if any, to Final Payment and (4), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver

required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

E.6.3 Acceptance of Final Payment by the Contractor, a Subcontractor or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final application for payment.

E.6.4 Contractor agrees to submit its final payment application within ninety (90) Days after Substantial Completion, unless written extension is granted by Owner. Contractor shall not delay Final Payment application for any reason, including without limitation nonpayment of Subcontractors, suppliers, manufacturers or others not a party to this Contract, or lack of resolution of a dispute with Owner or any other person of matters arising out of or relating to the Contract. If Contractor fails to submit its Final Payment application within ninety (90) Days after Substantial Completion, and Contractor has not obtained written extension by Owner, all requests or Claims for additional costs or an extension of Contract Time shall be waived.

SECTION F JOB SITE CONDITIONS

F.1 USE OF PREMISES

Contractor shall confine equipment, storage of materials and operation of Work to the limits indicated by Contract Documents, Applicable Laws, permits or directions of the Owner. Contractor shall follow the Owner's instructions regarding use of premises, if any.

F.2 PROTECTION OF WORKERS, PROPERTY AND THE PUBLIC

F.2.1 Contractor shall maintain continuous and adequate protection of all of the Work from damage and shall protect the Owner, workers and property from injury or loss arising in connection with this Contract. Contractor shall remedy acceptably to the Owner any damage, injury, or loss, except such as may be directly due to errors in the Contract Documents or caused by authorized representatives or personnel of the Owner. Contractor shall adequately protect adjacent property as provided by law and the Contract Documents.

F.2.2 Contractor shall take all necessary precautions for the safety of all personnel on the job site or otherwise engaged in the undertaking of the Work and shall comply with the Contract Documents, best practices and all applicable provisions of federal, state and municipal safety laws and building codes to prevent accidents or injury to persons on, about or adjacent to the premises where the Work is being performed. Contractor shall erect and properly maintain at all times, as required by the conditions and progress of the Work, all necessary safeguards for protection of workers and the public against any hazards created by construction. Contractor shall designate a responsible employee or associate on the Work site, whose duty shall be the prevention of accidents. The name and position of the person designated shall be reported to the Owner. The Owner has no responsibility for Work site safety. Work site safety shall be the responsibility of the Contractor.

F.2.3 Contractor shall not enter upon private property without first obtaining permission from the property owner or its duly authorized representative. Contractor shall be responsible for the preservation of all public and private property along and adjacent to the Work contemplated under the Contract and shall use every precaution necessary to prevent damage thereto. In the event the Contractor damages any property, the Contractor shall at once notify the property owner and make, or arrange to make, full restitution. Contractor shall, immediately and in writing, report to the Owner, all pertinent facts relating to such property damage and the ultimate disposition of the claim for damage.

F.2.4 Contractor shall be responsible for protection of adjacent work areas including impacts brought about by activities, equipment, labor, utilities, vehicles and materials on the site.

F.2.5 Contractor shall at all times direct its activities in such a manner as to minimize adverse effects on the environment. Handling of all materials shall be conducted so no release will occur that may pollute or become hazardous.

F.2.6 In an emergency affecting the safety of life or limb or of the Work or of adjoining property, the Contractor, without special instruction or authorization from the Owner, shall act reasonably to prevent threatened loss or injury, and shall so act, without appeal, if instructed by the Owner. Any compensation claimed by the Contractor on account of emergency work shall be determined in accordance with section D.

F.3 CUTTING AND PATCHING

F.3.1 Contractor shall be responsible for coordinating all cutting, fitting, or patching of the Work to make its several parts come together properly and fit to receive or be received by work of other contractors or Subcontractors shown upon, or reasonably implied by, the Contract Documents.

F.3.2 Contractor shall be responsible for restoring all cut, fitted, or patched surfaces to an original condition; provided, however, that if a different condition is specified in the Contract Documents, then Contractor shall be responsible for restoring such surfaces to the condition specified in the Contract Documents.

F.4 CLEANING UP

From time to time as may be prudent or ordered by the Owner and, in any event, immediately after completion of the Work, the Contractor shall, at its own expense, clean up and remove all refuse and unused materials of any kind resulting from the Work. If Contractor fails to do so within twenty-four hours after notification by the Owner the work may be done by others and the cost charged to the Contractor and deducted from payment due the Contractor.

F.5 ENVIRONMENTAL CONTAMINATION

F.5.1. Contractor shall be held responsible for and shall indemnify, defend (with counsel of Owner's choice), and hold harmless Owner from and against any costs, expenses, damages, claims, and causes of action, (including attorneys' fees), or any of them, resulting from

all spills, releases, discharges, leaks and disposal of environmental pollution, including storage, transportation, and handling during the performance of the Work or Contractor's obligations under the Contract which occur as a result of, or are contributed by, the negligence or actions of Contractor or its personnel, agents, or Subcontractors or any failure to perform in accordance with the Contract Documents (except to the extent otherwise void under ORS 30.140). Nothing in this section F.5.1 shall limit Contractor's responsibility for obtaining insurance coverages required under Section G.3 of this Contract, and Contractor shall take no action that would void or impair such coverages.

F.5.1.1 Contractor agrees to promptly dispose of such spills, releases, discharge or leaks to the satisfaction of Owner and regulatory agencies having jurisdiction in a manner that complies with Applicable Laws. Cleanup shall be at no cost to the Owner and shall be performed by properly qualified and, if applicable, licensed personnel.

F.5.1.2 Contractor shall obtain the Owner's written consent prior to bringing onto the Work site any (i) environmental pollutants or (ii) hazardous substances or materials, as the same or reasonably similar terms are used in any Applicable Laws. Notwithstanding such written consent from the Owner, the Contractor, at all times, shall:

- (a) properly handle, use and dispose of all environmental pollutants and hazardous substances or materials brought onto the Work site, in accordance with all Applicable Laws;
- (b) be responsible for any and all spills, releases, discharges, or leaks of (or from) environmental pollutants or hazardous substances or materials which Contractor has brought onto the Work site; and
- (c) promptly clean up and remediate, without cost to the Owner, such spills, releases, discharges, or leaks to the Owner's satisfaction and in compliance with all Applicable Laws.

F.5.2 Contractor shall report all reportable quantity releases, as such releases are defined in Applicable Laws, including but not limited to 40 CFR Part 302, Table 302.4 and in OAR 340-142- 0050, to applicable federal, state, and local regulatory and emergency response agencies. Upon discovery, regardless of quantity, Contractor must telephonically report all releases to the Owner. A written follow-up report shall be submitted to Owner within 48 hours of the telephonic report. Such written report shall contain, as a minimum:

- (a) Description of items released (identity, quantity, manifest numbers, and any and all other documentation required by law.)
- (b) Whether amount of items released is EPA/DEQ reportable, and, if so, when reported.
- (c) Exact time and location of release, including a description of the area involved.
- (d) Containment procedures initiated.
- (e) Summary of communications about the release between Contractor and members of the press or Stat, local or federal officials other than

Owner.

- (f) Description of cleanup procedures employed or to be employed at the site, including disposal location of spill residue.
- (g) Personal injuries, if any, resulting from, or aggravated by, the release.

F.6 ENVIRONMENTAL CLEAN-UP

- F.6.1 Unless disposition of environmental pollution is specifically a part of this Contract, or was caused by the Contractor (reference F.5 Environmental Contamination), Contractor shall immediately notify Owner of any hazardous substance(s) which Contractor discovers or encounters during performance of the Work required by this Contract. "Hazardous substance(s)" means any hazardous, toxic and radioactive materials and those substances defined as "hazardous substances," "hazardous materials," "hazardous wastes," "toxic substances," or other similar designations in any federal, state, or local law, regulation, or ordinance, including without limitation asbestos, polychlorinated biphenyl (PCB), or petroleum, and any substances, materials or wastes regulated by 40 CFR, Part 261 and defined as hazardous in 40 CFR S 261.3. In addition to notifying Owner of any hazardous substance(s) discovered or encountered, Contractor shall immediately cease working in any particular area of the project where a hazardous substance(s) has been discovered or encountered if continued work in such area would present a risk or danger to the health or well-being of Contractor's or any Subcontractor's work force, property or the environment.
- F.6.2 Upon being notified by Contractor of the presence of hazardous substance(s) on the project site, Owner shall arrange for the proper disposition of such hazardous substance(s).

F.7 FORCE MAJEURE

A party to this Contract shall not be held responsible for delay or default due to Force Majeure acts, events or occurrences unless they could have been avoided by the exercise of reasonable care, prudence, foresight, and diligence by that party. The Owner may terminate this Contract upon written notice after determining that delay or default caused by Force Majeure acts, events or occurrences will reasonably prevent successful performance of the Contract.

SECTION G INDEMNITY, BONDING, AND INSURANCE

G.1 RESPONSIBILITY FOR DAMAGES / INDEMNITY

- G.1.1 Contractor shall be responsible for all damage to property, injury to persons, and loss, expense, inconvenience, and delay that may be caused by, or result from, the carrying out of the Work to be done under this Contract, or from any act, omission or neglect of the Contractor, its Subcontractors, sub-subcontractors of any tier, suppliers, employees, guests, visitors, invitees and agents.
- G.1.2 To the fullest extent permitted by law, Contractor shall indemnify, defend (with counsel approved by Owner) and hold harmless the Owner, Architect/Engineer, Architect/Engineer's consultants, and their respective

officers, directors, agents, employees, partners, members, stockholders and affiliated companies (collectively "Indemnitees") from and against all liabilities, damages, losses, claims, expenses (including reasonable attorney fees), demands and actions of any nature whatsoever which arise out of, result from or are related to, (a) any damage, injury, loss, expense, inconvenience or delay described in this Section G.1., (b) any accident or occurrence which happens or is alleged to have happened in or about the project site or any place where the Work is being performed, or in the vicinity of either, at any time prior to the time the Work is fully completed in all respects, (c) any failure of the Contractor or its Subcontractors, sub-subcontractors of any tier, suppliers, employees, or consultants to observe or perform any duty or obligation under the Contract Documents which is to be observed or performed by the Contractor, or any breach of any agreement, representation or warranty of the Contractor contained in the Contract Documents or in any subcontract, (d) the negligent acts or omissions of the Contractor, a Subcontractor, sub-subcontractor of any tier, a supplier, a consultant, or anyone directly or indirectly employed by them or any one of them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder (except to the extent otherwise void under ORS 30.140), and (e) any lien filed upon the project or bond claim in connection with the Work. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this Section G.1.2.

- G.1.3 In claims against any person or entity indemnified under Section G.1.2 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under Section G.1.2 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

G.2 PERFORMANCE AND PAYMENT SECURITY; PUBLIC WORKS BOND

- G.2.1 When the Contract Price is \$100,000 or more (or \$50,000 or more in the case of Contracts for highways, bridges and other transportation projects), the Contractor shall furnish and maintain in effect at all times during the Contract Period a performance bond in a sum equal to the Contract Price and a separate payment bond also in a sum equal to the Contract Price. Contractor shall furnish such bonds even if the Contract Price is less than the above thresholds if otherwise required by the Contract Documents.
- G.2.2 Bond forms furnished by the Owner and notarized by awarded Contractor's surety company authorized to do business in Oregon are the only acceptable forms of performance and payment security, unless otherwise specified in the Contract Documents.
- G.2.3 Before execution of the Contract the Contractor shall file with the Construction Contractors Board, and maintain in full force and effect, the separate public works bond required by Oregon Laws 2015, Chapter 279C, and OAR 839-025-0015, unless otherwise exempt under those provisions. The Contractor shall also include in every subcontract a provision requiring the Subcontractor to have a public works bond filed with the

Construction Contractors Board before starting Work, unless otherwise exempt, and shall verify that the Subcontractor has filed a public works bond before permitting any Subcontractor to start Work.

G.3 INSURANCE

G.3.1 Primary Coverage: Insurance carried by Contractor and Subcontractors under this Contract shall be the primary coverage. The coverages indicated are minimums unless otherwise specified in the Contract Documents.

G.3.2 Workers' Compensation: All employers, including Contractor, that employ subject workers who work under this Contract in the State of Oregon shall comply with ORS 656.017 and provide the required Workers' Compensation coverage, unless such employers are exempt under ORS 656.126. This shall include Employer's Liability Insurance with coverage limits of not less than the minimum amount required by statute for each accident. Contractors who perform the Work without the assistance or labor of any employee need not obtain such coverage if the Contractor certifies so in writing. Contractor shall ensure that each of its Subcontractors complies with these requirements. The Contractor shall require proof of such Workers' Compensation coverage by receiving and keeping on file a certificate of insurance from each Subcontractor or anyone else directly employed by either the Contractor or its Subcontractors.

G.3.3 Builder's Risk Insurance:

G.3.3.1 Builder's Risk: During the term of this Contract, for new construction the Contractor shall obtain and keep in effect Builder's Risk insurance on an all risk forms, including earthquake and flood, for an amount equal to the full amount of the Contract, plus any changes in values due to modifications, Change Orders and loss of materials added. Such Builder's Risk shall include, in addition to earthquake and flood, theft, vandalism, mischief, collapse, transit, debris removal, and architect's fees "soft costs" associated with delay of project due to insured peril. Any deductible shall not exceed \$50,000 for each loss, except the earthquake and flood deductible which shall not exceed 2 percent of each loss or \$50,000, whichever is greater. The deductible shall be paid by Contractor if Contractor or its Subcontractors are negligent. The policy will include as loss payees Owner, the Contractor and its Subcontractors as their interests may appear.

G.3.3.2 Builder's Risk Installation Floater: For Work other than new construction, Contractor shall obtain and keep in effect during the term of this Contract, a Builder's Risk Installation Floater for coverage of the Contractor's labor, materials and equipment to be used for completion of the Work performed under this Contract. The minimum amount of coverage to be carried shall be equal to the full amount of the Contract. The policy will include as loss payees Owner, the Contractor and its Subcontractors as their interests may appear. Owner may waive this requirement at their sole and absolute discretion.

G.3.3.3 Such insurance shall be maintained until Owner has occupied the facility.

G.3.3.4 Loss insured under the Builder's Risk insurance shall be adjusted by the Owner and made payable to the

Owner as loss payee. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and

by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their sub-subcontractors of any tier in similar manner. The Owner shall have power to adjust and settle a loss with insurers.

G.3.4 General Liability Insurance:

G.3.4.1 Commercial General Liability: Upon issuance of a Contract, Contractor shall obtain, and keep in effect at Contractor's expense for the term of the Contract, Commercial General Liability Insurance covering bodily injury and property damage in the amount of \$1,000,000 per claim and \$2,000,000 per occurrence in a form satisfactory to Owner. This insurance shall include personal injury liability, products and completed operations, no subcontractors' limitations, and blanket contractual liability coverage for the indemnities provided under this Contract (to the extent contractual liability coverage for the indemnity is available in the marketplace), and shall be issued on an occurrence basis.

G.3.4.2 Automobile Liability: Contractor shall obtain, at Contractor's expense, and keep in effect during the term of this Contract, Automobile Liability Insurance covering owned, and/or hired vehicles, as applicable. The coverage may be written in combination with the Commercial General Liability Insurance. Contractor shall provide proof of insurance of not less than \$1,000,000 per claim and \$2,000,000 per occurrence. Contractor and its Subcontractors shall be responsible for ensuring that all non-owned vehicles maintain adequate Automobile Liability insurance while on site.

G.3.4.3 Owner may adjust the insurance amounts required in Section G.3.4.1 and G.3.4.2 based upon institution specific risk assessments through the issuance of Supplemental General Conditions and a Contract.

G.3.4.4 "Tail" Coverage: If any of the required liability insurance is arranged on a "claims made" basis, "tail" coverage will be required at the completion of this Contract for a duration of 36 months or the maximum time period available in the marketplace if less than 36 months. Contractor shall furnish certification of "tail" coverage as described or continuous "claims made" liability coverage for 36 months following Final Completion. Continuous "claims made" coverage will be acceptable in lieu of "tail" coverage, provided its retroactive date is on or before the effective date of this Contract. Owner's receipt of the policy endorsement evidencing such coverage shall be a condition precedent to Owner's obligation to make final payment and to Owner's final acceptance of Work or services and related warranty (if any).

G.3.4.5: Umbrella Liability: Contractor shall obtain, at Contractor's expense, and keep in effect during the term of this Contract, Umbrella liability Insurance over and above the general liability, automobile liability and workers' compensation coverage if required by Owner in specified limits at time of requirement.

G.3.4.6 Pollution Liability (if required by Owner through issuance of Supplemental General Conditions): Contractor shall obtain, at Contractor's expense, and

keep in effect during the term of this Contract, Pollution liability Insurance in minimum amounts of \$3,000,000 naming Owner as "additional insured," as noted in the "additional insured section below.

- G.3.5 Additional Insured: The general liability insurance coverage, professional liability, umbrella, and pollution liability if required, shall include the Owner as additional insureds but only with respect to the Contractor's activities to be performed under this Contract, and shall include completed operations coverage.

If Contractor cannot obtain an insurer to name the Owner as additional insureds, Contractor shall obtain at Contractor's expense, and keep in effect during the term of this Contract, Owners and Contractors Protective Liability Insurance, naming the Owner as additional insureds with not less than a \$2,000,000 limit per occurrence. This policy must be kept in effect for at least 36 months following Final Completion. As evidence of coverage, Contractor shall furnish the actual policy to Owner prior to execution of the Contract.

- G.3.6 Notice of Cancellation or Change: If the Contractor receives a non-renewal or cancellation notice from an insurance carrier affording coverage required herein, or receives notice that coverage no longer complies with the insurance requirements herein, Contractor agrees to notify Owner by fax within five (5) business days with a copy of the non-renewal or cancellation notice, or written specifics as to which coverage is no longer in compliance. When notified by Owner, the Contractor agrees to stop Work pursuant to this Contract, unless all required insurance remain in effect. Any failure to comply with the reporting provisions of this insurance, except for the potential exhaustion of aggregate limits, shall not affect the coverages provided to the Owner and its institutions, divisions, officers, and employees.

Owner shall have the right, but not the obligation, of prohibiting Contractor from entering the Work site until a new certificate(s) of insurance is provided to Owner evidencing the replacement coverage. The Contractor agrees Owner reserves the right to withhold payment to Contractor until evidence of reinstated or replacement coverage is provided to Owner.

- G.3.7 Certificate(s) of Insurance: As evidence of the insurance coverage required by this Contract, the Contractor shall furnish certificate(s) of insurance to the Owner prior to execution of the Contract. The certificate(s) will specify all of the parties who are additional insureds or loss payees for this contract. Insurance coverage required under this Contract shall be obtained from insurance companies or entities acceptable to the Owner and that are eligible to provide such insurance under Oregon law. Eligible insurers include admitted insurers that have been issued a certificate of authority from the Oregon Department of Consumer and Business Services authorizing them to conduct an insurance business and issue policies of insurance in the state of Oregon, and certain non-admitted surplus lines insurers that satisfy the requirements of applicable Oregon law and which are subject to approval by the Owner. The Contractor shall be financially responsible for all deductibles, self-insured retentions and/or self-insurance included

hereunder. Any deductible, self-insured retention and/or self-insurance in excess of \$50,000 shall be subject to approval by the Owner in writing and shall be a condition precedent to the effectiveness of any Contract. The Owner has the right to require the Contractor at any time during the performance of the Work to furnish to Owner copies of the Contractor's actual policies.

SECTION H SCHEDULE OF WORK

H.1 CONTRACT PERIOD

- H.1.1 Time is of the essence. The Contractor shall at all times carry on the Work diligently, without delay and punctually fulfill all requirements herein. If required by the Contract Documents, Contractor shall commence Work on the site within fifteen (15) Days of Notice to Proceed, unless directed otherwise.
- H.1.2 Unless specifically extended by an Amendment or Change Order, all Work shall be complete by the date contained in the Contract Documents. The Owner shall have the right to accelerate the completion date of the Work, which may require the use of overtime. Such accelerated Work schedule shall be an acceleration in performance of Work under Section D.1.2 (f) and shall be subject to the provisions of Section D.1.
- H.1.3 The Owner shall not waive any rights under the Contract by permitting the Contractor to continue or complete in whole or in part the Work after the date described in Section H.1.2 above.

H.2 SCHEDULE

- H.2.1 Contractor shall provide, by or before the pre-construction conference, the initial as-planned Construction Schedule for review and acceptance by the Owner. The submitted Construction Schedule must illustrate Work by project components, labor trades, and long lead items broken down by building and/or floor where applicable. If Owner shall so elect, Contractor shall provide the Construction Schedule in CPM format showing the graphical network of planned activities, including i) a reasonably detailed list of all activities required to complete the Work; ii) the time and duration that each activity will take to completion; and iii) the dependencies between the activities. Construction Schedules lacking adequate detail, or unreasonably detailed, will be rejected. The Construction Schedule shall include the following: Notice to Proceed or the date the Work commences, if no Notice to Proceed is issued by Owner, Substantial Completion, and Final Completion. Construction Schedules shall be updated monthly, unless otherwise required by the Contract Documents, and submitted with the monthly application for payment. Acceptance of the Construction Schedule by the Owner does not constitute agreement by the Owner as to the Contractor's sequencing, means, methods, or durations. Any positive difference between the Contractor's scheduled completion and the Contract completion date is float owned by the Owner. Owner reserves the right to negotiate the float if it is deemed to be in Owner's best interest to do so. In no case shall the Contractor make a claim for delays if the Work is completed within the Contract Time but after Contractor's scheduled completion.

H.3 PARTIAL OCCUPANCY OR USE

H.3.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage, provided such occupancy or use is consented to by public authorities having jurisdiction over the Work. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have reasonably accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, insurance or self-insurance, maintenance, heat, utilities, and damage to the Work, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents with respect to such portion of the Work. Approval by the Contractor to partial occupancy or use shall not be unreasonably withheld. Immediately prior to such partial occupancy or use, the Owner and Contractor shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work. Partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

SECTION I CORRECTION OF WORK

I.1 CORRECTION OF WORK BEFORE FINAL PAYMENT

The Contractor warrants to the Owner that materials and equipment furnished 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 that the Work will conform to the requirements of the Contract Documents. Work failing to conform to these requirements shall be deemed defective. Contractor shall promptly remove from the premises and replace all defective materials and equipment as determined by the Owner, whether incorporated in the Work or not. Removal and replacement shall be without loss or expense to the Owner, and Contractor shall bear the cost of repairing all Work destroyed or damaged by such removal or replacement. Contractor shall be allowed a period of no longer than thirty (30) Days after Substantial Completion for completion of defective (Punch List) work. At the end of the thirty-day period, or earlier if requested by the Contractor, Owner shall arrange for inspection of the Work by the Architect/Engineer. Should the work not be complete, and all corrections made, the costs for all subsequent re-inspections shall be borne by the Contractor. If Contractor fails to complete the Punch List work within the thirty (30) Day period, Owner may perform such work and Contractor shall reimburse Owner all costs of the same within ten (10) Days after demand without affecting Contractor's obligations.

I.2 WARRANTY WORK

I.2.1 Neither the final certificate of payment nor any provision of the Contract Documents shall relieve the Contractor from responsibility for defective Work and, unless a longer period is specified, Contractor shall correct all defects that appear in the Work within a period of one year from the date of issuance of the written notice of Substantial Completion by the Owner except for latent defects which will be remedied by the Contractor at any time they become apparent. The Owner shall give Contractor notice of defects with reasonable promptness. The Contractor shall perform the warranty Work by correcting defects within twenty-four (24) hours of

notification by Owner, unless otherwise specified in the Contract Documents. Should the Contractor fail to respond within the specified response time, the Owner may, at its option, complete the necessary repairs using another contractor or its own forces. If Owner completes the repairs using Owner's own forces, Contractor shall pay Owner at the rate of one and one-half (1½) times the standard hourly rate of Owner's forces, plus related overhead and any direct non-salary costs. If Owner completes the repairs using another contractor, Contractor shall pay Owner the amount of Owner's direct costs billed by the other contractor for the work, plus the direct salary costs and related overhead and direct non-salary expenses of Owner's forces who are required to monitor that contractor's work. Work performed by Owner using Owner's own forces or those of another contractor shall not affect the Contractor's contractual duties under these provisions, including warranty provisions. In the event of warranty work consisting of emergency repairs, Owner may perform such work and Contractor shall reimburse Owner all costs of the same within ten (10) Days after demand, without affecting Contractor's obligations.

I.2.2 Nothing in this Section I.2 provision shall negate guarantees or warranties for periods longer than one year including without limitation such guarantees or warranties required by other sections of the Contract Documents for specific installations, materials, processes, equipment or fixtures.

I.2.3 In addition to Contractor's warranty, manufacturer's warranties shall pass to the Owner and shall not take effect until such portion of the Work covered by the applicable warranty has been accepted in writing by the Owner.

I.2.4 The one-year period for correction of Work shall be extended with respect to portions of Work performed after Substantial Completion by the period of time between Substantial Completion and the actual performance of the Work, and shall be extended by corrective Work performed by the Contractor pursuant to this Section, as to the Work corrected. The Contractor shall remove from the site portions of the Work which are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

I.2.5 Nothing contained in this Section I.2 shall be construed to establish a period of limitation with respect to other obligations which the Contractor might have under the Contract Documents. Establishment of the period for correction of Work as described in this Section I.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

I.2.6 If the Owner prefers to accept Work which is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Price will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

SECTION J
SUSPENSION AND/OR TERMINATION OF THE
WORK

J.1 OWNER'S RIGHT TO SUSPEND THE WORK

J.1.1 The Owner has the authority to suspend portions or all of the Work due to the following causes:

- (a) Failure of the Contractor to correct unsafe conditions;
- (b) Failure of the Contractor to carry out any provision of the Contract;
- (c) Failure of the Contractor to carry out orders;
- (d) Conditions, in the opinion of the Owner, which are unsuitable for performing the Work;
- (e) Time required to investigate differing site conditions;
- (f) Any reason considered to be in the public interest.

J.1.2 The Owner shall notify Contractor and the Contractor's Surety in writing of the effective date and time of the suspension, and Owner shall notify Contractor and Contractor's surety in writing to resume Work.

J.2 CONTRACTOR'S RESPONSIBILITIES

J.2.1 During the period of the suspension, Contractor is responsible to continue maintenance at the project just as if the Work were in progress. This includes, but is not limited to, protection of completed Work, maintenance of access, protection of stored materials, temporary facilities, and clean-up.

J.2.2 When the Work is recommenced after the suspension, the Contractor shall replace or renew any Work damaged during the suspension, remove any materials or facilities used as part of temporary maintenance, and complete the project in every respect as though its prosecution had been continuous and without suspension.

J.2.3 COMPENSATION FOR SUSPENSION

J.2.4

J.2.1 Depending on the reason for suspension of the Work, the Contractor or the Owner may be due compensation by the other party. If the suspension was required due to acts or omissions of Contractor, the Owner may assess the Contractor actual costs of the suspension in terms of administration, remedial work by the Owner's forces or another contractor to correct the problem associated with the suspension, rent of temporary facilities, and other actual costs related to the suspension. If the suspension was caused by acts or omissions of the Owner, the Contractor may be due compensation which shall be defined using Section D, Changes in Work. If the suspension was required through no fault of the Contractor or the Owner, neither party shall owe the other for the impact.

J.4 OWNER'S RIGHT TO TERMINATE CONTRACT

J.4.1 The Owner may, without prejudice to any other right or

remedy, and after giving Contractor seven (7) Days' written notice and an opportunity to cure, terminate the Contract in whole or in part under the following conditions:

- (a) If Contractor should, voluntarily or involuntarily, seek protection under the United States Bankruptcy Code and Contractor as debtor-in-possession or the Trustee for the estate fails to assume the Contract within a reasonable time;
- (b) If Contractor should make a general assignment for the benefit of Contractor's creditors;
- (c) If a receiver should be appointed on account of Contractor's insolvency;
- (d) If Contractor should repeatedly refuse or fail to supply an adequate number of skilled workers or proper materials to carry on the Work as required by the Contract Documents, or otherwise fail to perform the Work in a timely manner;
- (e) If Contractor should repeatedly fail to make prompt payment to Subcontractors or for material or labor, or should disregard laws, ordinances or the instructions of the Owner; or
- (f) If Contractor is otherwise in breach of any part of the Contract.
- (g) If Contractor is in violation of Applicable Laws, either in the conduct of its business or in its performance of the Work.

J.4.2 At any time that any of the above occurs, Owner may exercise all rights and remedies available to Owner at law or in equity, and, in addition, Owner may take possession of the premises and of all materials and appliances and finish the Work by whatever method it may deem expedient. In such case, the Contractor shall not be entitled to receive further payment until the Work is completed. If the Owner's cost of finishing the Work exceeds the unpaid balance of the Contract Price, Contractor shall pay the difference to the Owner.

J.5 TERMINATION FOR CONVENIENCE

J.5.1 Owner may terminate the Contract in whole or in part whenever Owner determines that termination of the Contract is in the best interest of Owner or the public.

The Owner shall provide the Contractor with seven (7) Days prior written notice of a termination for Owner's or for public convenience. After such notice, the Contractor shall provide the Owner with immediate and peaceful possession of the premises and materials located on and off the premises for which the Contractor received progress payment under Section E. Compensation for Work terminated by the Owner under this provision will be according to Section E. In no circumstance shall Contractor be entitled to lost profits for Work not performed due to termination.

J.6 ACTION UPON TERMINATION

J.6.1 Upon receiving a notice of termination, and except as directed otherwise by the Owner, Contractor shall immediately cease placing further subcontracts or orders for materials, services, or facilities. In addition, Contractor shall terminate all subcontracts or orders to the extent they

relate to the Work terminated and, with the prior written approval of the Owner, settle all outstanding liabilities and termination settlement proposals arising from the termination of subcontracts and orders.

J.6.2 As directed by the Owner, Contractor shall, upon termination, transfer title and deliver to the Owner all Record Documents, information, and other property that, if the Contract had been completed, would have been required to be furnished to the Owner.

I.6.3 Upon Owner's notice of termination pursuant to either Section

J.4 or J.5, if Owner shall so elect, Contractor shall assign the Owner such subcontracts and orders as Owner shall specify. In the event Owner elects to take assignment of any such subcontract or order, Contractor shall take such action and shall execute such documents as Owner shall reasonably require for the effectiveness of such assignment and Contractor shall ensure that no contractual arrangement between it and its subcontractors or suppliers of any tier or sub-tier shall prevent such assignment.

SECTION K CONTRACT CLOSE OUT

K.1 RECORD DOCUMENTS

As a condition of final payment (refer also to section E.6), Contractor shall comply with the following: Contractor shall provide Record Documents for the entire project to Owner. Record Documents shall depict the project as constructed and shall reflect each and every change, modification, and deletion made during the construction. Record Documents are part of the Work and shall be provided prior to the Owner's issuance of final payment. Record Documents include all modifications to the Contract Documents unless otherwise directed, and accurate MWESB Reports.

K.2 OPERATION AND MAINTENANCE MANUALS

As part of the Work, Contractor shall submit two completed operation and maintenance manuals ("O & M Manuals") for review by the Owner prior to submission of any pay request for more than 75% of the Work. Owner's receipt of the O & M Manuals shall be a condition precedent to any payment thereafter due. The O & M Manuals shall contain a complete set of all Submittals, all product data as required by the specifications, training information, telephone list and contact information for all consultants, manufacturers, installer and suppliers, manufacturer's printed data, record and shop drawings, schematic diagrams of systems, appropriate equipment indices, warranties and bonds. The Owner shall review and return one O & M Manual for any modifications or adjustments required. Prior to submission of its final pay request, Contractor shall deliver two (2) complete and approved sets of O & M Manuals in paper form and one (1) complete and approved set in electronic form to the Owner and Owner's receipt of the O & M Manuals shall be a condition precedent to Owner's obligation to make final payment.

K.3 COMPLETION NOTICES

K.3.1 Contractor shall provide Owner written notice of both Substantial and Final Completion. The certificate of Substantial Completion shall state the date of Substantial Completion, the responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and the time within which the Contractor shall finish all items on the Punch List accompanying the Certificate. Both completion notices

must be signed by the Contractor and the Owner to be valid. The Owner shall provide the final signature on the notices. The notices shall take effect on the date they are signed by the Owner.

K.3.2 Substantial Completion of a facility with operating systems (e.g., mechanical, electrical, HVAC) shall be that degree of completion that has provided a minimum of thirty (30) continuous Days of successful, trouble-free operation, which period shall begin after all performance and acceptance testing has been successfully demonstrated to the Owner. All equipment contained in the Work, plus all other components necessary to enable the Owner to operate the facility in the manner that was intended, shall be complete on the Substantial Completion date. The Contractor may request that a Punch List be prepared by the Owner with submission of the request for the Substantial Completion notice.

K.4 TRAINING

As part of the Work, and prior to submission of the final application for payment, the Contractor shall schedule with the Owner training sessions for all equipment and systems as required by the Contract Documents. Contractor shall schedule training sessions at least two weeks in advance of the date of training to allow Owner to provide its personnel with adequate notice. The O & M Manual shall be used as a basis for training. In addition to any off-site training required by the Contract Documents, training shall include a formal session conducted at the Work site after the equipment and/or system is completely installed and operational in its normal operating environment.

K.5 EXTRA MATERIALS

As part of the Work, Contractor shall provide spare parts, extra maintenance materials, and other materials or products in the quantities specified in the Contract Documents prior to final payment. Delivery point for extra materials shall be designated by the Owner.

K.6 ENVIRONMENTAL CLEAN-UP

As part of the Final Completion notice, or as a separate written notice submitted with or before the notice of Final Completion, the Contractor shall notify the Owner that all environmental and pollution clean-up, remediation and closure have been completed in accordance with all Applicable Laws and pursuant to the authority of all agencies having jurisdiction, and Contractor shall provide Owner with any and all documentation related to the same, including but not limited to directives, orders, letters, certificates and permits related to or arising from such environmental pollution. The notice shall reaffirm the indemnification given under Section F.5.1 above. Contractor's completion of its obligations under this Section K.6 and Owner's receipt of documents evidencing such completion shall be a condition precedent to Owner's obligation to make final payment.

K.7 CERTIFICATE OF OCCUPANCY

Owner's receipt of an unconditioned certificate of occupancy from the appropriate state and/or local building officials shall be a condition precedent to Owner's obligation to make final payment, except to the extent failure to obtain an unconditional certificate of occupancy is due to the sole fault or neglect of Owner.

K.8 OTHER CONTRACTOR RESPONSIBILITIES

The Contractor shall be responsible for returning to the

Owner all property of Owner issued to Contractor during construction such as keys, security passes, site admittance badges, and all other pertinent items. Upon notice from Owner, Contractor shall be responsible for notifying the appropriate utility companies to transfer utility charges from the Contractor to the Owner. The utility transfer date shall not be before Substantial Completion and may not be until Final Completion, if the Owner does not take beneficial use of the facility and the Contractor's forces continue with the Work.

K.9 SURVIVAL

All warranty and indemnification provisions of this Contract, and all of Contractor's other obligations under this Contract that are not fully performed by the time of Final Completion or termination, shall survive Final Completion or any termination of the Contract.

EXHIBIT B

**OREGON STATE UNIVERSITY
GMP AMENDMENT TO CONTRACT**

THIS AMENDMENT IS BETWEEN:

OWNER: **Oregon State University**

And

**CONSTRUCTION MANAGER/
GENERAL CONTRACTOR ("the CM/GC"):**

The Project is:

Date of Original CM/GC Contract:

Date of this Amendment:

The Owner and CM/GC hereby amend the Contract as set forth below. Capitalized terms used but not defined herein shall have the meanings given in the Contract Documents. Except as amended hereby, the Contract remains in full force and effect.

1. **GMP.** The parties agree that the GMP for the Project is \$ _____, consisting of the Preconstruction Fee, the Estimated Cost of the Work and the CM/GC Fee (stated as a fixed dollar lump sum amount), as follows:

Preconstruction Fee: \$ _____

Estimated Cost of Work (Est. COW): \$ _____

CM/GC Fee (___ % of Est. COW): \$ _____

GMP (Total of above categories): \$ _____

For purposes of determining the GMP, the Estimated Cost of the Work includes the CM/GC's Contingency, costs for General Conditions Work, and the costs of all components and systems required for a complete, fully functional facility.

2. **Basis of GMP.** The GMP is based on the GMP Supporting Documents attached as Attachments A-F (___ pages) including the Allowances, assumptions, exclusions, unit prices, and alternates designated therein.

3. **Plans and Specifications.** The Plans and Specifications for the Project are as listed in the GMP Supporting Documents. CM/GC shall perform Construction Phase Services in accordance with the Plans and Specifications and the other Contract Documents and any modifications thereto.

4. **Substantial Completion Date.** Notwithstanding any provision in the GMP Supporting Documents to the contrary, the required date for Substantial Completion is: *[Select one of the following (insert new date if different Substantial Completion date has been agreed upon): the date stated in the CM/GC Contract/ _____, 2017]*

5. **Bonds.** CM/GC shall obtain new payment and performance bonds, or increase the amount of the performance and payment bonds previously provided in connection with this CM/GC Contract, as required by Section G of the OSU General Conditions for Public Improvement Contracts, so that each new bond, or with respect to increases in existing bonds, the sum of the amount of each existing bond and the increase in the amount of each such existing bond, shall equal or exceed the GMP, prior to supplying any labor or materials for prosecution of the Work under this GMP Amendment.

THIS AMENDMENT is executed in two original copies of which one is to be delivered to the CM/GC, and the remainder to Owner.

CM/GC:

Name of Firm: _____

Address: _____

CM/GC's Federal Tax I.D. #: _____

Construction Contractor's Board Registration No.: _____

Signature of Authorized Representative of CM/GC

Title _____

Date _____

OWNER:

Oregon State University

Michael J. Green

Title: Interim Vice President for Finance and Administration

Date _____

Attachment A Plans, Specifications, Supplementary Conditions of the Contract, on which the Guaranteed Maximum Price is based, pages ____ through ____ dated _____.

Attachment B Allowance items, pages ____ through ____ dated _____.

Attachment C Assumptions and clarifications made in preparing the Guaranteed Maximum Price, pages ____ through _____, dated _____.

Attachment D Completion schedule, pages ____ through _____, dated _____.

Attachment E Alternate prices, pages ____ through _____, dated _____.

Attachment F Unit prices, pages ____ through _____, dated _____.

EXHIBIT C

DIRECT COSTS/GC WORK COSTS MATRIX

EXHIBIT C
DIRECT COSTS/GENERAL CONDITIONS WORK COSTS MATRIX

Description	Construction costs/Paid by Owner		Contractor's O/H Part of CM/GC's Fee	Misc. Costs Paid by Owner
	Direct Cost of the Work	General Conditions Work Costs		
Costs Related to CM Staffing & Job Office				
1 Project Superintendent		X		
2 Area Superintendents		X		
3 Project Executive (for project specific time only)		X*		
4 Senior Project Manager (for project specific time only)		X		
5 Project Manager		X		
6 Project Engineers		X		
7 Field Engineers = install, adjust, and/or trouble-shoot equipment		X		
8 Project Admin = on-site office manager, payroll, clerical services		X*		
9 Scheduler (for project specific time only)		X		
10 MEP Coordinator (for project specific time only)		X		
11 LEED Coordinator (for project specific time only)		X		
12 Safety Coordinator (for project specific time only)		X		
13 Detailer		X		
14 Accounting/Data Processing			X	
15 Payroll Accountant			X	
16 Surveying		X		
17 Benefits - included in hourly rates		X		
18 Vacation Time - included in hourly rates		X		
19 Travel, Hotel, Meals, etc. (in accordance with Agreement for product verification only)		X		
20 Sick Leave - included in hourly rates		X		
21 Bonuses			X	
22 Jobsite Office material costs and expendables		X		
23 Warranty			X	
24 Corrective/Non-confirming repair			X	
25 Corrective work not due to contractor default			X	
26 PM auto rental		X		
27 PM auto fuel for on-site job-related errands only - not travel from home		X		
28 Project Superintendent truck rental		X		
29 Project Superintendent truck fuel for on-site job-related errands only - not travel from home		X		
30 Office Trailer Rental		X		
31 Office Furniture/Equipment		X*		
32 Blueprints for sub bidding - Allowance		X*		
33 Blueprints for day-to-day job operations		X		
34 Postage/FedEx		X		
35 Project Photos		X		
36 Phones/Computers & other Electronic Devices, associated services charges			X	
37 General Contractor Bond		X		
38 Subcontractor Bonds		X*		

Description	Construction costs/Paid by Owner		Contractor's O/H Part of CM/GC's Fee	Misc. Costs Paid by Owner
	Direct Cost of the Work	General Conditions Work Costs		
39 Insurance GL, Auto (in accordance with OSU contract only)			X	
40 Insurance All Risk	X			
41 Soils report				X
42 Testing and Inspections				X
43 Facility training	X			
44 Building Permits/Fees				X
45 Development Permits/fees				X
46 Estimating	X			
47 Corporate accounting			X	
48 Corporate safety officer			X	
49 Main office administration			X	
50 Corporate IT director			X	
51 Legal			X	
52 Main office payroll costs			X	
53 Main office fringe/bonus costs		X*		
54 Construction Wages for trade labor		X*		X
55 Labor Burden for trade labor, including Workers Comp premiums		X*		
56 Subcontracts	X			
57 Material & Equipment related to craft labor & site logistics	X			
58 Rental-Contractor Owned equip (less than \$2000 will be purchased)	X*			
59 Small Tools (less than \$2000 will be purchased)		X*		
60 Job truck rental/operation		X		
61 Job truck fuel		X		
62 Water truck		X		
63 Dewatering		X		
64 Equipment rental -third party	X			
65 Storage Trailer rental		X		
66 Temporary Toilets		X		
67 Project Signage		X		
68 Temporary Fencing		X		
69 Barricades		X		
70 Temporary Enclosures		X		
71 Temporary Stairs		X		
72 Opening Protection		X		
73 Safety railing and nets		X		
74 Drinking water (NOT coffee) and supplies (cups)		X		
Safety equipment for CMGC personnel. Generic only - not logo materials. Subs provide own in COW.	X	X		
75 First Aid supplies for CMGC personnel. Subs provide own in COW.	X	X		
77 Security		X*		
78 Weather protection		X		
79 Mobilization/Demobilization		X		
80 Craft Parking			X	
81 Craft Shuttles			X	
82 Telephone and Data line installation		X		

Description	Construction costs/Paid by Owner		Contractor's O/H Part of CM/GC's Fee	Misc. Costs Paid by Owner
	Direct Cost of the Work	General Conditions Work Costs		
83 Temp utilities hookup		X		
84 Temp utility bills				X
85 Periodic Cleanup	X			
86 Final cleanup	X			
87 Dump permits/fees	X			
88 Trash removal/Hauling	X			
89 Fagging/Traffic control	X			
90 Dust Control	X			
91 Trash chute	X			
92 Trade permits				X
93 Manlift Materials and Rental	X			
94 Manlift Erect/Dismantle	X			
95 Manlift operator	X			
96 Crane rental	X			
97 Crane operator & bellman	X			
98 Crane Erect/Dismantle/Jump	X			
99 Crane Service agreement costs	X			
100 Temp elevator operator	X			
101 Temp elevator agreement	X			
102 Forklift rental	X			
103 Forklift operator	X			
104 Equipment Fuel	X			

EXHIBIT D

OSU SUPPLEMENTAL GENERAL CONDITIONS

OREGON STATE UNIVERSITY

SUPPLEMENTAL GENERAL CONDITIONS

To The

PUBLIC IMPROVEMENT GENERAL CONDITIONS

Project Name: UHDS ROOF REPLACEMENT

The following modify the June 30, 2017 Oregon State University General Conditions (“OSU Public Improvement General Conditions”) for this Contract. Where a portion of the OSU General Conditions is modified by these Supplemental General Conditions, the unaltered portions shall remain in effect.

SG-1 Section B.4 is modified as follows: Revise to read:

“Contractor shall obtain and pay for all necessary permits and licenses, except for those specifically excluded in the Supplemental General Conditions, for the construction of the Work, for temporary obstructions, enclosures, opening of streets for pipes, walls, utilities, environmental Work, etc., as required for the project. Owner shall obtain and pay for the general building permit and pay for any specialty permits required for the Work. Contractor shall be responsible for all violations of the law, in connection with the construction or caused by obstructing streets, sidewalks or otherwise. Contractor shall give all requisite notices to public authorities. The Contractor shall pay all royalties and license fees. The Contractor shall defend all suits or claims for infringement of any patent or other proprietary rights and save harmless and blameless from loss, on account thereof, Oregon State University, and its departments, divisions, members and employees.

SG-2 Section F.2.4 is modified as follows: Add the following:

“Contractor shall verify that all mechanical or electrical equipment in the construction areas that may be affected by the Work is in working order and shall notify the Owner, in writing, of any equipment not in working order prior to the start of the Work. Start of Work will be considered as acknowledgement that all equipment is in good working order. Contractor shall be required to restore equipment to its original, or better, condition upon completion of the Project.”

SG-3 Section G.3 is replaced with the following:

“G.3.1 General Requirements. The required insurance amounts set forth below do not in any way limit the amount or scope of liability of Contractor under this Contract. The amounts listed indicate only the minimum amounts of insurance coverage Owner is

willing to accept to help insure full performance of all terms and conditions of this Contract.

G.3.1.1 Primary Coverage and Non-Contributory Coverage. Insurance carried by Contractor under this Contract shall be primary and non-contributory coverage. The coverages indicated are minimums unless otherwise specified in the Contract Documents.

G.3.1.2 Company Ratings. All policies of insurance must be written by companies having an A.M. Best rating of no less than "A-VII", or equivalent. Owner may, upon thirty (30) days written notice to Contractor, require Contractor to change any carrier whose rating drops below an "A-VII" rating. Eligible insurers include admitted insurers that have been issued a certificate of authority from the Oregon Department of Consumer and Business Services authorizing them to conduct an insurance business and issue policies of insurance in the state of Oregon, and certain non-admitted surplus lines insurers that satisfy the requirements of applicable Oregon law and which are subject to approval the Owner.

G.3.1.3 Additional Insured. Each liability policy, except Workers' Compensation and Professional Liability, shall be endorsed to include Owner, its officers, trustees, employees and agents as additional insured but only with respect to the Contractor's activities to be performed under this Contract.

If Contractor cannot obtain an insurer to name the Owner as additional insured, Contractor shall obtain at Contractor's expense, and keep in effect during the term of this Contract, Owners and Contractors Protective Liability Insurance, naming the Owner as additional insured with minimum limits of \$2,000,000 per occurrence and \$2,000,000 aggregate. This policy must be kept in effect for 36 months following Final Completion. As evidence of coverage, Contractor shall furnish the actual policy to Owner prior to execution of the Contract.

G.3.1.4 Notice of Cancellation or Change. If the Contractor receives a non-renewal or cancellation notice from an insurance carrier affording coverage required herein, or receives notice that coverage no longer complies with the insurance requirements herein, Contractor agrees to notify Owner by fax within five (5) business days with a copy of the non-renewal or cancellation notice, or written specifics as to which coverage is no longer in compliance. When notified by Owner, the Contractor agrees to stop Work pursuant to this Contract, unless all required insurance remain in effect. Any failure to comply with the reporting provisions of this insurance, except for the potential exhaustion of aggregate limits, shall not affect the coverages provided to the Owner.

Owner shall have the right, but not the obligation, of prohibiting Contractor from entering the Work site until a new certificate(s) of insurance is provided to Owner evidencing the replacement coverage. The Contractor agrees Owner reserves the right to withhold payment to Contractor until evidence of reinstated or replacement coverage is provided to Owner.

G.3.1.5 Deductibles and Self-insured Retentions. Any deductible, self-insured retention and/or self-insurance in excess of \$50,000 shall be subject to approval by the Owner in writing and shall be a condition precedent to the effectiveness of any Contract.

G.3.2 Workers' Compensation: All employers, including Contractor, that employ subject workers who work under this Contract in the State of Oregon shall comply with ORS 656.017 and provide the required Workers' Compensation coverage, unless such employers are exempt under ORS 656.126. This shall include Employer's Liability Insurance with minimum limits of \$1,000,000 each accident; \$1,000,000 disease-each employee; and \$1,000,000 disease-policy limit. Contractors who perform the Work without the assistance or labor of any employee need not obtain such coverage if the Contractor certifies so in writing. Contractor shall ensure that each of its Subcontractors complies with these requirements. The Contractor shall require proof of such Workers' Compensation coverage by receiving and keeping on file a certificate of insurance from each Subcontractor or anyone else directly employed by either the Contractor or its Subcontractors.

G.3.3 Commercial General Liability. Upon issuance of a Contract, Contractor shall obtain, and keep in effect at Contractor's expense for the term of the Contract, Commercial General Liability Insurance covering bodily injury and property damage in the minimum amount of \$2,000,000 per occurrence and \$4,000,000 aggregate. This insurance shall include personal injury liability, products and completed operations, and contractual liability coverage for the indemnities provided under this Contract (to the extent contractual liability coverage for the indemnity is available in the marketplace).

G.3.4 Automobile Liability. Contractor shall obtain, at Contractor's expense, and keep in effect during the term of this Contract, Automobile Liability Insurance with "symbol 1" coverage (owned, hired and non-owned vehicles). The coverage may be written in combination with the Commercial General Liability Insurance. Contractor shall provide proof of insurance showing minimum limits of \$1,000,000 combined single limit. Contractor and its Subcontractors shall be responsible for ensuring that all non-owned vehicles maintain adequate Automobile Liability insurance while onsite.

G.3.5 Umbrella Liability. Contractor shall obtain, at Contractor's expense, and keep in effect during the term of this Contract, Umbrella Liability Insurance over and above General Liability, Automobile Liability and Employers' Liability insurance coverage with minimum limits of \$5,000,000 per occurrence and \$5,000,000 aggregate.

G.3.6 Owner may adjust the insurance amounts required in Section G.3.3, G.3.4, and G.3.5 through the issuance of Supplemental General Conditions and a Contract.

G.3.7 Professional Liability (if required by Owner through issuance of Supplemental General Conditions). Contractor shall obtain, at Contractor's expense, Professional Liability/Errors & Omissions insurance covering damages caused by any negligent error, omission, or professional misconduct of the Contractor. The policy may be either a

practice based policy or a policy pertaining to the specific Project. Professional Liability insurance shall have minimum limits of \$3,000,000 each claim and \$3,000,000 aggregate.

G.3.7.1 Tail Coverage. If the Professional Liability insurance is arranged on a “claims made” basis, tail coverage will be required at the completion of this Contract for a duration of 36 months of maximum time period available in the marketplace if less than 36 months. Contractor shall furnish certificates of insurance showing tail coverage as described or continuous “claims made” liability coverage for 36 months following Final Completion. Continuous “claims made” coverage will be acceptable in lieu of tail coverage, provide its retroactive date is on or before the effective date of this Contract. Owner’s receipt of the certificate of insurance and/or endorsement evidencing such coverage shall be a condition precedent to Owner’s obligation to make final payment and to Owner’s final acceptance of Work or Services and related warranty (if any).

G. 3.8 Contractor’s Pollution Liability (if required by Owner through issuance of Supplemental General Conditions). Contractor shall obtain, at Contractor’s expense, and keep in effect during the term of this Contract, Pollution Liability Insurance in minimum amounts of \$3,000,000 per occurrence and \$3,000,000 aggregate, naming Owner as additional insured as noted in the Additional Insured section.

G.3.9 Builders' Risk Insurance – Completed Value Basis. Unless otherwise provided, the Contractor shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, Builders' Risk Insurance in the amount of the initial Contract Sum, plus value of subsequent modifications, change orders, and cost of material supplied or installed by others, comprising total value of the entire Project at the site on a replacement cost basis without optional deductibles. The earthquake and flood insurance sub-limits will be equal to the maximum probable loss.

G.3.9.1 Policy must provide coverage from the time any covered property becomes the responsibility of the Contractor, and continue without interruption during construction, renovation, or installation, including any time during which the covered property is being transported to the construction installation site, or awaiting installation, whether on or off site.

G.3.9.2 Such Builders' Risk Insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made or until no person or entity other than the OSU has insurable interest in the property to be covered, whichever is later.

G.3.9.3 The Builders' Risk insurance shall include the Owner, the Contractor, subcontractors and sub-tier contractors in the Project as named insureds on the policy, and shall include a waiver of subrogation provision in favor of all parties.

G.3.9.4 The Builders' Risk Coverage shall be written on a **Special** Covered Cause of Loss

form and shall include theft, vandalism, malicious mischief, collapse, false-work, temporary buildings, transit, debris removal including demolition, increased cost of construction, architect's fees and expenses, flood (including water damage), earthquake, and if applicable, all below and above ground structures, piping, foundations including underground water and sewer mains, piling including the ground on which the structure rests and excavation, backfilling, filling, and grading.

G.3.9.5 The Builders' Risk shall include a Beneficial Occupancy Clause. The policy shall specifically permit occupancy of the building during construction. Contractor shall take reasonable steps to obtain consent of the insurance company and delete any provisions with regard to restrictions within any Occupancy Clauses within the Builder's Risk Policy. The Builder's Risk Policy shall remain in force until final payment has been made on the project by OSU.

G.3.9.6 Equipment Breakdown Coverage (a.k.a. Boiler & Machinery) shall be included as required by the Contract Documents or by law, which shall specifically covers insured equipment during installation and testing (including cold and hot testing).

G.3.9.7 The Builders' Risk shall include loss of use due to delays in project completion caused by covered peril losses to the Project, including loss of income and rents and soft costs.

G.3.9.8 The deductible shall not exceed \$50,000 for physical damage and shall be the responsibility of the Contractor. The deductible shall be paid by the Contractor if the Contractor is negligent. The earthquake and flood deductible shall not exceed 2 percent of each loss or \$50,000, whichever is greater.

G.3.9.9 OSU shall be provided with a certificate of insurance, as well as a copy of the policy.

G.3.9.10 The Contractor shall be responsible for the payment of premium, giving or receiving notice of cancellation; and requesting amendments to this policy and accepting amendments to this policy made by the company.

G.3.9.11 OSU reserves the right, but not the obligation, to purchase the Builder's Risk insurance policy.

G.3.10 Builder's Risk Installation Floater. For Work other than new construction, Contractor shall obtain and keep in effect during the term of this Contract, a Builder's Risk Installation Floater for coverage for the Contractor's labor, materials and equipment to be used for completion of the work performed under this Contract. The minimum amount of coverage to be carried shall be equal to the full amount of the Contract. The policy will include as loss payees Owner, the Contractor and its Subcontractors as their interests may appear. Owner may waive this requirement at their sole and absolute discretion.

G.3.11 Certificate(s) of Insurance. As evidence of the insurance coverage required by this Contract, the Contractor shall furnish certificate(s) of insurance to the Owner prior to the execution of the Contract. The certificates(s) will specify all of the parties who are additional insured or loss payees for this Contract, and the applicable endorsements will be attached. Additional insured endorsements must include completed operations without restriction to contractual requirements.

G.3.12 Subcontractors. The Contractor shall require Subcontractors to have insurance as outlined in section G.3.1 through G.3.4; however, the policy limits may be reduced, but no case shall the policy limits be less than \$1,000,000.”

SG-4 Section H.2.1 is replaced with the following:

"Contractor shall provide, by or before the pre-construction conference, a detailed Construction Schedule for review and acceptance by the Owner. The submitted Construction Schedule must illustrate Work by significant project components, significant labor trades, long lead items, broken down by building and/or floor where applicable. Each Construction Schedule item shall account for no greater than 5% of the monetary value of the Project or 5% of the available time. Schedules with activities of less than one day or valued at less than 1% of the Contract shall be considered too detailed and shall not be accepted. Schedules lacking adequate detail, or unreasonably detailed, shall be rejected. Included within the Construction Schedule are the following: Notice to Proceed, Substantial Completion, and Final Completion. Contractor shall provide an updated, full project schedule with each payment request. In addition, twice monthly, the Contractor shall provide an updated three-week forward-looking Construction Schedule. Acceptance of the Schedule by the Owner does not constitute agreement by the Owner as to the Contractor's sequencing, means, methods, or durations. Any positive difference between the Contractor's scheduled completion and the contract completion date is float owned by the Project. Use of the float shall be negotiated. In no case shall the Contractor make a claim for delays if the Work is completed within the Contract time but after Contractor's scheduled completion."

EXHIBIT E

Travel Reimbursement Policy

Oregon State University Contractor Travel Reimbursement Policy

The Travel Policy set forth below may be modified from time to time and posted on Owner's website.

Category	Rate Summary	Policy
Instate Travel: Meal per diem \$60 B = \$15 L = \$15 D = \$30	All Oregon Cities Meals \$60.00 Lodging \$135.00	<ul style="list-style-type: none"> • The per diem equals the federal rate using the <i>IRS's High-Low Substantiation Method</i>. All Oregon cities are currently Low Cost Cities. • No receipts are required for lodging, meals and incidental expenses (these are reimbursed on a per diem basis). • If meals are provided at the meeting or event, no meal per diem is allowed. • No meal per diem is allowed on one day trips. • Lodging tax is reimbursed as a miscellaneous expense.
Out-of-State, and Continental US Travel: High meal per diem \$71 B = \$17.75 L = \$17.75 D = \$35.50 Low meal per diem \$60 B = \$15 L = \$15 D = \$30	High: See list of High Cost Cities Meals \$71.00 Lodging \$216.00 Low: All other cities, Continental US Meals \$60.00 Lodging \$135.00	<ul style="list-style-type: none"> • The per diem equals the federal rate using the <i>IRS's High-Low Substantiation Method</i>. • No receipts are required for lodging, meals and incidental expenses (these are reimbursed on a per diem basis). • If meals are provided at the meeting or event, no meal per diem is allowed. • No meal per diem is allowed on one day trips. • Lodging tax is reimbursed as a miscellaneous expense.
Foreign & Non-Continental US and Overseas Non-Foreign Areas (Alaska, Hawaii, Guam, etc.)	Contractor travel to these locations is minimal and the federal tables are complicated. Call for per diem rates.	<ul style="list-style-type: none"> • Contact Oregon State University Business Affairs for current per diem rates for these locations. • If meals are provided at the meeting or event, no meal per diem is allowed. • Lodging tax is reimbursed as a miscellaneous expense for Alaska, Hawaii, Puerto Rico, and US possessions. Lodging tax is included in the per diem for foreign travel. • No receipts are required for lodging, meals and incidental expenses.
Mileage for Private Vehicle:	58 cents per mile.	<ul style="list-style-type: none"> • Mileage can be calculated one of 3 ways: <ul style="list-style-type: none"> ○ Mileage Chart in the Excel file (see Excel file) ○ Actual mileage (from the odometer)

		<ul style="list-style-type: none"> ○ Mapping software (e.g., mapquest.com) • Mileage cannot be claimed in addition to fees for rented vehicles and fuel expenses for a rented vehicle. • Mileage is not reimbursable unless one way trip exceeds 25 miles from origin to destination.
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Pro-ration of meals for partial days involving an overnight stay:	INITIAL Day of Travel – Leave:	Prior to 7:00 am	7:00 am to 12:59 pm	1:00 pm and after
	Meal Allowance	Breakfast, lunch, dinner	Lunch, dinner	Dinner
	FINAL Day of Travel – Return:	Prior to Noon	12:00 noon to 5:59 pm	6:00 pm and after
	Meal Allowance	Breakfast	Breakfast, lunch	Breakfast, lunch, dinner

Rented Vehicles: OSU will only reimburse vehicle rental rates for compact and economy cars and their equivalent green class. OSU will reimburse for liability insurance issued through the vehicle rental company. Other classes of vehicles may be rented for circumstances that are approved in advance by the OSU representative for reasons that include space requirements or inclement weather conditions. Receipts are required.

Airfare: OSU will only reimburse actual economy rate airfare, plus mandatory taxes and fees. Receipts are required.

Ground Transportation: Taxicab, train (coach or business class only), and airport shuttle fees will be reimbursed. Receipts are required if over \$75 per item.

Incidental Expenses: *Incidental expenses are combined with the meal per diem rate and will not be separately reimbursed.* Incidental expenses include, but are not limited to, expenses for laundry, cleaning and pressing of clothing, and fees and gratuities for services, such as for waiters, taxi drivers, and baggage handlers.

Miscellaneous Expenses: The miscellaneous expenses that can be reimbursed include: fuel expenses for a rented vehicle, parking, tolls, lodging taxes, and checked baggage for up to 2 standard-weight bags. Other miscellaneous expenses can be reimbursed only if approved in advance by the OSU representative. All miscellaneous expenses must be itemized. Receipts are required if over \$25 per item.

Unallowed Expenses: Expenses for laundry, cleaning and pressing of clothing, and fees and gratuities for services (e.g. waiters, taxi drivers, and baggage handlers) are not reimbursable.

Hosting Expenses: If the Statement of work in your contract authorizes reimbursement for hosting expenses, all expenses must be authorized prior to incurring costs. Contact OSU Business Affairs for allowable expenses.

OREGON STATE UNIVERSITY
PERFORMANCE BOND

Bond No. _____

Solicitation _____

Project Name Advanced technology and Manufacturing Institute (ATAMI) Build Out – HP Campus B11

_____ (Surety #1)

_____ (Surety #2)*

** If using multiple sureties*

Bond Amount No. 1: \$ _____

Bond Amount No. 2: * \$ _____

Total Penal Sum of Bond: \$ _____

We, _____ as Principal, and the above identified Surety(ies), authorized to transact surety business in Oregon, as Surety, hereby jointly and severally bind ourselves, our respective heirs, executors, administrators, successors and assigns firmly by these presents to pay unto Oregon State University (OSU), the sum of (Total Penal Sum of Bond)

(Provided, that we the Sureties bind ourselves in such sum “jointly and severally” as well as “severally” only for the purpose of allowing a joint action or actions against any or all of us, and for all other purposes each Surety binds itself, jointly and severally with the Principal, for the payment of such sum only as is set forth opposite the name of such Surety), and

WHEREAS, the Principal has entered into contract No. _____ with the OSU, the plans, specifications, terms and conditions of which are contained within the Contract resulting from the above-referenced Solicitation;

WHEREAS, the terms and conditions of the Contract, together with applicable plans, standard specifications, special provisions, schedule of performance, and schedule of Contract prices, are made a part of this Performance Bond by reference, whether or not attached to the contract (all hereafter called “Contract”); and

WHEREAS, the Principal has agreed to perform the Contract in accordance with the terms, conditions, requirements, plans and specifications, and all authorized modifications of the Contract which increase the amount of the work, the amount of the Contract, or constitute an authorized extension of the time for performance, notice of any such modifications hereby being waived by the Surety:

NOW, THEREFORE, THE CONDITION OF THIS BOND IS SUCH that if the Principal herein shall (1) faithfully and truly observe and comply with the terms, conditions and provisions of the Contract, in all respects, (2) shall well and truly and fully do and perform all matters and things undertaken by Contractor to be performed under the Contract, upon the terms set forth therein, and within the time prescribed therein, or as extended as provided in the Contract, with or without notice to the Sureties, (3) shall save, defend, indemnify and hold harmless OSU and its officers, board members, employees, agents and other representatives, against any direct or indirect damages or claim of every kind and description that shall be suffered or claimed to be suffered in connection with or arising out of the performance of the Contract by

the Principal or its subcontractors, and (4) shall in all respects perform said contract according to law, then this obligation is to be void; otherwise, it shall remain in full force and effect.

Nonpayment of the bond premium will not invalidate this bond, nor shall OSU be obligated for the payment of any premiums.

This bond is given and received under authority of ORS Chapters 279C and 352, the provisions of which hereby are incorporated into this bond and made a part hereof.

IN WITNESS WHEREOF, WE HAVE CAUSED THIS INSTRUMENT TO BE EXECUTED AND SEALED BY OUR DULY AUTHORIZED LEGAL REPRESENTATIVES.

Dated this _____ day of _____, 20__.

PRINCIPAL: _____

By _____

Signature

Official Capacity

Attest: _____

Corporation Secretary

SURETY: _____

[Add signatures for each surety if using multiple bonds]

BY ATTORNEY-IN-FACT:

[Power-of-Attorney must accompany each surety bond]

Name

Signature

Address

City State Zip

Phone Fax

OREGON STATE UNIVERSITY

PAYMENT BOND

Bond No. _____
Solicitation _____
Project Name _____

_____ (Surety #1) Bond Amount No. 1: \$ _____
_____ (Surety #2)* Bond Amount No. 2:* \$ _____
* *If using multiple sureties* Total Penal Sum of Bond: \$ _____

We, _____, as Principal, and the above identified Surety(ies), authorized to transact surety business in Oregon, as Surety, hereby jointly and severally bind ourselves, our respective heirs, executors, administrators, successors and assigns firmly by these presents to pay unto Oregon State University (OSU) the sum of (Total Penal Sum of Bond) _____ (Provided, that we the Sureties bind ourselves in such sum "jointly and severally" as well as "severally" only for the purpose of allowing a joint action or actions against any or all of us, and for all other purposes each Surety binds itself, jointly and severally with the Principal, for the payment of such sum only as is set forth opposite the name of such Surety), and

WHEREAS, the Principal has entered into contract No. _____ with OSU, the plans, specifications, terms and conditions of which are contained within the Contract resulting from the above-referenced Solicitation;

WHEREAS, the terms and conditions of the contract, together with applicable plans, standard specifications, special provisions, schedule of performance, and schedule of contract prices, are made a part of this Payment Bond by reference, whether or not attached to the contract (all hereafter called "Contract"); and

WHEREAS, the Principal has agreed to perform the Contract in accordance with the terms, conditions, requirements, plans and specifications, and schedule of contract prices which are set forth in the Contract and any attachments, and all authorized modifications of the Contract which increase the amount of the work, or the cost of the Contract, or constitute authorized extensions of time for performance of the Contract, notice of any such modifications hereby being waived by the Surety:

NOW, THEREFORE, THE CONDITION OF THIS BOND IS SUCH that if the Principal shall (1) faithfully and truly observe and comply with the terms, conditions and provisions of the Contract, in all respects, (2) shall well and truly and fully do and perform all matters and things by it undertaken to be performed under said Contract and any duly authorized modifications that are made, upon the terms set forth therein, and within the time prescribed therein, or as extended therein as provided in the Contract, with or without notice to the Sureties, (3) shall save, defend, indemnify and hold harmless OSU, and its officers, board members, employees, agents and other representatives, against any claim for direct or indirect damages of every kind and description that shall be suffered or claimed to be suffered in connection with or arising out of the performance of the Contract by the Contractor or its subcontractors, (4) shall promptly pay all persons supplying labor, materials or both to the Principal or its subcontractors for prosecution of the work provided in the Contract; (5) shall promptly pay all contributions due the State Industrial Accident Fund and the State Unemployment Compensation Fund from the Principal or its

subcontractors in connection with the performance of the Contract; (6) shall pay over to the Oregon Department of Revenue all sums required to be deducted and retained from the wages of employees of the Principal and its subcontractors pursuant to ORS 316.167;(7) shall permit no lien nor claim to be filed or prosecuted against the State or OSU on account of any labor or materials furnished; and (8) shall do all things required of the Principal by the laws of this State, then this obligation shall be void; otherwise, it shall remain in full force and effect.

Nonpayment of the bond premium will not invalidate this bond, nor shall OSU be obligated for the payment of any premiums.

This bond is given and received under authority of ORS Chapters 279C and 352, the provisions of which hereby are incorporated into this bond and made a part hereof.

IN WITNESS WHEREOF, WE HAVE CAUSED THIS INSTRUMENT TO BE EXECUTED AND SEALED BY OUR DULY AUTHORIZED LEGAL REPRESENTATIVES:

Dated this _____ day of _____, 20__.

PRINCIPAL: _____

By _____
Signature

Official Capacity

Attest: _____
Corporation Secretary

SURETY: _____
[Add signatures for each if using multiple bonds]

BY ATTORNEY-IN-FACT:
[Power-of-Attorney must accompany each bond]

Name

Signature

Address

City State Zip

Phone Fax