

**EXHIBIT G - SPECIFICATIONS**

**DAIRY BARN NO 0343 RE-ROOFING**

**ITB# 2020-003522**



**Oregon State**  
**University**

**Construction Contracts Administration  
Oregon State University  
644 SW 13<sup>th</sup> Ave.  
Corvallis, Oregon 97333**

**EXHIBIT G - SPECIFICATIONS**  
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## SECTION 01 11 00

### SUMMARY OF WORK

#### PART 1 GENERAL

##### 1.01 SUMMARY OF WORK

- A. The Work Contract consists of removing and replacing the existing roof system on Barn No 343 of the Dairy Research Center, located at 4490 NW Harrison Blvd, west of the Oregon State University Campus, Corvallis, Oregon. Work shall include the replacement of the existing exposed fastener metal roofing system construction over a ballasted built-up roof with a new pre-finished concealed fastener system metal roofing system. Owner will work with awarded contractor to identify, repair and replaced deteriorated structural materials.
- B. Work shall be started within ten (10) calendar days after signing of Contract on behalf of Oregon State University. The Contract may not be signed prior to approval of the Contractor's Certificate of Insurance by Construction Contract Administration (CCA), Oregon State University. Work shall be completed no later than September 25, 2020.

##### 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. A 96 hour notification is required prior to scheduled utility shutdowns or street closures, but more lead time is often required to schedule around other critical activities.
- 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.
  - 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.
- B. If the Contractor observes or suspects the existence of asbestos, polychlorinated biphenyl (PCB) or other hazardous materials in the structure or components of the building, the Contractor shall immediately stop work and notify the Owner's Authorized Representative.
- C. The Owner will arrange for the removal of asbestos, polychlorinated biphenyl (PCB) or other hazardous materials as required by Facilities Services personnel or by separate contract.
- D. 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. The Owner may have tested existing paint in the project area and if levels are found the following conditions apply.
- B. Contractor shall remove paint as specified for surface preparation and capture removed material for disposal.
- C. Contractor shall follow OSHA guidelines involving exposure to workers.
- D. Owner will provide containers for Contractor's use at project site.
- E. Contractor shall comply with the requirements of DEQ and EPA and shall submit a lead abatement plan.
- F. Contractor shall separate lead contaminated material from effluent and water.
- G. Owner will dispose of lead paint and effluent resulting from stripping operation.
- H. Soil contaminated by stripping operations shall be replaced with topsoil.

**END OF SECTION**

## **SECTION 01 22 00**

### **UNIT PRICES**

#### **PART 1 – GENERAL**

##### **1.01 DESCRIPTION**

- A. Provide unit prices for the Work described herein.

##### **1.02 QUALITY ASSURANCE**

- A. For each unit price item which is performed, coordinate the work of the various trades involved, and modify surrounding work as required to complete the project, as intended.
- B. In the figure for each unit price, include incidental costs which, as attributable to adjustments in the work of other trades, may be required to achieve the contemplated final conditions, including final cleanup. Cleanup shall mean restoring the site to its pre-construction condition.
- C. If there is a question regarding the extent, scope, nature, or intent of the unit price work, contact the Owner for clarification. Failure on the part of the Contractor to clarify any unclear items shall not relieve the Contractor of the responsibility for performing the Work in accordance with the intent and requirements of the ITB.
- D. The Description of unit price items listed hereinafter is qualitative. The quantities listed are estimated quantities and are included for the purpose of award of the Contract. Actual quantities of labor and materials required to execute the unit price items of work will be determined by project conditions and with concurrence of the Owner's Authorized Representative.

#### **PART 2 - PRODUCTS**

##### **2.01 GENERAL**

- A. The applicable Sections of the Specifications apply to the Work under each unit price item.

#### **PART 3 - EXECUTION**

##### **3.01 LIST OF UNIT PRICE ITEMS OF WORK**

- A. Unit Price #1: Within the limits shown on the plans we anticipate exposing sheets of deteriorated 5/8" CDX roof sheathing. Payment under this unit price will be paid by each sheet of plywood removed and replaced
- B. Unit Price #2: Within the limits shown on the plans we anticipate exposing deteriorated 2x10 purlins. Payment under this unit price will be paid by each board foot of structure removed and replaced.
- C. Unit Price #3: Within the limits shown on the plans we anticipate exposing deteriorated 2x12 rafters, fascias and rake boards. Payment under this unit price will be paid by each board foot of structure removed and replaced.
- D. Unit Price #4: Within the limits shown on the plans we anticipate exposing deteriorated 2x4 monitor studs. Payment under this unit price will be paid by each board foot of structure removed and replaced.

**END OF SECTION**

## SECTION 01 23 00

### ALTERNATES

#### 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.
  - 3. 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.
  - 4. The applicable Sections of the Specifications apply to the work under each alternate.

##### 1.03 LIST OF ALTERNATES

- A. Alternate 1: Omit all work associated with re-roofing and re-siding lean-to located at gridlines D, E, 2, 4 and as noted in Exhibit H, Drawing Sheets A1, A1.2, A2.1, and A2.2.
- B. Alternate 2: Omit all work associated with wall sheeting as noted on Exhibit H, Drawing Sheet A2.2 General Finish, Note 6.

**END OF SECTION**

## SECTION 01 24 76

### APPLICATIONS FOR PAYMENT

#### PART 1 GENERAL

##### 1.01 SECTION INCLUDES

- A. Work of this Section includes forms and procedures for progress payments.
- B. Related work specified elsewhere.
  - 1. For the primary discussion of payments, refer to OSU General Conditions, Section E, as supplemented.
  - 2. In compliance with OSU General Conditions, Section K, no payments beyond 75% will be made by the Owner before draft Operation and Maintenance Manuals have been received for review by the Owner.

##### 1.02 APPLICATION FORMS

- A. For applications for payment, use sample Contract Payment Request (see below), contract payment request on company letterhead, or AIA Document G702, supported by AIA Document G703, Continuation Sheet, or similar document.
- B. Prepare the Schedule of Values in such a manner that each major item of Work and each subcontracted item of Work is shown as a line item broken down in terms of material and labor costs on AIA Document G703, Application Certification of Payment, Continuation Sheet or similar format. The sample continuation sheet shall be the minimum Schedule of Values breakdown.
- C. The Schedule of Values shall be submitted for review by the Owner prior to the first application for payment; and may be used when, and only when, accepted in writing by the Owner.
- D. Payment request is to include the Contractor's Federal Tax Identification number and return address.

##### 1.03 PAYMENTS

- A. The Owner will make progress payments on account of the Contract once monthly for the scheduled duration of the project (i.e. three (3) payments on a three-month project), based on the value of work accomplished or materials on the job site, as stated in the Schedule of Values on the Application and Certificate Payment.
- B. Notwithstanding the foregoing, as this project is scheduled to take three (3) months to complete, Owner will only make three (3) payments, plus a final retainage payment, as applicable.
- C. Complete and forward Application to the Owner on or about the 15th day of each month for work performed the previous month and include certified payroll statements as specified in the OSU General Conditions.

- D. Submit one (1) copy of forms requesting payment to the Owner.
- E. Payments will be made on protected materials on hand at the job site properly stored, protected, and insured.
- F. Estimated quantities shall be subject to the Owner's review and judgment.

**1.04 EARLY PURCHASE AND PAYMENT OF MATERIALS AND EQUIPMENT**

- A. Order materials and equipment requiring a long lead or waiting time early so as not to delay progress of the Work.
- B. The Contractor will be reimbursed for early order materials or equipment upon receipt and verification of quality and quantity against submittals and shipping documents by the Owner's Authorized Representative.
- C. Receipt shall be to the job site or stored at Owner's other premises in an orderly and safe manner, secured from normal weather damage.
- D. Security remains the responsibility of the Contractor.

**END OF SECTION**

**CONTRACT PAYMENT REQUEST**

**DATE:** \_\_\_\_\_

**TO:** University Financial Services  
Oregon State University  
3015 SW Western Blvd  
Corvallis, OR 97333

Payment Request No. \_\_\_\_\_ Contract No. \_\_\_\_\_ Period from \_\_\_\_\_ to \_\_\_\_\_

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

Original Contract Amount ..... \$ \_\_\_\_\_

Change Orders (Net Amount)..... \$ \_\_\_\_\_

Contract Total to Date ..... \$ \_\_\_\_\_

=====

Total Completed and Stored to Date ..... \$ \_\_\_\_\_

Less Retainage (5%), if applicable ..... \$ \_\_\_\_\_

Total Earned, Less Retainage (if applicable) ..... \$ \_\_\_\_\_

Less Previous Payments..... \$ \_\_\_\_\_

**Net Amount Due this Request..... \$ \_\_\_\_\_**

The undersigned Contractor certifies that, to the best of his/her knowledge, information, and belief, the Work covered by this request has been completed in accordance with the Contract Documents, that all amounts have been paid for Work for which previous applications for Payment were issued and payments received from the Owner, and that the amount shown herein is now due.

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

By: \_\_\_\_\_ Date: \_\_\_\_\_

Federal Tax ID Number: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_



## **SECTION 01 25 00**

### **PRODUCT SUBSTITUTION PROCEDURES**

#### **PART 1 GENERAL**

##### **1.01 SECTION INCLUDES**

- A. General requirements for the Work in relation to substitutions and product options.
- B. Submit to the Owner's property insurance carrier shop drawings, samples, and product data (such as manufacturer's standard schematic drawings and other literature) when required by individual Specifications sections.
- C. Related Work Specified Elsewhere
  - 1. Instructions to Bidders.
  - 2. OSU General Conditions.

##### **1.02 REQUESTS FOR SUBSTITUTIONS**

- A. Requests for substitution of products in place of those specified shall be in accordance with Instructions to Bidders, and as specified herein.

##### **1.03 CONTRACTOR'S RESPONSIBILITIES**

- A. Investigate proposed products and determine that they are equal or superior in all respects to products specified.
- B. Provide same guarantee for accepted substitutions as for products specified.
- C. Coordinate installation of accepted substitutions into the Work, making such changes as may be required for the Work to be complete in all respects.

##### **1.04 SUBSTITUTIONS DURING BIDDING**

- A. Submit two (2) copies of the following information with each request to the Owner:
  - 1. CSI substitution request form.
  - 2. Comparison of proposed substitution with product, material or system specified.
  - 3. Complete data, substantiating compliance of proposed substitution with the Contract Documents.
  - 4. Test numbers and supporting reports, indicating compliance with referenced standards.
  - 5. Evidence that warranty requirements are acceptable.
  - 6. Details indicating specific deviations proposed for the substitution.
  - 7. Reference and applicable Specification sections.
  - 8. Applicable product samples.
- B. All substitution requests shall be received in the Owner's office no less than ten (10) calendar days before bid opening. Requests received after this date will not be considered.

### **1.05 SUBSTITUTIONS DURING CONSTRUCTION**

- A. Substitutions will normally not be considered after date of Contract except when required due to unforeseen circumstances.
- B. Within a period of thirty (30) days after date of Contract, the Owner may, at its option, consider formal written requests for substitution of products in place of those specified, when submitted in accordance with the requirements stipulated herein.
- C. One or more of the following conditions must be documented in any such request:
  - 1. Required for compliance with final interpretation of code or insurance requirements.
  - 2. Required due to unavailability of a specified product.
  - 3. Required because of the inability of the specified product to perform properly or to fit in the designated space.
  - 4. Substitution would be substantially in the best interest of the Owner in terms of cost, time, or other considerations.

### **1.06 SUBSTITUTIONS NOT PERMITTED**

- A. If implied on submittals without first requesting approval thereof.
- B. If acceptance will require substantial revision of the Contract Documents.

**END OF SECTION**

SUBSTITUTION REQUEST FORM

TO: \_\_\_\_\_

PROJECT: \_\_\_\_\_

SPECIFIED ITEM:

\_\_\_\_\_

Section	Page	Paragraph	Description
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The undersigned requests consideration of the following:

PROPOSED SUBSTITUTION: \_\_\_\_\_

Attached data includes product description, specifications, drawings, photographs, performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes description of changes to Contract Documents which proposed substitution will require for its proper installation.

The undersigned states that the following paragraphs, unless modified on attachments, are correct:

1. The proposed substitution does not affect dimensions shown on Drawings.
2. The undersigned will pay for changes to the building design, including engineering design, detailing and construction costs caused by the requested substitution.
3. The proposed substitution will have no adverse effect on other trades, the construction schedule, or specified warranty requirements.
4. Maintenance and service parts will be locally available for the proposed substitution.

The undersigned further states that the function, appearance and quality of the Proposed Substitution are equivalent or superior to the Specified Item.

Submitted by:

Signature \_\_\_\_\_

Firm \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

Date \_\_\_\_\_

Telephone \_\_\_\_\_

Attachments:

For use by Design Consultant:

Accepted  Accepted as noted

Not Accepted  Received too late

By \_\_\_\_\_

Date \_\_\_\_\_

Remarks \_\_\_\_\_

## SECTION 01 31 19

### PROJECT MEETINGS

#### PART 1 GENERAL

##### 1.01 PRE-CONSTRUCTION MEETING

- A. Architect/Engineer/Designer, Contractor and Owner will meet prior to start of the Work (within seven (7) days after notice to proceed) to discuss at least the following topics and any others of mutual interest.
1. Schedule of Values
  2. Permit Status/tree protection/erosion control
  3. List of sub-contractors
  4. Job inspections.
  5. Early purchase of, and/or lead time requirements for material and equipment/repurchase of equipment
  6. Monthly payment date/SOP for pay requests
  7. Portion of site to be occupied by construction.
  8. Parking/Staging areas
  9. Non-smoking campus requirements
  10. Maintenance of access and safety.
  11. Processing of field decisions and change orders
  12. Labor provisions/labor rates for subs
  13. Material submittals/deferred submittals
  14. Owner access during construction.
  15. Review of Contract Documents/review ADA requirements/cross-slopes
  16. Coordination procedures and separate contracts.
  17. Progress schedules.
  18. Critical Work sequencing.
  19. Safety and emergency procedures/24 hour contact numbers
  20. Security procedures.
  21. Hazardous materials.
  22. Progress meetings.
  23. Contract close-out.
- B. Location of Meeting: Project site

##### 1.02 PROGRESS MEETINGS

- A. The Contractor will schedule and administer progress meetings and will:
1. Prepare agendas.
  2. Schedule progress meetings, frequency, time and day to be determined during pre-construction meeting.
  3. Make physical arrangements for and preside at meetings.
  4. Record minutes and include decisions.

5. Distribute copies of minutes to participants within four (4) days after meetings.
- B. Location of Meetings: Project site.
- C. Attendance:
1. The Owner or Owner's Authorized Representative.
  2. Contractor.
  3. Subcontractors affected by agenda.
  4. Project Architect/Engineer/as necessary.
  5. Owner will attend meeting to ascertain Work is expedited consistent with progress schedule and with Contract Documents.
- D. Minimum Agenda:
1. Review and approve minutes from previous meeting.
  2. Review Work progress since previous meeting.
  3. Discuss field observations, and problems.
  4. Review delivery schedules, construction schedule, and identify problems which impede planned progress.
  5. Review proposed changes.
  6. Material submittals.
  7. Note all new subcontractors performing Work at the job site.

**END OF SECTION**

## SECTION 01 33 23

### SHOP DRAWINGS, PRODUCT DATA, SAMPLES

#### PART 1 GENERAL

##### 1.01 SECTION INCLUDES

- A. Submit to the Owner shop drawings, samples, and product data (such as manufacturer's standard schematic drawings and other literature) when required by individual Specifications sections.
- B. Related Work Specified Elsewhere
  - 1. Instructions to Bidders.
  - 2. OSU General Conditions.

##### 1.02 SUBMITTAL SCHEDULING

- A. For items requiring review by the Owner only, submittals shall be sent to the Owner at least 15 calendar days before the date each is required for fabrication or installation.
- B. Submittals to be reviewed by Owner's consultants shall be sent to the Owner at least 20 calendar days before the date each is required for fabrication or installation.
- C. Submittals to be reviewed by Owner's property insurance carrier shall be sent to Owner as directed in individual specification sections.
- D. Submittals involving Substitution requests or other modifications requiring review by the Owner and/or the Owner's consultants shall be sent to the Owner at least 20 calendar days before the date each is required for fabrication or installation.

##### 1.03 SUBMITTAL CONTENT AND FORMAT

- A. General Requirements:
  - 1. Shop Drawings: Submit in electronic format and, if requested by Owner's Authorized Representative, submit one reproducible transparency and 1 print of each drawing.
  - 2. Product Data: Submit electronically, and if requested by Owner's Authorized Representative, up to 6 hard copies.
  - 3. Samples: Submit the number and type stated in each Specification Section. Submit a minimum of three sets of color samples where color selection is required.
  - 4. Submittals shall include:
    - a. Date and revision dates return date requested.
    - b. Project title and number.
    - c. The names of the Contractor, subcontractor, supplier, and manufacturer.
    - d. Identification of product or material, with Specification Section number.
    - e. Relation to adjacent critical features of work or materials.
    - f. Field dimensions, clearly identified as such.

- g. Applicable standards, such as ASTM number or Federal Specification.
  - h. Identification of deviations from Contract Documents, and for products accompanied by Substitution request as required by Section 01 25 00.
  - i. Contractor's stamp legibly signed, essentially as follows:
    - 1) The undersigned, acting on behalf of the Contractor, certifies that this submittal has been reviewed and is approved; products have been verified as being as specified, field measurements and field construction criteria have been or will be coordinated, and the submittal is in compliance with Contract Documents.
5. Re-submission Requirements:
- a. Revise initial drawings as required and resubmit as specified for initial submittal.
  - b. Indicate on drawings any changes which have been made other than those requested by the Owner or the owner's consultants.
6. The Owner may return without review any submittal not meeting the requirements listed above.
- B. Shop Drawings:
- 1. Present data in a clear and thorough manner.
  - 2. Details shall be identified by reference to sheet and detail, schedule or room numbers shown on Contract Documents.
  - 3. Structural items shall be identified by location in the completed structure. Identify details by reference to contract sheet and detail numbers.
  - 4. Minimum sheet Size: 8 ½ x 11".
- C. Product Data:
- 1. Manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations and other standard descriptive data:
    - a. Clearly mark each copy to identify pertinent product or models.
    - b. Show dimensions, weights, and clearances required.
    - c. Show performance data consisting of capabilities, ROM, KW, pressure drops, design characteristics and consumption; conforming as closely as possible to the test methods referenced in the Plans and Specifications.
    - d. Show wiring or piping diagrams and controls.
  - 2. Manufacturer's standard schematic drawings and diagrams:
    - a. Modify to delete information which is not applicable.
    - b. Supplement standard information to provide information specifically applicable to the Work.
- D. Samples:
- 1. Insure that samples are of sufficient size to indicate the general visual effect or color.
  - 2. Where samples must show a range of color, texture, finish, graining, or other property, submit sets of pairs illustrating the full scope of this range.

3. One (1) sample or one (1) set of approved samples will be retained by the Owner; final work will be measured against approved samples.

#### **1.04 QUALITY ASSURANCE**

- A. Process submittals in ample time for review, as applicable, so as to not delay the Work. All submittals shall be received by the Owner within ten (10) days after pre-construction.

#### **1.05 DEFINITIONS**

- A. The Owner will mark reviewed materials as follows:
  1. "No Exception Taken," which means fabrication, manufacture and/or installation may proceed.
  2. "Make Revisions Noted," which means fabrication, manufacture and/or installation may proceed with revisions as noted.
  3. "Revise and Resubmit," which means that fabrication, manufacture and/or installation may not proceed.
  4. "Rejected," which means do not proceed; make arrangements for the review of the proposed Work with the Owner as soon as possible.

#### **1.06 PROCESSING**

- A. Review submittals, make necessary corrections, and become familiar with the content of the submittals.
- B. Mark each item with Contractor's stamp.
- C. Accompany submittals with a transmittal letter bearing the project name, Contractor's name, number of items, and other pertinent data.
- D. Keep one copy of each reviewed submittal on the job site at all times.
- E. Be responsible for obtaining and distributing prints of shop drawings to the various suppliers, and the Owner once review process has been completed. Make prints of reviewed shop drawings only from transparencies which carry the appropriate stamp and endorsement.

**END OF SECTION**

**SECTION 01 42 13**

**ABBREVIATIONS AND SYMBOLS**

**PART 1 GENERAL**

**1.01 REQUIREMENTS INCLUDED**

- A. Words which may be found elsewhere in the Project Manual and Drawings are abbreviated in accordance with the standards set forth in the following table:

A/C	air conditioning	CEM	cement
AB	anchor bolt	CF	cubic foot
AC	asphaltic concrete	CFOI	contractor furnished owner installed
ACT	acoustical tile	CG	corner guard
AD	area drain	CH	ceiling height
ADD	addendum	CI	cast iron
ADD'L	additional	CJ	control joint
ADH	adhesive	CKBD	chalkboard
AFF	above finish floor	CL	centerline
AGG	aggregate	CLG	ceiling
AL	aluminum	CLR	clear(ance)
ALLOW	allowable	CM	construction manager
ALT	alternate	CMT	ceramic mosaic (tile)
ANOD	anodized	CMU	concrete masonry unit
AP	access panel	COL	column
APPRX	approximate	COM	communications
ARCH	architect(ural)	CONC	concrete
ASPH	asphalt	CONN	connect(ion)
AUTO	automatic	CONST	construction
AVE	avenue	CONT	continuous or continue
BD	board	CONTR	contract(or)
BIT	bituminous	CPT	carpet
BLDG	building	CRS	course(s)
BLKG	blocking	CS	countersink
BM	bench mark, beam(s)	CSMT	casement
BOT	bottom	CT	ceramic tile
BRZ	bronze	CTR	center
BS	both side	CVG	clear vertical grain
CB	catch basin	CW	cold water
		CWT	ceramic wall tile
		CY	cubic yard

D	depth	FA	fire alarm
DEMO	demolish, demolition	FAF	fluid applied flooring
DEP	depressed	FARF	fluid applied resilient floor
DF	drinking fountain	FAS	fasten, fastener
DIA	diameter	FBD	fiberboard
DIAG	diagonal	FBT	finished blowing temperature
DIM	dimension	FD	floor drain, fire damper
DISP	dispenser	FE	fire extinguisher
DIV	division	FEC	fire extinguisher cabinet
DL	dead load	FF	factory finish
DMT	demountable	FGL	fiberglass
DN	down	FHMS	flathead machine screw
DP	dampproofing	FHWS	flathead wood screw
DR	door	FIN	finish(ed)
DS	downspout	FLCO	floor cleanout
DT	drain tile	FLR	floor(ing)
DTL	detail	FLUR	fluorescent
DW	dumbwaiter	FND	foundation
DWG	drawing(s)	FOC	face of concrete
DWR	drawer	FOIC	furnished by owner/installed by contractor
EA	each	FOIO	furnished by owner/installed by owner
EB	expansion bolt	FOM	face of masonry
EF	each face	FP	fireproofing, flash point
EJ	expansion joint	FPHB	freeze-proof hose bib
EL	elevation	FR	fire resistive, fire rated
ELEC	electric(al)	FRM	frame(d), (ing)
EMBED	embedment	FS	full size
EMER	emergency	FSS	finished structural slab
ENCL	enclose(ure)	FT	foot
EP	electrical panel board	FTG	footing
EQ	equal	FTS	finished topping slab
EQUIP	equipment	GA	gage, gauge
EST	estimate	GALV	galvanized
EVT	equiviscous temperature	GB	grab bar or gypsum board
EW	each way	GC	general contractor
EWC	electric water cooler	GI	galvanized iron
EX.EXIT	existing	GL	glass, glazing
EXH	exhaust	GLS	glass resin wall surfacing
EXP	exposed		
EXT	exterior		

GP	gypsum	LL	live load
HB	hose bib	LONGIT	longitudinal
HBD	hardboard	LP	low point
HC	hollow core	LW	lightweight
HD	heavy duty	MAX	maximum
HDR	header	MB	machine bolt
HDW	hardware	M. MECH	mechanic(al)
HM	hollow metal	MFR	manufacture(r)
HOR	horizontal	MH	manhole
HP	high point	Min	minimum, minute
HR	hour	MISC	miscellaneous
HT	height	MO	masonry opening
HTG	heating	MO#	model number
HVAC	heating, ventilating, air conditioning	MOD	modular
HWD	hardwood	MPH	miles per hour
HWH	hot water heater	MS	machine screw
ID	inside diameter, identification	MTL	metal
IN	inch	MULL	mullion
INCIN	incinerator	MWP	membrane waterproofing
INCL	include(d), ion	NAT	natural, natural finish
INT	interior	NIC	not in contract
INV	invert	NO	number
JB	junction box	NOM	nominal
JC	janitor's closet	NTS	not to scale
JT	joint	OA	overall
KD	kiln dried	OBS	obscure
KCP	Keene's cement plaster	OC	on center(s)
KO	knockout	OD	outside diameter
KP	kick plate	OF	overflow
LAB	laboratory	OFCI	owner furnished contractor installed
LAM	laminated	OFOI	owner furnished owner installed
LAV	lavatory	OHMS	ovalhead machine screw
LBS	pounds	OHWS	ovalhead wood screw
LH	left hand	OPG	opening
		OPP	opposite
		OZ	ounce(s)
		P	paint(ed)

PB	push button	SIM	similar
PCF	pounds per cubic foot	SL	sleeve
PCP	putting coat plaster	SOG	slab on grade
PERF	perforate(d)	SPEC	specification(s)
PL	plate, property line	SQ	square
PLAM	plastic laminate	SS	storm sewer
PLAS	plaster	S4S	finished 4 sides
PNL	panel	SD	storm drain
PP	push plate	ST	steel, street
PR	pair	ST ST	stainless steel
PREP	prepare	STD	standard
PSF	pounds per square foot	STR	structural
PSI	pounds per square inch	SUPP	supplement
PT	point, pressure treated	SUPT	support
PTN	partition	SUSP	suspended
PVC	polyvinyl chloride	SV	sheet vinyl
PWD	plywood		
		T	tread
QT	quarry tile	TBM	top bench mark
		T&G	tongue and groove
R	rise	TB	towel bar
RA	return air	TC	top of curb
RAD	radius	TEL	telephone
RCP	reflected ceiling plan	TEMP	tempered
RD	roof drain	THK	thickness
REF	reference	TKBD	tackboard
REFR	refrigerator	TO	top of
REINF	reinforce(ing)	TP	top of paving
REQ	required	TRANS	transverse
RET'G	retaining	TS	top of slab
REV	revision(s), revised	TV	television
RH	right had	TW	top of wall
RM	room	TYP	typical
RO	rough opening		
RSF	resilient sheet flooring	UNO	unless noted otherwise
		VAT	vinyl asbestos tile
SC	solid core	VB	vapor barrier
SCHED	schedule	VCT	Vinyl Composition Tile
SEC	section	VERT	vertical
SF	square feet (foot)	VG	vertical grain
SHT	sheet	VIF	verify in field
SHTHG	sheathing		

VWC	vinyl wall covering	WP	waterproof(ing)
W	width, wide, water	WNS	wainscot
W/	with	WR	water resistant
W/O	without	WS	waterstop
WC	water closet	WW	window wall
WD	wood, wood finish	WWC	wood wall covering
		WWF	woven wire fabric

B. Words which may be found elsewhere in the Project Manual and Drawings are abbreviated in accordance with the standards set forth in the following table:

&	and
$\lambda$	angle
@	at
$\iota$	diameter, round
"	inches
:	is, shall b
'	feet
$\zeta$	perpendicular
/	per
%	percent
#	pound, number
X	by (as in 2 by 4)

**END OF SECTION**

## SECTION 01 42 16

### DEFINITIONS

#### PART 1 GENERAL

##### 1.01 SECTION INCLUDES

- A. Words which may be found elsewhere in the Contract Documents are defined in accordance with the standards set forth in the following table:

**Approve:**

Where used in conjunction with Architect's response to submittals, requests, applications, inquiries, reports and claims by Contractor, the meaning of term "approved" will be limited to the Architect's responsibilities and duties as specified in General and Supplementary Conditions. In no case will "approval" by Architect be interpreted as a release of Contract requirements.

**As Detailed, As Shown:**

Where "as detailed", "as shown" or words of similar importance are used, it shall be understood that reference to the Drawings accompanying the Specifications is made unless otherwise stated.

**As Directed, As Required, As Authorized, As Reviewed, As Accepted:**

Where "as directed", "as required", "as authorized", "as reviewed", "as accepted" or words of similar importance are used, it shall be understood that the direction, requirement, permission, authorization, review, or acceptance of the Architect is intended, unless otherwise stated.

**As Indicated:**

Where "as indicated" is used it shall be understood that reference to Drawings and/or Specifications is made unless otherwise stated.

**Directed, Requested, etc.:**

Terms such as "directed," "requested," "authorized," "selected," will be understood as "directed by Architect," "requested by Architect," and similar phrases shall not be interpreted to extend Architect's responsibility into Contractor's responsibility for construction supervision.

**Furnish:**

Except as otherwise defined in greater detail the term "furnish" is used to mean supply and deliver to project site, ready for unloading, unpacking, assembly, installation, etc., as applicable in each instance.

**Indicated:**

The term "indicated" is a cross-reference to graphic representations, notes or schedules on drawings, to other paragraphs or schedules in the specifications and to similar means of recording requirements in Contract Documents. Where terms such as "shown," "noted," "scheduled," and "specified" are used in lieu of "indicated," it is for purpose of helping reader locate cross-reference and no limitation of location is intended except as specifically noted.

**Install:**

Except as otherwise defined in greater detail, the term "install" is used to describe operations at project site including unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning and similar operations, as applicable in each instance.

**Installer:**

The term "installer" is defined as the entity (person or firm) engaged by Contractor, or its subcontractor or sub-subcontractor for performance of a particular unit of Work at project site, including installation, erection, application and similar required operations. It is a general requirement that such entities (Installers) be expert in operations they are engaged to perform.

**Provide:**

Except as otherwise defined in greater detail, term "provide" means furnish and install, complete and ready for intended use, as applicable in each instance.

**END OF SECTION**

## SECTION 01 42 19

### REFERENCE STANDARDS

#### PART 1 GENERAL

##### 1.01 SECTION INCLUDES

- A. Quality Assurance.
- B. Location of References.
- C. Schedule of References.

##### 1.02 QUALITY ASSURANCE

- A. For products or quality of work specified by association, trade, or federal standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on date of Contract Documents.
- C. General Applicability of Standards: Except where Contract Documents include more stringent requirements, applicable standards of the construction industry have the same force and effect as if bound or copied directly into Contract Documents.
- D. Such standards are made a part of the Contract Documents by reference.
- E. Individual sections indicate which codes and standards the Contractor must keep at the project site, available for reference.
- F. Referenced industry standards take precedence over standards which are not referenced but recognized in industry as applicable.
- G. Non-referenced standards are not directly applicable to the Work, except as a general requirement of whether the Work complies with standards recognized in the construction industry.

##### 1.03 LOCATION OF REFERENCES

- A. Valley Library, Oregon State University.

##### 1.04 SCHEDULE OF REFERENCED ASSOCIATIONS

AIA            American Institute of Architects

	<a href="http://WWW.AIA.ORG">WWW.AIA.ORG</a>
AISC	American Institute of Steel Construction <a href="http://WWW.AISC.ORG">WWW.AISC.ORG</a>
AISI	American Iron and Steel Institute <a href="http://WWW.STEEL.ORG">WWW.STEEL.ORG</a>
ANSI	American National Standards Institute <a href="http://WWW.ANSI.ORG">WWW.ANSI.ORG</a>
APA	American Plywood Association <a href="http://WWW.APAWOOD.ORG">WWW.APAWOOD.ORG</a>
ASHRAE	American Society of Heating, Refrigerating, and Air Conditioning Engineers <a href="http://WWW.ASHRAE.ORG">WWW.ASHRAE.ORG</a>
ASTM	American Society for Testing and Materials <a href="http://WWW.ASTM.ORG">WWW.ASTM.ORG</a>
AWPA	American Wood Protection Association <a href="http://WWW.AWPA.COM">WWW.AWPA.COM</a>
AWS	American Welding Society <a href="http://WWW.AWS.ORG">WWW.AWS.ORG</a>
BIA	Masonry Institute of America <a href="http://WWW.MASONRYINSTITUTE.ORG">WWW.MASONRYINSTITUTE.ORG</a>
BOLI	Oregon Bureau of Labor and Industries <a href="http://WWW.BOLI.STATE.OR.US">WWW.BOLI.STATE.OR.US</a>
CCB	Construction Contractors Board <a href="http://WWW.OREGON.GOV.CCB/">WWW.OREGON.GOV.CCB/</a>
CDA	Copper Development Association <a href="http://WWW.COPPER.ORG">WWW.COPPER.ORG</a>
CISPI	Cast Iron Soil Pipe Institute <a href="http://WWW.CISPI.ORG">WWW.CISPI.ORG</a>
CSI	Construction Specification Institute <a href="http://WWW.CSINET.ORG">WWW.CSINET.ORG</a>
DEQ	Department of Environmental Quality (Oregon) <a href="http://WWW.OREGON.GOV/DEQ/">WWW.OREGON.GOV/DEQ/</a>

DHI	Door and Hardware Institute <a href="http://WWW.DHI.ORG">WWW.DHI.ORG</a>
DOT	Department of Transportation <a href="http://WWW.DOT.GOV">WWW.DOT.GOV</a>
EPA	U.S. Environmental Protection Agency <a href="http://WWW.EPA.GOV">WWW.EPA.GOV</a>
FM	Factory Mutual System <a href="http://WWW.FMGLOBAL.COM">WWW.FMGLOBAL.COM</a>
FS	Federal Specification General Services Administration Specifications and Consumer Information Distribution Section (WFSIS) <a href="http://WWW.GSA.GOV/PORTAL/CONTENT/103856">WWW.GSA.GOV/PORTAL/CONTENT/103856</a>
IBC	International Building Code <a href="http://WWW.ICCSAFE.ORG">WWW.ICCSAFE.ORG</a>
ICBO	International Conference of Building Officials <a href="http://PUBLICECODES.CITATION.COM/ICOD/IBG/INDEX.HTM">PUBLICECODES.CITATION.COM/ICOD/IBG/INDEX.HTM</a>
IRS	Internal Revenue Service <a href="http://WWW.IRS.GOV">WWW.IRS.GOV</a>
ISA	Instrumentation Systems and Automation Society <a href="http://WWW.ISA.ORG">WWW.ISA.ORG</a>
NAAMM	National Association of Architectural Metal Manufacturers <a href="http://WWW.NAAMM.ORG">WWW.NAAMM.ORG</a>
NBFU	National Board of Fire Underwriters <a href="http://WWW.NFPA.ORG">WWW.NFPA.ORG</a>
NEC	National Electric Code <a href="http://WWW.NECPLUS.ORG">WWW.NECPLUS.ORG</a>
NEMA	National Electrical Manufacturers' Association <a href="http://WWW.NEMA.ORG">WWW.NEMA.ORG</a>
NESC	National Electrical Safety Code <a href="http://WWW.IEEE.ORG">WWW.IEEE.ORG</a>
NFPA	National Fire Protection Association <a href="http://WWW.NFPA.ORG">WWW.NFPA.ORG</a>

NRCA	National Roofing Contractors' Association WWW.NRCA.NET
OAR	Oregon Administrative Rules ARCWEB.SOS.STATE.OR.US/404.HTML
OESP	State of Oregon Electrical Specialty Code <a href="http://www.bcd.oregon.gov/programs/online_codes.html">http://www.bcd.oregon.gov/programs/online_codes.html</a>
ORS	Oregon Revised Statutes LANDRU.LEG.STATE.OR.US/ORS/
OSHA	Occupational Safety and Health Administration WWW.OSHA.GOV
OSSC	Oregon Structural Specialty Code <a href="http://www.bcd.oregon.gov/programs/online_codes.html">http://www.bcd.oregon.gov/programs/online_codes.html</a>
PS	Product Standard STANDARDS.GOV/STANDARDS.CFM
SDI	Steel Door Institute WWW.STEELDOOR.ORG
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association WWW.SMACNA.ORG
SPRI	Single Ply Roofing Institute WWW.SPRI.ORG
SSPC	Steel Structures Painting Council WWW.SSPC.ORG
SWRI	Sealing, Waterproofing and Restoration Institute WWW.SWIRONLINE.ORG
UBC	Uniform Building Code (See ICBO)
UFC	Uniform Fire Code WWW.NFPA.ORG
UL	Underwriters' Laboratories, Inc. WWW.UL.COM
UMC	Uniform Mechanical Code WWW.UBC.COM

UPC        Uniform Plumbing Code  
              WWW.UBC.COM

WHL        Warnock Hersey Laboratories  
              WWW.INTEK.COM/MARKS/WH/

WCLIB      West Coast Lumber Inspection Bureau  
              WWW.WCLIB.ORG

WWPA      Western Wood Products Association  
              [WWW.WWPA.ORG](http://WWW.WWPA.ORG)

**END OF SECTION**

## SECTION 01 45 00

### QUALITY CONTROL

#### PART 1 GENERAL

##### 1.01 SECTION INCLUDES

- A. Codes, regulations and permits.
- B. Procedures for quality control.

##### 1.02 OWNER RESPONSIBILITIES

- A. Owner will employ and pay for services of an independent testing laboratory to perform inspection, sampling and testing as required by local building authority.
- B. Owner's Authorized Representative will provide on-site observation during construction.

##### 1.03 CODES, REGULATIONS AND PERMITS

- A. All Work shall conform with the Oregon Structural Specialty Code (OSSC) based on the International Building Code (IBC), as amended by the State of Oregon Building Codes Division and the edition designated by the governing authority.
- B. Contractor shall comply with all applicable state and local construction codes.
- C. References to codes, Specifications and standards referred to in the Contract Documents shall mean, and are intended to be, the latest edition, amendment or revision of such reference standard in effect as of the date of these Contract Documents.
- D. The Owner shall be responsible for all permits and City of Corvallis plan review fees; the Contractor shall be responsible for all licenses and associated fees required for the Project.
- E. Contractor shall arrange and attend all required permit inspections and furnish evidence of approved City inspection reports per Section 01 77 00.

##### 1.04 QUALITY OF WORK

- A. It is the true and specific intent of these Specifications that quality of Work on all phases of the construction and embracing all the trade sections shall be of high quality performed by workers skilled in their trade and performing their Work only according to the standard of best practice of the trade.
- B. All manufactured articles, materials, and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with manufacturer's directions unless otherwise specified.
- C. If Work is required in a manner to make it impossible to produce first quality Work, or should discrepancies appear among Contract Documents, request interpretation from

Architect before proceeding with Work.

- D. Failure to secure interpretation may cause rejection by Architect or owner of installation.

#### **1.05 LAYOUT**

- A. Be responsible for properly laying out the Work and for lines and measurements for the Work.
- B. Verify the figures shown on the drawings before laying out the Work and report errors or inaccuracies to the Architect before commencing Work.
- C. Strict compliance with maximum slopes is required. Accessible parking spaces and adjacent access aisles with slope exceeding 2% in any direction, as determined by OSU, shall be removed and replaced by the contractor at their expense.
- D. Strict compliance with maximum slopes is required. New sidewalks exceeding 1:20 slope or with cross slope exceeding 2%, as determined by OSU, shall be removed and replaced by the contractor at their expense. Ramps exceeding 1:16 slope or with cross slope exceeding 2%, as determined by OSU, shall be removed and replaced by the contractor at their expense.

#### **1.06 SUPERVISION**

- A. The Contractor shall maintain effective supervision on the project at all times Work is being performed.
- B. The superintendent shall be the same person throughout the project and shall attend the preconstruction conference.

#### **1.07 INSPECTIONS AND TESTING**

- A. Contractor shall notify the Owner at least twenty-four (24) hours in advance of any required progress inspection or final inspection including final punch list inspection.
- B. Cooperate with laboratory personnel, provide access to Work and furnish incidental equipment material and labor required for field testing and sample taking.

#### **1.08 EVALUATION OF TESTS AND INSPECTIONS**

- A. Results of laboratory and/or field control tests and inspections shall be the principal basis upon which satisfactory completion of Work shall be judged.
- B. If results of tests and inspections indicate Work is below requirements of Contract Documents, that portion of Work is subject to rejection.

#### **1.09 ADJUSTMENTS**

- A. Remove and replace Work so rejected at Contractor's expense including costs of subsequent tests and inspections until Work meets requirements of Contract Documents.

- B. The Owner reserves the right to perform any testing as may be required to determine compliance with the Contract Documents.
- C. Costs for such testing will be the Owner's responsibility unless testing indicates noncompliance. Cost for such testing indicating noncompliance shall be borne by the Contractor.
- D. Noncomplying Work shall be corrected and testing will be repeated until the Work complies with the Contract Documents.
- E. Contractor will pay costs for retesting noncomplying Work.

**END OF SECTION**

## SECTION 01 51 00

### CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

#### PART 1 GENERAL

##### 1.01 SECTION INCLUDES

- A. This Section specifies requirements for temporary services and facilities, including utilities, construction and support facilities, security and protection.

##### 1.02 REQUIREMENTS OF REGULATORY AGENCIES

- A. Regulations: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction.
- B. Standards: Comply with NFPA Code 241, "Building Construction and Demolition Operations", ANSI-A10 Series standards for "Safety Requirements for Construction and Demolition".
- C. Electrical Service: Comply with NEMA, NEC and UL standards and regulations for temporary electric service; install service in compliance with National Electric Code (NFPA 70).
- D. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use; obtain required certifications and permits if required.

##### 1.03 PROTECTION

- A. Protect sidewalks, asphalt paving, concrete, trees, shrubs, and lawn areas at all times from damage resulting from construction activities.
- B. Prevent materials from clogging catch basins and yard drains; leave drains clean and in proper working condition.
- C. Protect Existing Irrigation Systems:
  - 1. In the event damage occurs to an underground irrigation system as a direct result of a Contractor's activities, the Contractor shall repair/replace or be assessed a charge at the discretion of the Owner.
  - 2. If repairs are to be made by the Contractor, the repairs will be inspected by the Owner's Authorized Representative prior to backfilling.
  - 3. Any galvanized pipe that requires repair shall be repaired at a threaded coupling, not by use of a compression coupling.
- D. Protect Existing Air Handling Systems:
  - 1. Contractor shall be responsible for protection of the cleanliness of the existing air handling system at all times. This protection shall include:
    - a. During site work or building demolition, prefilters shall be provided and maintained on all building outside air intakes at all times throughout the construction duration.

- b. During any interior work that may create dust in the interior space and adjacent corridor/hallways, air filters shall be provided and maintained on all affected air return and exhaust grilles. Where air flow in or out of the space is not required, all air duct openings shall be temporarily blanked off with plywood or sheet metal.
  - c. Prior to starting any work, the Contractor shall record and submit to the Owner's Authorized Representative, pressure readings across all existing air handler air filter banks before installation of new prefilters.
  - d. Upon completion of all Work affecting existing air handling systems, the Contractor shall remove all temporary filters, covers and associated parts and restore the system to its original operating condition unless otherwise stated elsewhere in the Contract Documents
- E. Clean, repair, resurface, or restore existing surfaces to their original, or better, condition, or completely replace such surfaces to match existing, where damaged by construction operations.
- F. Security is the responsibility of the Contractor.
- G. Construction Debris:
- 1. Debris shall not be allowed to remain around the buildings during performance of Work, but shall be disposed of as rapidly as it accumulates.
  - 2. On completion of Work, the buildings and grounds shall be left in a condition that is equal to or better than original condition.
  - 3. In case of failure to do so, the Owner may remove rubbish and charge the cost to the Contractor.
- H. The Contractor shall manage a safe job environment for both the safety of all the people around the Work site as well as the safety of the Owner's and general public's property.
- I. The Contractor shall provide and maintain suitable barricades, shelters, lights, and danger signals during the progress of the Work; they shall meet the requirements of the local building code and OSHA.

#### **1.04 DRAINAGE**

- A. Verify that all rain drains in the construction areas are in working order and notify the Owner's Authorized Representative in writing of any rain drains that are plugged, prior to the start of the Work.
- B. Start of Work will be considered as acknowledgment that all drains are clear and in good working order.
- C. All drains shall be left in a clean and proper working condition.

#### **1.05 CONSTRUCTION PROJECT SAFETY FORM**

- A. Contractor shall submit to the Owner, prior to signing the Contract, the completed

"Construction Project Safety Form", which is provided with instructions at the end of this Section.

#### **1.06 TEMPORARY UTILITIES**

- A. Temporary Utilities:
  - 1. Prepare a schedule indicating dates for implementation and termination of each temporary utility.
  - 2. At the earliest feasible time, when acceptable to the Owner, change over from use of temporary service to use of the permanent service.
- B. Conditions of Use:
  - 1. Keep temporary services and facilities clean and neat in appearance.
  - 2. Operate in a safe and efficient manner.
  - 3. Take necessary fire prevention measures.
  - 4. Do not overload facilities or permit them to interfere with progress.
  - 5. Do not allow hazardous, dangerous or unsanitary conditions, or public nuisances to develop or persist on the site.
- C. Electrical Service:
  - 1. Service limited to 20 amp 120V circuits will be paid for by the Owner.
  - 2. Connection to the service shall be the responsibility of the Contractor, with the Owner's approval.
  - 3. Coordinate with the Owner's Authorized Representative.
- D. Water Service:
  - 1. Service in reasonable quantities for the Project will be paid for by the Owner.
  - 2. Connection to the service shall be the responsibility of the Contractor, with the Owner's approval.
  - 3. Coordinate with the Owner's Authorized Representative.

#### **1.07 TEMPORARY SUPPORT FACILITIES**

- A. Temporary Sanitary Facilities:
  - 1. Provide and maintain an adequate number of facilities for the use of all persons employed on the Work during construction.
  - 2. Provide enclosed, weatherproof facilities with heat as required.
  - 3. Use of new or existing Owner's facilities will not be permitted.
- B. Temporary Heat and Ventilation:
  - 1. As necessary, provide temporary heat and ventilation required by construction activities, for curing or drying of completed installations or protection of installed construction from adverse effects of low temperatures or high humidity. Select safe equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce the ambient condition required and minimize consumption of energy.

- C. Telephone Equipment: Provide telephone communications at project site.
- D. Existing Services:
  - 1. Do not interrupt any existing service.
  - 2. Prior request and approval of the Owner's Representative will enable the Owner to shut down any utility required by the Work.
  - 3. Contractor shall not shut down utilities.

#### **1.08 TEMPORARY BARRIERS AND ENCLOSURES**

- A. Provide barriers and fencing to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage.
- B. Provide Commercial grade chain link fence construction.
- C. Provide 6 foot high fence around construction site as directed by Owner's Authorized Representative; equip with vehicular and pedestrian gates with lock.
- D. Exterior Closures: Provide temporary secured, weather-tight closures at exterior openings, to permit acceptable working conditions and protection of the Work.
- E. Interior Closures:
  - 1. Provide temporary floor to ceiling partitions (not plastic sheeting) and ceilings as required to separate work areas from Owner occupied areas, to prevent penetration of dust and moisture into Owner occupied areas, to reduce construction noise, and to prevent damage to existing materials and equipment.
  - 2. Paint surfaces exposed to view from Owner occupied areas.

#### **1.09 ODORS**

- A. Work that causes excessive odors shall be performed only after coordination with the Owner's Authorized Representative. Filtering of air intakes to units may be required to prevent odors and vapors from entering the buildings.
- B. Contractor shall provide 7 days advance notice to the Owner's Authorized Representative in order for advance notice to be forwarded to building occupants. Work stoppage may occur if advance notification has not been coordinated or odors and vapors from the work are found to generate complaints from building occupants.

#### **1.10 FIRE SAFETY**

- A. Ensure that required exit routes remain unobstructed while building is occupied.
- B. Abide by all fire safety requirements for buildings under construction, alteration or demolition as required by Article 87, of the Uniform Fire Code as adopted by the State of Oregon.
- C. An emergency telephone shall be provided on site. Cellular telephone equipment is acceptable.
- D. Fire Suppression Equipment:

1. Install and maintain temporary fire protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 10 "Standard for Portable Fire Extinguishers", and NFPA 241 "Standard for Safeguarding Construction, Alterations and Demolition Operations".
2. Maintain equipment in working condition with current inspection certificate attached to each.
3. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor at or near each usable stairwell.
4. Store combustible materials in containers in fire-safe locations.
5. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways, and other access routes for fighting fires.
- 6.
6. Provide continual supervision of welding operations, combustion type temporary heating units, and similar sources of fire ignition.
7. When possible, relocate hot work to a designated hot work area.
8. If the materials or equipment cannot be relocated to a designated hot work area, use the least hazardous form of hot work that will get the job done and prepare the area properly.
9. Manage mobile hot work using the formal hot work permit system. (mentioned in the next bullet point and also a directive in the OSU Hot Work Safety Program)
10. Make sure both fire protection and hot work equipment work properly.
11. Train all personnel involved in hot work operations and activities so that they have the understanding, knowledge, and skills necessary to safely perform their jobs.

### **1.11 CONSTRUCTION AIDS**

- A. Scaffolding: comply with applicable OSHA requirements.
- B. Material Handling Equipment:
  1. Provide necessary cranes, hoists, towers, or other lifting devices.
  2. Use only experienced operators.
  3. Remove equipment as soon as possible after task is ended.
  4. Coordinate placement of such equipment with Owner's Authorized Representative.
  5. Obtain required permits and meet requirement of governing authorities regarding applicable regulations.
- C. Materials or debris shall not be allowed to free fall from building.
- D. The use of chutes or conveyors must be approved by Owner.

### **1.12 TEMPORARY CONTROLS**

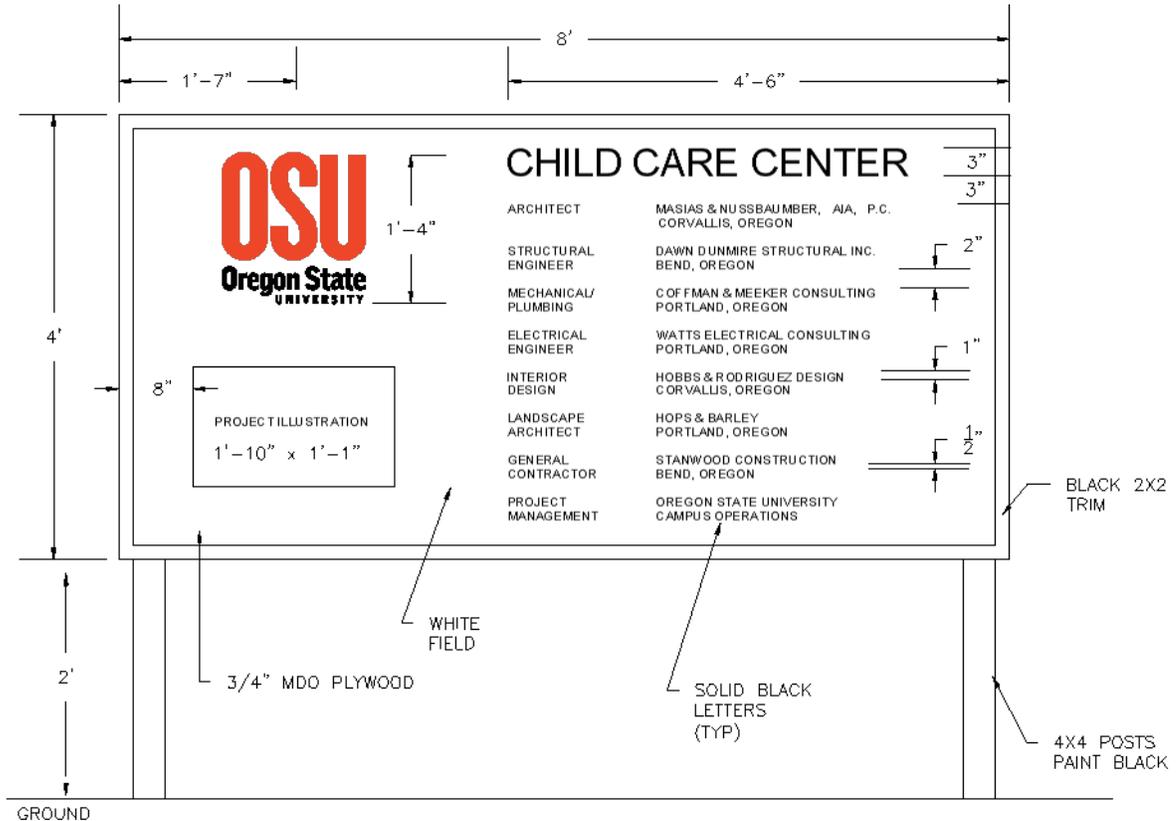
- A. Water Control:
  1. Maintain excavations free of water.
  2. Provide, operate, and maintain necessary pumping equipment.

- B. Protection:
  - 1. Protect installed Work and provide special protection where specified in individual specification sections.
  - 2. Prohibit traffic or storage upon waterproofed or roofed surfaces.
- C. Security:
  - 1. Provide security and facilities to protect Work and existing facilities and Owner's operations from unauthorized entry, vandalism, or theft.
  - 2. Coordinate operations with Owner's Authorized Representative.
- D. Temporary Traffic Control /Pedestrian Accessibility
  - 1. A continuous route for all pedestrians, including persons with disabilities and bicyclists, shall be maintained at all times. When existing pedestrian facilities are disrupted, closed, or relocated in a construction zone, temporary pedestrian facilities shall be provided.
  - 2. Temporary pedestrian facilities should be safe and accessible. There should be no curbs or abrupt changes in grade that could cause tripping or be a barrier to wheelchair use.
  - 3. Signage shall be provided directing people to the temporary accessible route. The signage shall include the International Symbol of Accessibility.
  - 4. Contractors shall not block temporary walkways with vehicles, equipment, construction materials, signs, trash, or other objects that might prohibit pedestrian passage.
  - 5. Construction equipment and equipment operation must be separated from any open walkways. At construction zones, pedestrian fences or other protective barriers shall be provided to prevent access into the construction zone.

### **1.13 PROJECT SIGNAGE**

- A. Contractor is permitted to post only one project identification sign based on the following example:

## OSU TYPICAL JOB SIGN



### 1.14 PREPARATION

- A. Consult with Owner to review jobsite areas required for field offices, material storage and stockpiles, equipment storage, access to different locations, etc.

### 1.15 PERFORMANCE

- A. Confine equipment, apparatus, and storage of material to work limits. The Owner will not be responsible for protection of materials and equipment from damage, pilfering, etc.
- B. Install temporary facilities in such a manner that the installed work will not be damaged.
- C. Do not use facilities of existing building unless authorized in writing by the Owner.
- D. Effective September 1, 2012, OSU became a non-smoking campus and smoking is prohibited on all Campus property.
- E. Keep facilities well maintained.
- F. Relocate temporary facilities as required during job progress.

- G. At Substantial Completion, clean and renovate permanent facilities that have been used during the construction period, including but not limited to:
1. Replace air filters and clean inside of ductwork and housings.
  2. Replace significantly worn parts and parts that have been subject to unusual operating conditions.
  3. Replace lamps that are burned out or noticeably dimmed by substantial hours of use.

**END OF SECTION**

# Oregon State University Construction and Maintenance Safety Requirements

EH&S, 130 Oak Creek Building, Corvallis, OR 97331-7405, (541) 737-2505,  
FAX (541) 737-9090

**Complete OSU Construction and Maintenance Safety Form** - Send completed documents (including Site Safety Plan and all separate answer pages) to Construction Contract Administration along with the signed contract and bonds.

**Project Isolation** - All construction and remodeling activities regardless of size and/or scope must be fenced, barricaded, or otherwise protected to restrict entrance and to ensure the safety of those in the general area. See isolation requirements.

**Site Safety Plan** - A site safety plan will be required and will address:

- General Information
- Emergency Information
- Key Organization Personnel
- Hazard Evaluation/Facility Impact
- Emergency Procedures
- Work Zones
- Security Measures
- Fire Protection

A model plan is attached. This form can be used if another plan has not already been prepared. Contact OSU Environmental Health & Safety for more information 737-2505.

## Isolation Requirements

**General:** All construction, maintenance, and remodeling activities, regardless of size or scope, must be fenced, barricaded, or otherwise isolated to restrict entrance and to ensure the safety of those in the general area.

**Outdoor Activities:** Outdoor projects require the following perimeter isolation:

- A six foot chain-link fence, with controlled access points, extending in all directions around the excavation or building site such that no area of the construction is accessible to pedestrians or unauthorized personnel or vehicles.
- Isolation area will include vehicle loading and unloading areas.
- At the University's option, other barricading plans may be accepted. These may apply to projects such as road resurfacing, parking lot striping, exterior building water proofing, deliveries, etc. Contact EH&S regarding other barricading plans.

**Overnight:** Any excavation across or adjacent to sidewalks or pathways which must be left open overnight, must be identified with working, blinking construction lights in addition to solid barricades

**Indoor Activities:** Indoor construction or maintenance projects which will create dust, potentially hazardous fumes or vapors, or offensive odors are subject to the following isolation:

- Areas where existing doors can provide isolation will be labeled "Construction Area--Authorized Personnel Only".

- All other areas will be isolated by a solid barrier. The minimum barrier allowed is 4 mil poly sheeting sealed to prevent migration of dust.
- Mechanical ventilation may be required.
- A solid wall is required if building envelope is opened to the outside.

**Contractor Responsibilities**

- The contractor will provide all barricading, isolation, and fencing material. OSU will not provide any materials.
- The contractor will also provide all appropriate warning and detour signs when sidewalks, exits, or roads are closed.
- Contractor will provide all other construction area signs.

**OSU Construction and Maintenance Safety Form**

**Send completed safety documents to Construction Contract Administration with contract and bonds.**

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

Start Date: \_\_\_\_\_ Completion date: \_\_\_\_\_

Contractor: \_\_\_\_\_ Contact: \_\_\_\_\_

Work # \_\_\_\_\_ 24 hr #: \_\_\_\_\_

OSU Project Mgr: \_\_\_\_\_ Work / 24hr #'s: \_\_\_\_\_

Dept Contact: \_\_\_\_\_ OSU EH&S Contact: \_\_\_\_\_

Preconstruction meeting? **Y N** Date/Time/Location: \_\_\_\_\_

**For the following items, prepare answers on a separate sheet for all items marked "Yes". Precede each answer with the appropriate item number. All boxes need to be checked**

<b>Y</b>	<b>N</b>	<b>For This Project</b>	<b>If YES, then:</b>
		<b>1</b> Will any confined spaces be accessed?	Describe location of entry Specify location of permit Notify EH&S prior to entry See SAF 209
		<b>2</b> Will hot work be performed (welding, cutting, brazing, etc.)?	Provide min. 5# 2A10BC extinguisher within 10 ft If indoors - provide and describe ventilation See SAF 214
		<b>3</b> Any products brought to campus?	Provide MSDS on site prior to first use; Make available to OSU on request
		<b>4</b> Will lead paint be impacted?	Describe plan to limit contamination
		<b>5</b> Will asbestos-containing-material be impacted?	Coordinate with OSU asbestos manager
		<b>6</b> Will <u>any</u> materials (construction debris, soil, water, etc) be removed from campus?	Describe in detail identity and disposition of material (how, where)
		<b>7</b> Any open trenches or holes?	Describe isolation procedures (see Page 1)
		<b>8</b> Will a crane be used?	Describe crane safety plan (include plan to prevent loads above occupied areas)
		<b>9</b> Is this project building a new facility, a major remodel?	Provide Site Safety plan Describe isolation procedures (see Page 1)
		<b>10</b> Is this a minor remodeling project?	Provide, or fill out model Site Safety Plan form ( see Page 3) Describe isolation procedures (see Page 1)
		<b>11</b> Will air contamination be produced (e.g. dust, CO, solvent vapors, VOCs, odors)?	Describe project ventilation and isolation Indicate position of building air intake(s)
		<b>12</b> Will there be noise > 85 dB?	Describe noise minimization plan
		<b>13</b> Will this project use a scaffold or an external chute?	Describe isolation, dust control, installation
		<b>14</b> Will this project involve a working surface >6' above a lower level	Describe fall protection
		<b>15</b> Will any "blind" saw-cuts or penetrations be made in existing foundations, floors, ceilings and/or walls?	Describe plan for detecting and protecting power lines or other building utility lines.

EH&S Review: \_\_\_\_\_ Date: \_\_\_\_\_

# Model Site Safety Plan

## 1. General Information

Contractor name \_\_\_\_\_  
 Address \_\_\_\_\_  
 City, State, Zip \_\_\_\_\_  
 Site Safety Officer \_\_\_\_\_ Project Dates \_\_\_\_\_  
 Project Name \_\_\_\_\_

## 2. Emergency Information

Emergency Response	911	OSU EH&S and OSU Facilities Services must be notified in the event of an emergency
Hazardous Materials Spill		
MSDS on-site location		
OSU EH&S	(541) 737-2505	
Facilities Services	(541) 737-2969	

## 3. Contractor Key Personnel

	Name	Phone	Emergency Contact
Company Owner			
Project Manager			
Job Supervisor			
Site Safety Officer			
Other Responsible Individual			
24 Hour Notification			

List of employees on site \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

4. Hazard Evaluation/ Facility Impact	
Physical	Yes / No
Heavy Equipment	
Noise	
Heat	
Elevation	
Radiation Materials	
Excavations	
Underground Utilities	
Confined Spaces	
Fire Prevention	
Electrical	

5. Emergencies
Services
Evacuation Route
First Aid Location
Hazardous Materials Spill Procedure

## 6. Work Zones

Material Storage \_\_\_\_\_  
 Parking locations \_\_\_\_\_  
 Individuals with OSU keys \_\_\_\_\_  
 Access issues \_\_\_\_\_

## 7. Security measures

\_\_\_\_\_  
 \_\_\_\_\_

## 8. Fire protection

\_\_\_\_\_

## SECTION 01 56 39

### TREE AND PLANTING PROTECTION

#### PART 1 GENERAL

##### 1.01 SECTION INCLUDES

- A. Section includes temporary fencing, barricades, and guards to protect trees, plants and groundcovers not indicated to be removed, as necessary and required to prevent damage above and below grade.

##### 1.02 DEFINITIONS

- A. Dripline: Outer perimeter of branches of any tree or plant.
- B. Groundcover: Includes but not limited to plants and grass.

##### 1.03 PERFORMANCE REQUIREMENTS

- A. The Contractor shall exercise utmost care to protect existing trees and plants designated to remain and shall comply with all protection requirements provided by Owner and City of Corvallis as conveyed through the Owner's Authorized Representative.
- B. The Contractor shall install tree protection fencing as detailed and shall prevent damage to shrubs, groundcover, trees, root systems, soil, bark, foliage, branches and limbs due to construction activities, including but not limited to:
  - 1. Soil contamination, erosion, and compaction.
  - 2. Excessive wetting, and ponding due to storm water, and construction run-off.
  - 3. Alteration of grade, stockpiling of soil, debris, and materials.
  - 4. Damage to soil, roots, bark, trunk, limbs, branches, and foliage.
  - 5. Prevent unauthorized cutting, breaking, skinning and bruising of roots, branches, and bark.

##### 1.04 SUBMITTALS

- A. Procedural proposal for tree and plant protection, describe methods of protection, and stabilization, provide drawings and supporting documentation as directed.
- B. Contractor's Condition Inspection; include written report and color photographs.

##### 1.05 PROJECT CONDITIONS

- A. Install protection during initial mobilization at the Work site, and maintain until substantial completion.
- B. If, in the opinion of the Owner's arborist, additional protection is required, the Contractor shall install additional fencing as directed and without cost to the Owner.
- C. The location and requirements for additional fencing shall be determined by the

Owner's arborist prior to, and at any time during the course of the Work.

- D. Fencing:
  - 1. Fencing shall be installed at the tree and plant protection areas as detailed on Plans, or as directed by the Owner's Authorized Representative.
  - 2. Tree and plant protection fences shall remain in place until all Work is completed and shall not be removed or relocated without the approval of the Owner's Authorized Representative.
- E. Driving and Parking:
  - 1. Not permitted off paved surfaces without the approval of the Owner's Authorized Representative.
  - 2. When approved, the Contractor shall place plywood of sufficient thickness and width to support vehicles and prevent rutting on the area to be driven on.
  - 3. Care shall also be taken with respect to existing lawn sprinkler systems.
- F. Storage of materials and Debris: Not permitted off paved surfaces.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURED COMPONENTS**

- A. Chain Link Fencing: 11 gage galvanized chain link, six feet. tall, and 1.5 inch inside diameter galvanized steel line posts and 2.5 inch inside diameter corner posts, provide lockable gates as necessary.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verification of Conditions: Inspect trees, plants, and groundcovers, document existing conditions prior to installation of protection.

### **3.02 EXECUTION**

- A. Pruning and Cutting of Roots, Branches and Foliage:
  - 1. Review conditions with Architect or Owner prior to need for work, and proceed as directed.
  - 2. All pruning to be done by Owner's landscape maintenance personnel or ISA Certified arborist under the direction of Owner's Landscape Management Department.
  - 3. Perform pruning and cutting with sharp instruments intended for the purpose; do not break or chop.
- B. Root Cuttings:
  - 1. Carefully and cleanly cut roots and branches of trees indicated to be left standing

- where such roots and branches obstruct new construction.
2. Protect exposed roots with wet burlap until they can be covered with soil.
- C. Excavation and Trenching Within Drip Lines:
1. Permitted where indicated, and at other specifically approved locations.
  2. Tunnel under or around roots by hand digging or boring.
  3. Do not cut main lateral roots and tap roots over one inch diameter; cut smaller roots which interfere with installation of new Work.
  4. Do not allow exposed roots to dry out before permanent backfill is placed; provide temporary earth cover, or pack with peat moss and wrap with burlap.
  5. Water and maintain roots in moist condition and temporarily support and protect from damage until permanently relocated and covered with backfill.
- D. Existing Grading: Maintain within drip line of trees and plants unless otherwise indicated on the drawing and approved by the Owner's Authorized Representative.
- E. Tree Protection:
1. Provide temporary fence complying with Section 01 51 00 for protection of trees to remain.
  2. Extend fencing ten feet beyond dripline, except where greater distance is required for protection of Elm trees.
  3. Prevent entry into protected areas except as authorized in writing by the Owner's Authorized Representative.

### **3.03 REPAIR AND REPLACEMENT OF TREES AND PLANTS**

- A. Repair trees or shrubs damaged by construction operations as directed by the Owner.
- B. Make repairs promptly after damage occurs to prevent progressive deterioration of damaged trees.
- C. Damaged Trees, Shrubs and Groundcover:
1. Replace where Owner's Authorized Representative determines restoration to normal growth pattern is not possible; plant and maintain as directed.
  2. Replacement trees up to 13 inches caliper and shrubs up to 4 feet tall: Same size as damaged tree or shrub, species selected by the Owner's Authorized Representative.
  3. Trees over 13 inch caliper and shrubs greater than 4 feet tall: Compensate Owner as determined by an acceptable consulting arborist registered with the American Society of Consulting Arborists.
  4. Replacement groundcovers: Same size and quality as damaged species selected by Owner's Authorized Representative.

**END OF SECTION**

## SECTION 01 60 00

### PRODUCT REQUIREMENTS

#### PART 1 GENERAL

##### 1.01 SECTION INCLUDES

- A. Summary:
  - 1. Product options.
  - 2. Owner-furnished products.
  - 3. Product delivery, storage and handling.

##### 1.02 PRODUCTS

- A. Products:
  - 1. New material, machinery, components, equipment, fixtures, and systems forming the Work, but does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work.
  - 2. Products may also include existing materials or components specifically identified for reuse.
- B. Use interchangeable components of the same manufacture for similar components.
- C. Unless otherwise specified, all material and equipment shall be new; free from defects impairing strength, durability, and appearance; of current manufacture.
- D. Items specified shall be considered minimum as to quality, function, capacity, and suitability for application intended.
- E. Items incorporated into the Work shall conform to applicable specifications and standards designated, and shall be of size, make, type, and quality specified.
- F. Design, fabricate, and assemble in accordance with current best engineering, industry, and shop practices.
- G. Manufacture like parts of duplicate units to standard size and gauge to make them interchangeable.
- H. Two or more items of the same kind shall be identical and made by the same manufacturer.

##### 1.03 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.
- C. Products Specified by Naming One [or More] Manufacturer[s]: Products of manufacturer[s] named and meeting specifications, no options or substitutions

allowed.

D. Substitution Procedure: Under Section 01 25 00.

#### **1.04 REUSE OF EXISTING PRODUCTS**

- A. Except as specifically indicated or specified, materials and equipment removed from existing construction shall not be used in the completed Work.
- B. For material and equipment specifically indicated or specified to be reused in the Work:
  - 1. Use care in removal, handling, storage, and reinstallation to assure proper function in the completed Work.
  - 2. Arrange for transportation, storage, and handling of products which require off-site storage, restoration, or renovation.
  - 3. Remove and reinstall mechanical units, vents, guys, antennae, and electrical and grounding wires or conduits.

#### **1.05 OWNER FURNISHED PRODUCTS**

- A. Designate delivery dates of Owner-furnished items in the construction schedule.
- B. Receive, unload, store and handle Owner-furnished items at the site; protect from damage.

#### **1.06 DELIVERY, STORAGE AND HANDLING**

- A. Transport, handle, store and protect products in accordance with manufacturer's instructions.
- B. Arrange deliveries in accordance with construction schedules; coordinate to avoid conflict with Work and site conditions.
- C. Deliver and store products in undamaged condition in manufacturer's original containers or packaging with identifying labels intact and legible.
- D. Inspect shipments to assure compliance with Contract Documents and reviewed submittals, and that products are undamaged.
- E. Prevent soiling or damage to products or packaging.
- F. Interior Storage: Maintain required temperature and humidity ranges. Verify that Owner furnished storage meets product manufacturer's requirements.
- G. Exterior Storage:
  - 1. Store materials above ground to prevent soiling and/or moisture infiltration.
  - 2. Cover materials with waterproof breathable sheet coverings; provide adequate ventilation.
  - 3. All storage locations to be approved in advance by the Owner.
- H. Arrange storage to provide access for inspection.
- I. Coordinate with Owner's Authorized Representative all on-site storage activities.

J. Provide for security of stored products.

**END OF SECTION**

## SECTION 01 73 29

### CUTTING AND PATCHING

#### PART 1 GENERAL

##### 1.01 SECTION INCLUDES

- A. Requirements and limitations for cutting and patching of Work.

##### 1.02 RELATED SECTIONS

- A. Section 01 25 00, Product Substitution Procedures.
- B. Section 01 33 23, Shop Drawings, Product Data, Samples

##### 1.03 SUBMITTALS

- A. Submit written request in advance of cutting or alteration which affects:
  - 1. Structural integrity of any element of the Work.
  - 2. Efficiency, maintenance, or safety of any operational element.
  - 3. Visual qualities of sight exposed elements.
  - 4. Work of Owner or separate contractor.
- B. Include in request:
  - 1. Identification of project.
  - 2. Location and description of affected work.
  - 3. Necessity for cutting or alteration.
  - 4. Description of proposed work, and products to be used.
  - 5. Alternatives to cutting and patching.
  - 6. Effect on work of Owner or separate contractor.
  - 7. Written permission of affected separate contractor.
  - 8. Date and time work will be executed.

#### PART 2 PRODUCTS

##### 2.01 MATERIALS

- A. Primary Products: Those required for original installation.
- B. Product Substitution: For any proposed change in materials, submit request for substitution under provisions of Section 01 25 00.

#### PART 3 EXECUTION

##### 3.01 EXAMINATION

- A. Inspect existing conditions prior to commencing Work, including elements subject to

damage or movement during cutting and patching.

- B. After uncovering existing work, inspect conditions affecting performance of Work.
- C. Beginning of cutting or patching means acceptance of existing conditions.

### **3.02 PREPARATION**

- A. Provide temporary supports to ensure structural integrity of the Work.
- B. Provide devices and methods to protect other portions of the Work from damage.
- C. Provide protection from elements for areas which may be exposed by uncovering work.

### **3.03 CUTTING AND PATCHING**

- A. Execute cutting, fitting and patching to complete work.
- B. Fit products together, to integrate with other work.
- C. Remove and replace defective or non-conforming work.
- D. Provide openings in the work for penetration of mechanical and electrical work.

### **3.04 PERFORMANCE**

- A. Execute work by methods to avoid damage to other Work, and which will provide appropriate surfaces to receive patching and finishing.
- B. Cut rigid materials using masonry saw or core drill. Pneumatic tools are not allowed without prior approval from Owner's Authorized Representative.
- C. Restore work with new products in accordance with requirements of Contract Documents.
- D. At penetrations of fire rated walls, partitions, ceiling or floor construction, completely seal voids with approved fire rated material, to full thickness of the penetrated element.
- E. Refinishing:
  - 1. Refinish surfaces to match adjacent finish.
  - 2. For continuous surfaces, refinish to nearest intersection or natural break.
  - 3. For an assembly, refinish entire unit.

**END OF SECTION**

## SECTION 01 74 00

### CLEANING

#### PART 1 GENERAL

##### 1.01 SECTION INCLUDES

- A. Related requirements specified elsewhere, cleaning for specific products or work: Specification section for that work.
- B. Maintain premises and public properties free from accumulations of waste, debris, and rubbish, caused by operations.
- C. At completion of Work remove waste materials, rubbish, tools, equipment, machinery and surplus materials, and clean all sight-exposed surfaces; leave project clean and ready for occupancy.

##### 1.02 QUALITY ASSURANCE

- A. Standards: Maintain project in accord with applicable safety and insurance standards.
- B. Hazard Control:
  - 1. Store volatile wastes in covered metal containers.
  - 2. Provide adequate ventilation during use of volatile or noxious substances.

##### 1.03 MATERIALS

- A. Use only cleaning materials recommended by manufacturer of surface to be cleaned.
- B. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

##### 1.04 DURING CONSTRUCTION:

- A. Wet down dry materials and rubbish to lay dust and prevent blowing dust.
- B. At reasonable intervals during progress of Work clean site and public properties, and dispose of waste materials, debris and rubbish.
- C. Provide on-site containers for collection of waste materials, debris and rubbish.
- D. Remove waste materials, debris and rubbish from site and legally dispose of at public or private dumping areas off Owner's property.
- E. Vacuum clean interior building areas when ready to receive finish painting, and continue vacuum cleaning on an as-needed basis until project is ready for Substantial Completion or occupancy.
- F. Handle materials in a controlled manner with as few handlings as possible; do not drop or throw materials from heights.

### **1.05 FINAL CLEANING**

- A. Employ experienced workers, or professional cleaners, for final cleaning.
- B. In preparation for Substantial Completion or occupancy, conduct final inspection of sight-exposed interior and exterior surfaces, and of concealed spaces.
- C. Remove grease, dust, dirt, stains, labels, and other foreign materials from exposed interior and exterior finished surfaces.
- D. Remove putty, paint, labels, lubricants, etc., from windows, mirrors, and sash, and then polish, taking care not to scratch glass.
- E. Vacuum carpeting (shampoo where required), removing debris and excess nap.
- F. Repair, patch and touch up marred surfaces to specified finish, to match adjacent surfaces.
- G. Replace air filters where units were operated during construction.
- H. Maintain cleaning until project, or portion thereof, is occupied by Owner.

**END OF SECTION**

## SECTION 01 77 00

### CONTRACT CLOSEOUT

#### PART 1 GENERAL

##### 1.01 DESCRIPTION

- A. The requirements specified in this section relate to all Contractors individually performing under these Contract Documents:
  - 1. Project Record Documents.
  - 2. Final review and payment.
- B. Related work specified elsewhere:
  - 1. OSU General Conditions.
  - 2. Shop Drawings, Product Data and Samples, Section 01 33 23.

##### 1.02 PROJECT RECORD DOCUMENTS

- A. The Project Record Documents shall be organized to include the following information:
  - 1. Table of Contents
  - 2. Project Team List
  - 3. Specifications (Including Addenda and Change Orders)
  - 4. Drawings
  - 5. Inspection Reports, as applicable
  - 6. Signed Warranty(ies)
  - 7. Maintenance Instructions
- B. Draft Project Record Documents shall be submitted for review upon 75% completion of the Work.
- C. Project Record Documents shall be submitted electronically to the Owner. Hard copies will not be accepted.
- D. The project team list shall include the name, address, and phone number of the Owner, Contractor, Inspector, Subcontractors, and the materials manufacturers.
- E. Legibly mark each Specification section to indicate actual as-built condition indicating changes in the Work made by addenda or change order or actual materials used and actual manufacturer(s) used.
- F. Maintain current and accurate as-built mark-ups during construction and make available to Owner's Authorized Representative upon request.
- G. Legibly mark the drawings to indicate actual as-built conditions indicating changes in the Work made by addenda or change order or actual conditions which differ from the drawings.
- H. Redraw or provide new drawings as required for a complete as-built set of drawings. The Contractor shall maintain current and accurate as-built mark-ups during

construction and make available to Owner's Authorized Representative.

- I. Include inspection reports if applicable.
- J. Include, in a single section, all copies of the Project's labor and material warranties clearly marked to identify the Owner's responsibilities under the terms of each warranty and the section of Work that each warranty covers. One set must be clearly marked as containing original documents.
- K. In the case of an elevator installation, the Contractor's and manufacturer's warranty shall provide for the Owner's right to respond to emergency/car failure situations for the purpose of extricating individuals trapped in the elevator.
- L. Include maintenance instructions complete with technical information and name, address, and phone number of the Contractor(s) and manufacturer(s) of each material and product.

### **1.03 FINAL REVIEW AND PAYMENT**

- A. Prior to completion, the Contractor shall inspect the Work and make a Punch-list noting all items that are incomplete and/or incorrect.
- B. The Contractor shall notify all Subcontractors in writing of incomplete and/or incorrect items. Notify far enough in advance of the completion date that the Work can be completed on schedule. Said Work shall be immediately corrected.
- C. Should conditions prevail which prohibit some elements of the Work from being accomplished, but the work-in-place will perform the primary function (i.e., painting cannot be completed due to high moisture content of masonry walls.) the Contractor shall record the reason with this Punch-list item requesting temporary delay in completion from the Owner in writing.
- D. Notify the Owner in writing that all items are completed and ready for final review or else that the Work product is fully usable, but some listed deficiencies remain to be completed. Submit all record documents at this time.
- E. The Owner will review all documents. When the documents include a Contractor's request for delay in completion, the Owner will review all Work which is certified as complete to the best knowledge of the Contractor. The Owner will also review the listed incomplete Work and assign a value to such uncompleted work.
- F. The Contractor shall make the required corrections to the Work expeditiously. A letter will be addressed to the Contractor informing the Contractor of the project status.
- G. When Contract closeout procedures are completed and all Punch-list deficiencies have been corrected, provide Owner with final corrected Project Record Documents based on Owner's preliminary review. Correct Project Record Documents shall be in electronic format.
- H. Final Completion by the Owner will be documented and the Contractor will receive

written notice of acceptance of the Work and notification that final payment may be billed and released.

- I. All warranties shall commence and become effective beginning on the date of Substantial Completion.

**END OF SECTION**

**PART 1 - GENERAL**

**1.01 SECTION REQUIREMENTS**

- A. Owner will occupy building during the re-roofing project. Contractor shall work closely with Dairy Center Manager when conducting project so as to minimize disruptions with operations.
- B. Comply with EPA regulations and hauling and disposal regulations of authorities having jurisdiction.
- C. It is not expected that hazardous materials will be encountered in the Work. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Owner will remove hazardous materials under a separate contract.

**PART 2 - PRODUCTS (Not Applicable)**

**PART 3 - EXECUTION**

**3.01 DEMOLITION**

- A. Maintain services/systems indicated to remain and protect them against damage during selective demolition operations. Before proceeding with demolition, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of the building.
- B. Locate, identify, shut off, disconnect, and cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.
- C. Provide temporary barricades and other protection required to prevent injury to people, animals and damage to adjacent buildings and facilities to remain.
- D. Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain or construction being demolished.
- E. Provide temporary weather protection to prevent water leakage and damage to structure and interior areas.

## **02 41 19 SELECTIVE STRUCTURE DEMOLITION**

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- F. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction.
- G. Promptly remove demolished materials from Owner's property and legally dispose of them. Do not burn demolished materials.

**END OF SECTION**

**PART 1 - GENERAL****1.01 SECTION REQUIREMENTS**

- A. Submittals: Model code evaluation reports for wood-preservative treated wood, fire-retardant treated wood, engineered wood products and metal framing anchors.

**1.02 UNIT PRICING**

- A. Unit Price No. 2: Within the limits shown on the plans we anticipate exposing deteriorated 2x10 purlins. Payment under this unit price will be paid by each board foot of structure removed and replaced.
- B. Unit Price No. 3: Within the limits shown on the plans we anticipate exposing deteriorated 2x12 rafters, fascias and rake boards. Payment under this unit price will be paid by each board foot of structure removed and replaced.
- C. Unit Price No. 4: Within the limits shown on the plans we anticipate exposing deteriorated 2x4 monitor studs. Payment under this unit price will be paid by each board foot of structure removed and replaced.

**PART 2 - PRODUCTS****2.01 WOOD PRODUCTS, GENERAL**

- A. Lumber: Provide dressed lumber, S4S, marked with grade stamp of inspection agency.
- B. Engineered Wood Products: Acceptable to authorities having jurisdiction and for which current model code research or evaluation reports exist that show compliance with building code in effect for Project.

**2.02 TREATED MATERIALS**

- A. Preservative-Treated Materials: AWWA C2, except that lumber not in ground contact and not exposed to the weather may be treated according to AWWA C31 with inorganic boron (SBX).
  - a. Use treatment containing no arsenic or chromium.
  - b. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent.

## 06 10 00 ROUGH CARPENTRY

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- c. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
- B. Provide preservative-treated materials for items indicated on Drawings, and the following
  - a. Wood members in connection with roofing, flashing, vapor barriers, and waterproofing.
  - b. Concealed members in contact with masonry or concrete.
  - c. Wood framing members that are less than 18 inches (460 mm) above the ground.
  - d. Wood floor plates that are installed over concrete slabs-on-grade.
- C. Fire-Retardant-Treated Materials: Comply with performance requirements in AWWPA C20.
  - a. Use Exterior type for exterior locations and where indicated.
  - b. Use Interior Type A, High Temperature (HT) for enclosed roof framing, framing in attic spaces, and where indicated.
  - c. Use Interior Type A, unless otherwise indicated.
  - d. Identify with appropriate classification marking of a testing and inspecting agency acceptable to authorities having jurisdiction.

### 2.03 LUMBER

- A. Dimension Lumber:
  - a. Maximum Moisture Content: 19 percent for 2-inch nominal (38-mm actual) thickness or less.
  - b. Non-Load-Bearing Interior Partitions: No. 2 Western woods: WCLIB or WWPA.
  - c. Framing Other Than Non-Load-Bearing Partitions: No. 2 Douglas fir-larch (north): NLGA
  - d. Exposed Framing: Provide material hand-selected for uniformity of appearance and freedom from characteristics, on exposed surfaces and edges, that would impair finish appearance, including decay, honeycomb, knot-holes, shake, splits, torn grain, and wane.
    - i. Species: As specified for framing other than non-load bearing partitions
    - ii. Grade: No. 1, as indicated.
- B. Timbers 5-Inch Nominal (117-mm Actual) Size and Thicker: No. 1: Douglas fir-larch (north), Options in subparagraph below are values in SPIB rules for kiln-dried and air-dried timber, respectively
  - a. Maximum Moisture Content: 20.

- C. Exposed Boards: Hem-fir, Select Merchantable or No. 1 Common: NLGA, WCLIB, or WWPA with 15 percent maximum moisture content.
- D. Concealed Boards: Western woods, Standard: WCLIB; or No. 3 Common: WWPA; with [15] 19 percent maximum moisture content.
- E. Miscellaneous Lumber: Construction, or No. 2 grade with 19 percent maximum moisture content of any species. Provide for nailers, blocking, and similar members.

#### 2.04 ENGINEERED WOOD PRODUCTS

- A. Engineered wood products with allowable design stresses, as published by manufacturer, that meet or exceed those indicated. Manufacturer's published values shall be demonstrated by comprehensive testing.
- B. Laminated-Veneer Lumber: Manufactured with exterior-type adhesive complying with ASTM D 2559. Allowable design values determined according to ASTM D 5456.
  - a. Extreme Fiber Stress in Bending, Edgewise: 2900 psi (20.0 MPa) or as indicated.
  - b. Modulus of Elasticity, Edgewise: 2,000,000 psi (13 800 MPa).
- C. Wood I-Joists: Prefabricated units, made with solid or structural composite lumber flanges and wood-based structural panel webs, let into and bonded to flanges. Provide units complying with material requirements of and with structural capacities established and monitored according to ASTM D 5055.
  - a. Web Material: Either oriented strand board or plywood, Exposure 1.
  - b. Structural Properties: Provide units with depths and design values not less than those indicated.
  - c. Provide units complying with APA PRI-400, factory marked with nominal joist depth, joist class, span ratings, mill identification, and compliance with APA standard.
- D. Rim Boards: Product designed to be used as a load-bearing member and to brace wood I-joists at bearing ends, complying with research/evaluation report for I-joists.
  - a. Material: product made from any combination solid lumber, wood strands, and veneers.
  - b. Thickness: as indicated.

**2.05 MISCELLANEOUS PRODUCTS**

- A. Fasteners: Size and type indicated. Where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.
  - a. Power-Driven Fasteners: CABO NER-272..
  - b. Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.
  
- B. Metal Framing Anchors: Structural capacity, type, and size indicated.
  - a. Use anchors made from hot-dip galvanized steel complying with ASTM A 653/A 653M, G60 (Z180) coating designation for interior locations where stainless steel is not indicated.
  - b. Use anchors made from stainless steel complying with ASTM A 666, Type 304 for exterior locations and where indicated.
  - c. Metal connectors in contact with pressure treated lumber, galvanize as recommended by manufacturer.

**PART 3 - EXECUTION**

**3.01 INSTALLATION**

- A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.
  
- B. Securely attach rough carpentry to substrates, complying with the following:
  - a. CABO NER-272 for power-driven fasteners
  - b. Published requirements of metal framing anchor manufacturer.

**END OF SECTION**

**PART 1 - GENERAL**

**1.01 SECTION REQUIREMENTS**

- A. Submittals: Model code evaluation reports for preservative-treated plywood.

**1.02 UNIT PRICING**

- A. Unit Price No. 1: Within the limits shown on the plans we anticipate exposing sheets of deteriorated 5/8" CDX roof sheathing. Payment under this unit price will be paid by each sheet of plywood removed and replaced.

**PART 2 - PRODUCTS**

**2.01 WOOD PRODUCTS, GENERAL**

- A. Plywood: DOC PS 1.
- B. Oriented Strand Board: DOC PS 2.

**2.02 TREATED PLYWOOD**

- A. Preservative-Treated Plywood: AWWPA C9.
  - a. Use treatment containing no arsenic or chromium.
  - b. Kiln-dry plywood after treatment to a maximum moisture content of 15 percent.
- B. Provide preservative-treated plywood for items indicated on Drawings, and plywood in contact with masonry or concrete or used with roofing, flashing, vapor barriers, and waterproofing.
- C. Fire-Retardant-Treated Plywood: Comply with performance requirements in AWWPA C27, labeled by a testing and inspecting agency acceptable to authorities having jurisdiction.
  - a. Use Exterior type for all locations where indicated.
  - b. Identify with appropriate classification marking of a testing and inspecting agency acceptable to authorities having jurisdiction.
- D. Provide fire-retardant treated materials for items indicated on Drawings.

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### **2.03 WALL SHEATHING**

- A. Plywood Wall Sheathing: Exposure 1, Structural I sheathing.
- B. Oriented-Strand-Board: Exposure 1, Structural I sheathing.

### **2.04 ROOF SHEATHING**

- A. Plywood Roof Sheathing: Exposure 1, Structural I sheathing.
- B. Oriented-Strand-Board: Exposure 1, Structural I sheathing.

### **2.06 MISCELLANEOUS PRODUCTS**

- A. Fasteners: Size and type indicated. Where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.
  - a. Power-Driven Fasteners: CABO NER-272.
- B. Adhesives for Field Gluing Panels to Framing: APA AFG-01.

## **PART 3 - EXECUTION**

### **3.01 INSTALLATION**

- A. Securely attach rough carpentry to substrates, complying with the following:
  - a. CABO NER-272 for power-driven fasteners.
- B. Fastening Methods for Wall and Roof Sheathing:
  - a. Nail to wood framing.
  - b. Screw to cold-formed metal framing.

**END OF SECTION**

**PART 1 - GENERAL**

**1.01 SUMMARY**

**A. SECTION INCLUDES**

This section includes, but is not necessarily limited to, furnishing and installing preformed standing seam metal roof panels, ridge, flashing, metal trim and accessories as indicated on the drawings and specified herein.

1. Furnishing and installing Roll-formed metal roofing system complete with concealed fasteners, eave protection, valley and ridge protection, protective flashings, clips, perimeter and penetration flashing, and closures.
2. Related Work Specified Elsewhere:
  - a. DIVISION 06 ROUGH CARPENTRY FOR WOOD SUBSTRATE COMPONENTS.
  - b. DIVISION 07 SHEET METAL FLASHING AND TRIM.

**1.02 REFERENCES**

**A. American Society for Testing and Materials (ASTM):**

1. ASTM A653/ A653M Standard Specification for galvanized G90 sheet steel.
2. ASTM A653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip process.
3. ASTM B209 Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
4. ASTM E1646 Standard Test Method for Water Penetration of Exterior Metal Panel Systems by Uniform Static Air Pressure Difference.
5. ASTM E1680 Standard Test Method for Rate of Air Leakage Through Exterior Metal Roof Panel Systems.

**B. Sheet Metal and Air Conditioning Contractors National Association (SMACNA):**

1. Architectural Sheet Metal Manual, 5th edition.

**C. American Society of Civil Engineers (ASCE):**

1. ASCE 7-05: Minimum Design Loads for Buildings and Other Structures.

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### **1.03 SUBMITTALS**

- A. Product Data: Include manufacturer's detailed material and system description, installation instructions, engineering performance, and finish specifications.
- B. Shop Drawings: showing layout of every roof panel and structural supporting member required in the installation with side laps and end laps marked.
  - 1. Provide details for continuous end wall and ridge, edge conditions, seams, joints, corners, panel profiles, assembly anchoring techniques, round and square flashings and counter flashings.
- C. Samples: Submit two (2) one foot by material width sections of panels and trim illustrating thickness, finish, color range and textures of materials.
- D. Sample Warranty:
  - 1. Provide an unexecuted copy of the warranty specified for this Project, identifying the terms and conditions required of the Manufacturer, Contractor, Installer, and the Owner.

### **1.04 SUBMITTALS FOR INFORMATION**

- A. Independent laboratory testing report for system design load and seam integrity.
- B. Professional engineer's documentation that roofing system incorporates sufficient allowance for stress and movement.
- C. Manufacturer's verifications that the panels are factory roll formed.

### **1.05 CONTRACT CLOSE-OUT**

- A. General: Comply with Requirements of DIVISION 01 CLOSE-OUT.
- B. Special Project Warranty: Provide specified warranty for the Project, executed by the authorized agent of the Manufacturer.
- C. Roofing Maintenance Instructions: Provide a manual of manufacturer's recommendations for maintenance of installed roofing systems.
- D. Insurance Certification: Assist Owner in preparation and submittal of roof installation acceptance certification as may be necessary in connection

with fire and extended coverage insurance on roofing and associated work.

**1.06 QUALITY ASSURANCE**

- A. **Manufacturer's Qualifications:** Manufacturer shall have a minimum of ten (10) years successful commercial experience supplying metal roofing systems to the region where the work is to be done.
- B. **Source Limitations:** Obtain all components of roof system from a single manufacturer, including roll goods materials if required. Secondary products that are required shall be recommended and approved in writing by the roofing system Manufacturer.
- C. Upon request of the Architect or Owner, submit Manufacturer's written approval of secondary components in list form, signed by an authorized agent of the Manufacturer.
- D. Manufacturer shall have direct authority and control over all fabrication of steel components as well as the raw materials used in their fabrication.
- E. **Site Formed Panels:** Site formed panels are prohibited. All metal panels must be factory pre-manufactured and engineered for this project.
- F. **Field Measurements:** Take field measurements of structure or substrates to receive panel system prior to fabrication of panels.

**1.07 DELIVERY, STORAGE, AND HANDLING**

- A. **Manufacturer's Responsibilities:**
  - 1. All roof panels shall be shipped from the manufacturer with strippable film or similar packaging material separating the individual panels to minimize flexing, stressing, scratching or otherwise damaging the material during transit to the job.
  - 2. Fully cover panels with tarpaulins or similar protective cover during transit to prevent dirt and debris from coming in contact with the finished goods.
- B. **Installer's Responsibilities:**
  - 1. Stack pre-finished materials to prevent twisting, bending, abrasion and denting and elevate one end to facilitate moisture run-off.

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2. Unload roof panels using a boom or crane, supporting the panels in at least two locations during lifting, and never lift more than three panels at a time.
3. Protect moisture-sensitive and water-based materials from the weather.
4. Inspect materials upon delivery. Reject and remove physically damaged or marred material from project site.

### **1.08 PROJECT CONDITIONS**

- A. Determine that work of other trades will not hamper or conflict with necessary fabrication, storage and protection requirements for roofing system.
- B. Protection:
  1. Protect completed roofing from subsequent construction operations. Comply with Manufacturer's recommendations.
  2. Do not overload roof with stored materials.
  3. Support no roof-mounted equipment directly on the roofing system.
  4. Ascertain that work of other trades that penetrate the roof or is to be made watertight per Manufacturer's recommendations and approved prior to installation of roofing.

### **1.09 DESIGN AND PERFORMANCE CRITERIA**

- A. Thermal Expansion and Contraction:
  1. Completed metal roofing and flashing system shall be capable of withstanding expansion and contraction of components caused by changes in temperature without buckling; producing excess stress on: structure, anchors or fasteners.
  2. Interface between panel and clip shall provide for thermal movement in each direction along the longitudinal direction.
- B. Provide Engineered System specific to local code, site conditions, and project building:
  1. Engineering Criteria:
    - a. Engineered to local conditions and all applicable Codes.
    - b. Calculations to be stamped by an engineer licensed in the State of Oregon.

## 1.10 WARRANTIES

- A. Owner shall receive:
  - 1. Manufacturer's ten (10) year watertight warranty, including coverage for all trim, flashings, and penetrations associated with the roof area.
  - 2. Manufacturer's ten (10) year coverage on finish including checking, crazing, peeling, chalking, fading and/or adhesion.
  - 3. Manufacturer's written warranty covering ten (10) year rust perforation
  - 4. Warranties shall commence on date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.01 PRODUCTS, GENERAL

- A. Refer to Division 01 Product Requirements.
- B. Basis of Design: Materials herein shall be regarded as the minimum standard of quality required for work of this Section. Comply with all manufacturer and contractor/fabricator quality and performance criteria specified in Part 1.
- C. Substitutions: Products proposed as equal to the products specified in this Section shall be submitted in accordance with Bidding Requirements and Division 01 provisions.
  - 1. Proposals shall be accompanied by a copy of the manufacturer's standard specification section.
  - 2. Equivalency of performance criteria, warranty terms, submittal procedures, and contractual terms will constitute the basis of acceptance.
  - 3. The Owner's decision regarding substitutions will be considered final.

### 2.02 ACCEPTABLE MANUFACTURERS

- A. Manufacturers:
  - a. AEP Span.
  - b. Epilay.
  - c. Firestone Building Products Company.
  - d. Morin, a Kingspan Group Company.
  - e. Taylor Metal Products.
  - f. The Breyer Company.
  - g. The Garland Company.

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### B. Approved Equals

1. Approved Equal Requests will be considered in accordance with provisions of DIVISION 01 GENERAL REQUIREMENTS
2. The Owner's decision regarding substitutions will be considered final.

## 2.03 STANDING SEAM ROOFING SYSTEM

### A. General.

1. The products, quality, and performance criteria specified shall be regarded as the minimum standard of quality required for the project.

### B. Panel material.

1. 24 ga. Galvanized G90 sheet steel conforming to ASTM A653/ A653M and AISI SG03-3, type AZ-50.

### C. Clips.

1. UL-class-90 rated system; clip / fasteners per manufacturer to suit uplift requirements.
2. Concealed anchor clips allowing thermal movement, and of configuration which will prevent entrance or passage of water.
3. Clips must be provided by the panel manufacturer as recommended for the manufacturers system.
4. Clip must maintain clearance between panel and substrate for proper ventilation to help prevent condensation on underside of panel and eliminate the contact of panel fastener head to panel.

### D. Flashing and flat stock material:

1. Fabricate in profiles required to complete roofing system and indicated on drawings of same material, thickness, and finish as roof system, unless indicated otherwise.

### E. Finish on Surfaces.

1. Finish shall conform to all tests for adhesion, flexibility and longevity as specified by finish supplier.
2. Exposed surfaces for coated panels:
  - a. Factory-applied, oven-baked finish based on Kynar 500 polyvinylidene fluoride resin. AAMA 2605.
3. Unexposed surfaces for coated panels shall be baked-on polyester coating with .20 - .30 dry film thickness (TDF).
4. Approved Metal Color: Dark Bronze by Taylor Metal Products. Approved equals to match.

## F. Characteristics.

1. Provide the same panel profile from a single manufacturer for all standing seam roof areas.
2. Profile of panel see Working Drawings
3. Exposed fasteners, screws and/or roof mastic are unacceptable and will be rejected. System configuration only allows for exposed fasteners at panel overlap (if required) and trim details (as per manufacturer's guidelines).
4. Provide panels in continuous lengths from ridge to eave with no overlaps unless approved by manufacturer, in writing.

## G. Standing Seam Panel Width:

1. 16 inches to 18 inches.

## H. Profile of panel:

1. Shall have mesa's every two (2) inches on center continuous throughout panel which are a minimum of one and one-half (1-1/2) inches wide.

## I. Stiffening ribs:

1. Located in flat of panel to minimize oil canning and telegraphing of structural members.

## J. Panel ends:

1. Shall be panned at ridge, headwall, and hip conditions, or where applicable.

## K. Panel length:

1. Full length without joints, including bends.

## L. Accessories.

1. Gable anchor clips for: Standing Seam style. Galvanized G90 steel, type AZ-50, minimum thickness: 16 gauge
2. Fasteners:
  - a. Concealed fasteners: Corrosion resistant steel fasteners (zinc plated, stainless steel or equal) designed to meet structural loading requirements. Provide #14 as the minimum fastener size.
  - b. Zinc-coated steel, corrosion resisting steel, zinc cast head, or nylon capped steel, type and size specified below or as otherwise approved for the applicable requirements. Design the fastening system to withstand the design loads specified. Exposed fasteners shall be gasketed or have gasketed washers on the exterior side of the covering to waterproof the penetration. Washer material shall

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be compatible with the covering; have a minimum diameter of 3/8 inch for structural connections; and gasketed portion of fasteners or washers shall be neoprene or other equally durable elastomeric material approximately 1/8 inch thick.

3. Closures:
  - a. Corrosion resisting steel, closed-cell or solid-cell synthetic rubber, neoprene or polyvinyl chloride pre-molded to match configuration of rib openings. Material for closures shall not absorb water. Factory precut closed cell foam meeting ASTM D1056 or ASTM D3575, enclosed in metal channel matching panels when used at hip, ridge, rake, and jamb or per approved manufacturer's recommendation.
4. Provide all miscellaneous accessories for complete installation.

### 2.04 ACCESSORY PRODUCTS

- A. Provide gutters, downspouts, diverters, and rain troughs, in limited places where shown on the Drawings (see Roof Plans, Exterior Elevations, Sections/Details, etc).
  1. Gutters, 24 gauge 316 Stainless Steel ASTM A-240.
  2. Diverters, rain troughs, 20 gauge 316 Stainless Steel ASTM A-240.
- B. Provide PVC downspouts and drainage piping to match existing drainage system.
- C. Sealants:
  1. Acceptable Sealants for weathertight installation, per manufacturer recommendations.
- D. Underlayments:
  1. Synthetic underlayment shall be applied over entire roof area.
    - a. Underlayment shall be Protectite Platinum by Epilay or equal.
  2. Provide 40 mil "Grace" ice & water shield 4'-0" minimum @ all roof edges, lap under underlayment. Comply with roofing manufacturer requirements for high temperature ice & water shield materials.

### 2.05 FABRICATION

- A. Shop fabricate metal roofing and flashing components to the maximum extent possible, forming metal work with clear, sharp, straight, and uniform bends and rises. Hem exposed edges of flashings.

- B. Form flashing components from full single width sheet in minimum ten (10) foot lengths. Provide shop fabricated, mitered corners, joined using closed end pop rivets and joint sealant.
- C. Fabricate roofing and related sheet metal work in accordance with approved shop drawings and applicable standards.

### **PART 3 - EXECUTION**

#### **3.01 PREPARATION**

- A. Design system so that the panel installation may be started and/or terminated at any given point in the area.
  - 1. It is understood that the ongoing operations of the Owner are of a critical nature as to leak sensitivity. Do not work on more roof area than can be restored completely watertight in one day.
- B. Remove existing loose material, dirt and debris from the roof area. All accumulations of asphalt or other repair materials shall be removed to provide a smooth, flat substrate without imperfections that will be evident in the finished work.

#### **3.02 INSTALLATION, GENERAL**

- A. Install roofing as per building code requirements and manufacturer's instructions.
- B. Install roof system when the atmospheric dry bulb temperature is minimum forty (40) degrees Fahrenheit and rising.
- C. Install all components of the roof system in exact accordance with the manufacturer's standard published procedures as applicable to these project conditions and substrates.
- D. Install all required vapor retarder, air seals and preliminary tapered insulating substrates required per enclosed specifications.
- E. Layout and anchor all roof framing sections or purlins according to the approved roof plan.

**3.03 ROOFING AND FLASHING INSTALLATION**

- A. Comply with all details and install roofing materials and flashings in accordance with approved shop drawings and manufacturer's product data within specified erection tolerances.
- B. Prepare roof for the installation of standing seam panels, including:
  - 1. Install all decking, framing, and/or furring members as indicated in this specification and bid documents.
  - 2. Install all insulation, vapor retarder, and/or air infiltration barriers as indicated in this specification and bid documents.
  - 3. Install all underlayments and/or temporary water proofing materials as required in this specification and bid documents.
  - 4. Clip Spacing Per Manufacturer's Recommendations.
- C. Installation of Roof Panels: Roof panels can be installed by starting from either end and working towards the opposite end.
  - 1. Install per Manufacturer's recommendations.
  - 2. Un-installed panels which are temporarily stored on the ground or roof shall be secured in place at the end of each day's work to prevent possible damage or injury.
- D. Isolate dissimilar metals and masonry or concrete from metals with bituminous coating. Use gasketed fasteners where required to prevent corrosive action between fastener, substrate, and panels.
- E. Limit exposed fasteners to extent indicated on shop drawings.
- F. Anchorage shall allow for temperature expansion/contraction movement without stress or elongation of panels, clips, or anchors. Attach clips to structural substrate using fasteners of size and spacing as determined by manufacturer's design analysis to resist specified uplift and thermal movement forces.
- G. Seal laps and joints in accordance with roofing system manufacturer's product data.
- H. Provide for temperature expansion/contraction movement of panels at roof penetrations and roof mounted equipment in accordance with system manufacturer's product data and design calculations.
- I. Installed system shall be true to line and plane and free of dents, and physical defects. In light gauge panels with wide flat surfaces, some oil

- canning may be present. Oil canning does not affect the finish or structural integrity of the panel and is therefore not cause for rejection.
- J. Maximum variation from true planes or lines shall be one-fourth (1/4) inch in twenty (20) feet and three-eighths (3/8) inch in forty (40) feet of more.
  - K. Form joints in linear sheet metal to allow for one-fourth (1/4) inch minimum expansion at twenty (20) feet on center maximum and eight (8) feet from corners.
  - L. At joints in linear sheet metal items, set sheet metal items in two (2) one-fourth (1/4) inch beads of butyl sealant. Extend sealant over all metal surfaces. Mate components for positive seal. Allow no sealant to migrate onto exposed surfaces.
  - M. Remove damaged work and replace with new, undamaged components.
  - N. Touch up exposed fasteners using paint furnished by roofing panel manufacturer and matching exposed panel surface finish.
  - O. Clean exposed surfaces of roofing and accessories after completion of installation. Leave in clean condition at date of substantial completion. Touch up minor abrasions and scratches in finish.

### **3.04 CLEANING**

- A. Clean installed work in accordance with the manufacturer's instructions.
- B. Replace damaged work than cannot be restored by normal cleaning methods.

### **3.05 CONSTRUCTION WASTE MANAGEMENT**

- A. Remove and properly dispose of waste products generated during roofing procedures. Comply with requirements of authorities having jurisdiction

### **3.06 FINAL INSPECTION**

- A. At completion of roofing installation and associated work, Contractor shall conduct meeting with Contractor, Architect, installer, installer of associated work, Owner. Inspect roofing work and flashing of roof penetrations, walls, curbs and other equipment. List all items requiring

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- correction or completion and furnish copy of list to each party in attendance.
- B. Repair or replace deteriorated or defective work required to produce an installation which is free of damage and deterioration at time of Substantial Completion and according to Warranty Requirements.
  - C. Immediately correct roof leakage during construction. If the Contractor does not respond within twenty four (24) hours, the Owner will exercise rights to correct the Work under the terms of Division 1.

**END OF SECTION**

**PART I • GENERAL****1.01 SUMMARY**

- A. Section Includes (but is not necessarily limited to):
1. Work described in this section includes pre-formed wall panel system with exposed fasteners, complete with anchor clips, fasteners, flashing, trim, and accessories indicated on the drawings, specified herein, and necessary to complete the system.

**1.02 RELATED SECTIONS**

- A. Examine Contract Documents for requirements that affect Work of this Section. Other Specification Sections that directly relate to Work of this Section include, but are not limited to.
1. Section 07 41 13 • Metal Roof Panels.
  2. Section 07 42 13 • Metal Wall Panels.
  3. Section 07 62 00 • Sheet Metal Flashing and Trim.
  4. Section 07 92 00 • Joint Sealants.

**1.03 REFERENCES**

- A. American Society for Testing and Materials (ASTM):
1. ASTM A635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position.
  2. ASTM D638 - Standard Test Method for Tensile Strength of Plastics.
  3. ASTM D648 - Standard Test Method for Deflection Temperature of Plastics Under Flexural Load.
  4. ASTM 696 - Standard Test Method for Coefficient of Linear Thermal Expansion.
  5. ASTM D 790/ASTM D 790M - Standard Test Method for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
  6. ASTM D 1003 - Standard Test Method for Haze and Luminous Transmittance of Transparent Plastics.
  7. ASTM D 1929 - Standard Test Method for Ignition Properties of Plastics.
  8. ASTM D 2843 - Standard Test Method for Density of Smoke from the Burning and Decomposition of Plastics.
  9. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
  10. ASTM G 155 - Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non Metallic Materials.

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### B. Others:

1. Underwriters Laboratories (UL) 2218 – Impact of Prepared Roof Covering Materials.
2. QUV 313B – Accelerated Weathering Test of Non-Metallic Materials.
3. ISO-9002 – International Standards Organization.

## 1.03 SUBMITTALS

### A. Product Data:

1. Polycarbonate sheet manufacturer's descriptive literature for each glazing type specified, including documentation of code compliance; include descriptive literature for recommended installation accessories.
2. Indicate fastener types and spacing; and required fastener pullout values.

### B. Selection Samples:

1. Two sets of color chips representing polycarbonate sheet manufacturer's full range of available colors.
2. Two samples, minimum size 4" long x full panel width showing panel profile and also a sample of color selected, representing actual color and finish of products to be installed.
3. Sample of foam closure strips to fit inside and outside specified panel profile.
4. Submit sample of panel fasteners.

### C. Shop Drawings:

1. Show wall panels (and roofing system, if applicable) with flashings and accessories in elevations, sections and details.
  - a. Building Wall Panel: PP-1.
2. Include thickness and finishes, panel lengths, joining details, anchorage details, flashings and special fabrication provisions for termination and penetrations.
3. Indicate relationships with adjacent and interfacing work and panel profile of MTL-2.
4. Indicate fastener types and spacing; and provide fastener pullout values.

### D. Sample Warranty:

1. Provide an unexecuted copy of the warranty specified for this Project, identifying the terms and conditions required of the Manufacturer, Contractor, Installer, and the Owner.

### E. Closeout Submittals:

1. Comply with Requirements of Division 01, 01 77 00 Contract Closeout.
2. Special Project Warranty: Provide specified warranty for the Project, executed by the authorized agent of the Manufacturer.

3. Wall Panel Maintenance Instructions. Provide a manual of manufacturer's recommendations for maintenance of installed systems.

#### 1.04 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Manufacturer shall have a minimum of ten (10) years commercial experience supplying polycarbonate panels to the region where the work is to be done.
- B. Source Limitations: Obtain all components of the wall panel system from a single manufacturer. Secondary products that are required shall be recommended and approved in writing by the Manufacturer.
  1. Upon request of the Architect or Owner, submit Manufacturer's written approval of secondary components in list form, signed by an authorized agent of the Manufacturer.
  2. Manufacturer shall have direct authority and control over all fabrication of steel components as well as the raw materials used in their fabrication.
- C. Field Measurements: Take field measurements of structure or substrates to receive panel system prior to fabrication of panels.

#### 1.05 DELIVERY, STORAGE, AND HANDLING

- A. Manufacturer's responsibilities:
  1. All panels shall be shipped from the manufacturer with polystyrene or similar cushioned packaging material separating the individual panels to minimize flexing, stressing, scratching or otherwise damaging the material during transit to the job.
  2. Fully cover with tarpaulins or similar protective cover during transit to prevent dirt and debris from coming in contact with the finished goods.
  3. Do not store polycarbonate sheet materials in areas subject to direct UV exposure.
  4. Maintain storage area in accordance with polycarbonate sheet manufacturer's instructions until installation of products.
- B. Installer's responsibilities:
  1. Stack pre-finished materials to prevent twisting, bending, abrasion and cracking and elevate one end to facilitate moisture run-off.
  2. Unload wall panels using a boom or crane, supporting the panels in at least two locations during lifting, and never lift more than three panels at a time.
  3. Protect moisture-sensitive materials and water-based from the weather.
  4. Inspect materials upon delivery. Reject and remove physically damaged or marred material from project site.

**1.06 PROJECT/SITE CONDITIONS**

- A. Determine that work of other trades will not hamper or conflict with necessary fabrication and storage and protection requirements for wall panel system.
  - 1. Protection:
    - a. Protect completed work from subsequent construction operations. Comply with Manufacturer's recommendations.
    - b. Do not encumber the site with stored materials or equipment.
    - c. Do not support wall-mounted equipment directly on the wall panel system.
    - d. Ascertain that work of other trades which penetrates the wall or is to be made watertight by the wall is in place an approved prior to installation.

**1.07 DESIGN AND PERFORMANCE CRITERIA**

- A. Regulatory Requirements: Glazing materials to comply with the following building code
  - 1. ICC Evaluation Report ESR-1893.
  - 2. International Building Code (IBC), current edition
  - 3. Miami Dade County NOA #18-0328.03.
- B. Structural Capacity: The structural capacity for the panel system to resist all applicable loads, including wind loads.
- C. Water penetration: The panel system shall exhibit no uncontrolled water penetration through the panel joints at a static pressure of 6.24 psf when tested in accordance with ASTM E1646.
- D. Air Infiltration: The panel system shall exhibit a maximum of 0.06 cfm of air leakage per linear foot of panel seam at a static pressure of 6.24 psf when tested in accordance with ASTM E1680.

**1.08 WARRANTIES**

- A. Owner shall receive:
  - 1. Manufacturer's standard ten (10) year warranty against loss of light transmission and yellowing.
  - 2. Manufacturer's standard ten (10) year warranty against hail damage.
  - 3. Installer's two (2) year warranty covering wall panel system installation.
  - 4. Warranties shall commence on date of Substantial Completion.

**PART 2 • PRODUCTS****2.01 GENERAL**

- A. Refer to Division 01 Product Requirements.
- B. Basis of Design: Materials herein shall be regarded as the minimum standard of quality required for work of this Section. Comply with all manufacturer and contractor/fabricator quality and performance criteria specified in Part 1.
- C. Substitutions: Products proposed as equal to the products specified in this Section shall be submitted in accordance with Bidding Requirements and Division 01 provisions.
  - 1. Proposals shall be accompanied by a copy of the manufacturer's standard specification section.
  - 2. Equivalency of performance criteria, warranty terms, submittal procedures, and contractual terms will constitute the basis of acceptance.
  - 3. The Owner's decision regarding substitutions will be considered final.

**2.02 ACCEPTABLE MANUFACTURERS**

- A. Palram Americas, Inc. (800) 999-9459.
- B. Approved Equals
  - 1. Approved Equal Requests will be considered in accordance with provisions of DIVISION 01 GENERAL REQUIREMENTS
  - 2. The Owner's decision regarding substitutions will be considered final.

**2.03 POLYCARBONATE WALL PANELS**

- A. Materials:
  - 1. Sunsky Corrugated Polycarbonate Mighty Rib 7800 Panel (PP-1):
    - a. Sheet Thickness: 0.08 inch (2mm) nominal, plus or minus 5%.
    - b. Color: Soft White 85% light transmission.
  - 2. Performance:
    - a. Light transmission: Change not to exceed 10% over ten (10) years.
    - b. Weather resistance, when tested for 3,000 hours in accordance with ASTM G 155.
    - c. Yellowing intensity: Change not to exceed a delta of 5 in ten (10) years.
    - d. Haze: Change not to exceed 5 percent in 10 years.
    - e. Less than 5% loss of tensile strength when tested to ASTM D638.
    - f. Protective UV layer: Intact after testing period.
    - g. ASTM E84 Flame Spread <25 and Smoke Developed <450 = Class A.
    - h. ASTM D635 Rate of Burning = Class CC2 rating.

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3. Flashing and flat stock material: Fabricate in profiles indicated on drawings of same material, thickness, and finish as wall panel system, unless indicated otherwise.
  - a. MTL-2.
  
- B. Characteristics:
  1. Configuration: Panels shall have overlapping seams and exposed fasteners.
  2. Panel Coverage Width and Profile: Match MTL-2 profile and width.
  3. Panel lengths: Full length without joints, up to twenty-four (24) feet long.
  
- C. Accessories:
  1. Fasteners:
    - a. Galvanized and Oxysel/Xylon coated for exterior application.
    - b. Provide exposed fasteners with heads and washers matching color of wall panels and flashings by means of factory applied coating equal to wall panel coating (MTL-2).
    - c. Provide Neoprene Bonded washers for all fasteners
    - d. Locate and space exposed fasteners in true vertical and horizontal alignment.
  2. Closure Strips:
    - a. Provide closure strips preformed to fit panel profile.
    - b. Strips shall be continuous across the panel coverage width.
    - c. Closure strips shall be provided for both inside and outside panel profile, according to Shop Drawing requirements.
  3. Panel Lap Sealants: Non-curing butyl tape, 1/16" x 1" in size, shall be field applied at every panel side lap and end lap joint, and at panel termination edges.

### 2.04 FABRICATION

- A. Shop fabricate panels and metal flashing components to the maximum extent possible, forming metal work with clear, sharp, straight, and uniform bends and rises. Hem exposed edges of flashings.
  
- B. Form flashing components from full single width sheet in minimum ten (10) feet sections. Provide shop fabricated, mitered corners, joined using closed end pop rivets and joint sealant.
  
- C. Fabricate panels and related sheet metal work in accordance with approved Shop Drawings and applicable standards.

**PART 3 • EXECUTION****3.01 EXECUTION, GENERAL**

- A. Comply with requirements of DIVISION 01 GENERAL REQUIREMENTS.

**3.02 PREPARATION**

- A. Inspection: Examine the alignment and placement of the building structure and substrate. Correct any objectionable warp, waves or buckles in the substrate before proceeding with installation of the pre-formed panels.
- B. Pre-installation conference: Prior to beginning wall panel work, a pre-installation conference shall be held to review work to be accomplished.
  - 1. Owner's Authorized representative (OAR), Contractor, Wall Panel Subcontractor, and all other Subcontractors who have equipment penetrating wall panels or whose work involves access to wall panel area shall be present.

**3.03 WALL PANEL INSTALLATION**

- A. All details will be shown on manufacturer's Shop Drawings to successful bidder; install panels and flashings in accordance with approved Shop Drawings and manufacturer's product data, within specified erection tolerances.
- B. Isolate dissimilar metals and masonry or concrete from metals with bituminous coating. Use gasketed fasteners where required to prevent corrosive action between fastener, substrate, and panels.
- C. Limit exposed fasteners to extent indicated on Shop Drawings.
- D. Seal laps and joints in accordance with wall system manufacturer's product data.
- E. Coordinate flashing and sheet metal work to provide weather-tight conditions at wall panel terminations.
- F. Installed system shall be true to line and plane and free of physical defects.
- G. Remove damaged work and replace with new, undamaged components.

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- H. Clean exposed surfaces of panels and accessories after completion of installation. Leave in clean condition at date of substantial completion. Touch up minor abrasions and scratches in finish.

### **3.04 CLEANING**

- A. Clean installed work in accordance with the manufacturer's instructions.
- B. Replace damaged work than cannot be restored by normal cleaning methods.

### **3.05 CONSTRUCTION WASTE MANAGEMENT**

- A. Remove and properly dispose of waste products generated during construction. Comply with requirements of authorities having jurisdiction

### **3.06 FINAL INSPECTION**

- A. At completion of installation and associated work, meet with Contractor, Architect, installer, installer of associated work, Owner, and other representatives directly concerned with performance of system.
- B. Inspect work and flashing of penetrations, walls, curbs and other equipment. List all items requiring correction or completion and furnish copy of list to each party in attendance.
- C. Repair or replace deteriorated or defective work found at time above inspection as required to produce an installation which is free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
- D. Notify the Contractor, Architect, Owner and Manufacturer Representative upon completion of corrections.
- E. Following the final inspection, provide written notice of acceptance of the installation from the system manufacturer.
- F. Immediately correct leakage during construction. If the Contractor does not respond within twenty-four (24) hours, the Owner will exercise rights to correct the Work under the terms of the Conditions of the Contract.

**END OF SECTION**

**PART I • GENERAL****1.01 SUMMARY**

- A. Section Includes (but is not necessarily limited to):
1. Work described in this section includes pre-formed wall panel system with exposed fasteners, complete with anchor clips, fasteners, flashing, trim, and accessories indicated on the drawings, specified herein, and necessary to complete the system.

**1.02 RELATED SECTIONS**

- A. Examine Contract Documents for requirements that affect Work of this Section. Other Specification Sections that directly relate to Work of this Section include, but are not limited to.
1. Section 07 41 13 • Metal Roof Panels.
  2. Section 07 41 33 • Polycarbonate Panels.
  3. Section 07 62 00 • Sheet Metal Flashing and Trim.
  4. Section 07 92 00 • Joint Sealants.

**1.03 REFERENCES**

- A. American Society for Testing and Materials (ASTM):
1. ASTM A653/A653M Standard Specification for galvanized G90 sheet steel.
  2. ASTM A653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip process.
  3. ASTM B209 Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
  4. ASTM E1646 Standard Test Method for Water Penetration of Exterior Metal Panel Systems by Uniform Static Air Pressure Difference.
  5. ASTM E1680 Standard Test Method for Rate of Air Leakage Through Exterior Metal Roof Panel Systems.
- B. Sheet Metal and Air Conditioning Contractors National Association (SMACNA):
1. Architectural Sheet Metal Manual, 5th edition.
- C. American Society of Civil Engineers (ASCE):
1. ASCE 7-05: Minimum Design Loads for Buildings and Other Structures.

**1.04 SUBMITTALS**

- A. Product Data:
  - 1. Include manufacturer's detailed material and system description, fastening requirements, sealant and closure installation instructions, and finish specifications.
  - 2. Indicate fastener types and spacing; and required fastener pullout values.
  
- B. Shop Drawings:
  - 1. Show wall panels (and roofing system, if applicable) with flashings and accessories in elevations, sections and details.
    - a. Building Wall Panel: MTL-2.
  - 2. Include metal thickness and finishes, panel lengths, joining details, anchorage details, flashings and special fabrication provisions for termination and penetrations.
  - 3. Indicate relationships with adjacent and interfacing work.
  - 4. Indicate fastener types and spacing; and provide fastener pullout values.
  
- C. Samples: Provide full-size samples of the following materials and system components. Samples shall be of identical material type, thickness, panel width, and material grade/alloy as the system specified for this project.
  - 1. Submit sample of panel section, at least 4" long x full panel width showing panel profile and also a sample of color selected.
    - a. MTL-2.
  - 2. Submit sample of foam closure strips to fit inside and outside specified panel profile.
  - 3. Submit sample of panel fasteners.
  
- D. Sample Warranty:
  - 1. Provide an unexecuted copy of the warranty specified for this Project, identifying the terms and conditions required of the Manufacturer, Contractor, Installer, and the Owner.
  
- E. Assurances:
  - 1. Manufacturer's verifications that the panels are factory roll formed.
  
- F. Closeout Submittals:
  - 1. Comply with Requirements of Division 01, 01 77 00 Contract Closeout.
  - 2. Special Project Warranty: Provide specified warranty for the Project, executed by the authorized agent of the Manufacturer.
  - 3. Wall Panel Maintenance Instructions. Provide a manual of manufacturer's recommendations for maintenance of installed systems.

### 1.05 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Manufacturer shall have a minimum of ten (10) years successful commercial experience supplying metal roofing systems to the region where the work is to be done.
- B. Source Limitations: Obtain all components of the wall panel system from a single manufacturer. Secondary products that are required shall be recommended and approved in writing by the Manufacturer.
  - 1. Upon request of the Architect or Owner, submit Manufacturer's written approval of secondary components in list form, signed by an authorized agent of the Manufacturer.
  - 2. Manufacturer shall have direct authority and control over all fabrication of steel components as well as the raw materials used in their fabrication.
- C. Field Measurements: Take field measurements of structure or substrates to receive panel system prior to fabrication of panels.

### 1.06 DELIVERY, STORAGE, AND HANDLING

- A. Manufacturer's responsibilities:
  - 1. All panels shall be shipped from the manufacturer with polystyrene or similar cushioned packaging material separating the individual panels to minimize flexing, stressing, scratching or otherwise damaging the material during transit to the job.
  - 2. Fully cover steel with tarpaulins or similar protective cover during transit to prevent dirt and debris from coming in contact with the finished goods.
- B. Installer's responsibilities:
  - 1. Stack pre-finished materials to prevent twisting, bending, abrasion and denting and elevate one end to facilitate moisture run-off.
  - 2. Unload wall panels using a boom or crane, supporting the panels in at least two locations during lifting, and never lift more than three panels at a time.
  - 3. Protect moisture-sensitive materials and water-based from the weather.
  - 4. Inspect materials upon delivery. Reject and remove physically damaged or marred material from project site.

### 1.07 PROJECT/SITE CONDITIONS

- A. Determine that work of other trades will not hamper or conflict with necessary fabrication and storage and protection requirements for wall panel system.
  - 1. Protection:

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- a. Protect completed work from subsequent construction operations.  
Comply with Manufacturer's recommendations.
- b. Do not encumber the site with stored materials or equipment.
- c. Do not support wall-mounted equipment directly on the wall panel system.
- d. Ascertain that work of other trades which penetrates the wall or is to be made watertight by the wall is in place an approved prior to installation.

### 1.08 DESIGN AND PERFORMANCE CRITERIA

- A. Design Loads: Design Loads shall be calculated in accordance with ASCE 7-05 by a professional engineer.
- B. Structural Capacity: The structural capacity for the panel system to resist all applicable loads, including wind loads, shall be determined in accordance with AISI SG-02-1. The calculated allowable panel capacity shall exceed the design load for all combinations of loading as required by ASCE 7-05.
- C. Water penetration: The panel system shall exhibit no uncontrolled water penetration through the panel joints at a static pressure of 6.24 psf when tested in accordance with ASTM E1646.
- D. Air Infiltration: The panel system shall exhibit a maximum of 0.06 cfm of air leakage per linear foot of panel seam at a static pressure of 6.24 psf when tested in accordance with ASTM E1680.
- E. Impact Resistance: The panel system shall be listed as a Class 4 impact rated system, as determined by UL 2218.

### 1.09 WARRANTIES

- A. Owner shall receive:
  1. Manufacturer's standard ten (10) year finish warranty covering checking, crazing, peeling, chalking, fading, or adhesion.
  2. Manufacturer's standard warranty covering ten (10) year rust perforation
  3. Manufacturer's standard ten (10) year watertight warranty including all trim flashings, and penetrations associated with metal wall panels.
  4. Installer's two (2) year warranty covering wall panel system installation.
  5. Warranties shall commence on date of Substantial Completion.

**PART 2 • PRODUCTS****2.01 GENERAL**

- A. Refer to Division 01 Product Requirements.
- B. Basis of Design: Materials herein shall be regarded as the minimum standard of quality required for work of this Section. Comply with all manufacturer and contractor/fabricator quality and performance criteria specified in Part 1.
- C. Substitutions: Products proposed as equal to the products specified in this Section shall be submitted in accordance with Bidding Requirements and Division 01 provisions.
  - 1. Proposals shall be accompanied by a copy of the manufacturer's standard specification section.
  - 2. Equivalency of performance criteria, warranty terms, submittal procedures, and contractual terms will constitute the basis of acceptance.
  - 3. The Owner's decision regarding substitutions will be considered final.

**2.02 ACCEPTABLE MANUFACTURERS**

- A. Manufacturers:
  - 1. AEP Span.
  - 2. Epilay.
  - 3. Firestone Building Products Company.
  - 4. Morin, a Kingspan Group Company.
  - 5. Taylor Metal Products.
  - 6. The Breyer Company.
  - 7. The Garland Company.
- B. Approved Equals
  - 1. Approved Equal Requests will be considered in accordance with provisions of DIVISION 01 GENERAL REQUIREMENTS
  - 2. The Owner's decision regarding substitutions will be considered final.

**2.03 METAL WALL PANELS**

- A. Materials:
  - 1. 24 ga. Galvanized G90 sheet steel conforming to ASTM A653/A653M and AISI SG03-3, type AZ-50.
    - a. MTL-2.
  - 2. Flashing and flat stock material: Fabricate in profiles indicated on drawings of same material, thickness, and finish as wall panel system, unless indicated otherwise.

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### B. Finish on surfaces:

1. Exposed surfaces for coated panels:
  - a. Factory-applied, oven-baked finish based on Kynar 500® polyvinylidene fluoride resin. AAMA 2605.
  - b. Coating systems shall provide nominal 1.0 mil dry film thickness, consisting of primer and color coat.
  - c. Approved Metal Colors:
    - i. MTL-2; Building wall color to match "Slate Grey" by Fabral. Approved equals to match.
2. Unexposed surfaces for coated panels shall be baked-on polyester coating with .20 - .30 dry film thickness (TDF).

### C. Characteristics:

1. Fabrication: Panels shall be factory roll-formed from the specified metal. Field rolled panels will not be allowed.
2. Configuration: Panels shall have overlapping seams and exposed fasteners.
3. Panel Coverage Width: 36".
4. Panel lengths: Full length without joints, up to forty (40) feet long.
5. Panel Profile: Panel shall have trapezoidal style longitudinal ribs 1 1/4" deep, spaced approximately 12" on center.

### D. Accessories:

1. Fasteners:
  - a. Galvanized and Oxyseal/Xylon coated for exterior application.
  - b. Provide exposed fasteners with heads and washers matching color of roof panels and flashings by means of factory applied coating equal to wall panel coating
  - c. Provide Neoprene Bonded washers for all fasteners
  - d. Locate and space exposed fasteners in true vertical and horizontal alignment.
2. Closure Strips:
  - a. Provide closure strips preformed to fit panel profile.
  - b. Strips shall be continuous across the panel coverage width.
  - c. Closure strips shall be provided for both inside and outside panel profile, according to Shop Drawing requirements.
3. Panel Lap Sealants: Non-curing butyl tape, 1/16" x 1" in size, shall be field applied at every panel side lap and end lap joint, and at panel termination edges.

## 2.04 ACCESSORY PRODUCTS

- A. Sealant:
  - 1. Acceptable product:
    - a. Concealed Application: Non-curing butyl sealant or equal.
    - b. Exposed Application: Tripolymer of polyurethane sealant or equal.
  - 2. Colors: As selected by architect from sealant manufacturer's standard selection.
  
- B. Underlayment/ Barrier:
  - 1. Underlayment shall be applied over entire wall substrate area.
  - 2. Underlayment shall be Tyvek Commercial Weatherbarrier to suit or equal. Seams shall be lapped in accordance with manufacturer's recommendations.

## 2.05 FABRICATION

- A. Shop fabricate metal panels and flashing components to the maximum extent possible, forming metal work with clear, sharp, straight, and uniform bends and rises. Hem exposed edges of flashings.
  
- B. Form flashing components from full single width sheet in minimum ten (10) feet sections. Provide shop fabricated, mitered corners, joined using closed end pop rivets and joint sealant.
  
- C. Fabricate panels and related sheet metal work in accordance with approved Shop Drawings and applicable standards.

## PART 3 • EXECUTION

### 3.01 EXECUTION, GENERAL

- A. Comply with requirements of DIVISION 01 GENERAL REQUIREMENTS.

### 3.02 PREPARATION

- A. Inspection: Examine the alignment and placement of the building structure and substrate. Correct any objectionable warp, waves or buckles in the substrate before proceeding with installation of the pre-formed metal panels.
  
- B. Pre-installation conference: Prior to beginning metal wall panel work, a pre-installation conference shall be held to review work to be accomplished.

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1. Owner's Authorized representative (OAR), Contractor, Metal Wall Panel Subcontractor, and all other Subcontractors who have equipment penetrating wall panels or whose work involves access to wall panel area shall be present.

### 3.03 WALL PANEL INSTALLATION

- A. All details will be shown on manufacturer's Shop Drawings to successful bidder; install panels and flashings in accordance with approved Shop Drawings and manufacturer's product data, within specified erection tolerances.
- B. Isolate dissimilar metals and masonry or concrete from metals with bituminous coating. Use gasketed fasteners where required to prevent corrosive action between fastener, substrate, and panels.
- C. Limit exposed fasteners to extent indicated on Shop Drawings.
- D. Seal laps and joints in accordance with roofing system manufacturer's product data.
- E. Coordinate flashing and sheet metal work to provide weather-tight conditions at wall panel terminations. Fabricate and install in accordance with standards of SMACNA Manual.
- F. Installed system shall be true to line and plane and free of dents, and physical defects. Oil canning and similar surface defects shall not exceed 1/8 inch in 10 feet.
- G. Form joints in linear sheet metal to allow for one-fourth (1/4) inch minimum expansion at twenty (20) feet on center maximum and eight (8) feet from corners.
- H. At joints in linear sheet metal items, set sheet metal items in two (2), one-fourth (1/4) inch beads of butyl sealant. Extend sealant over all metal surfaces. Mate components for positive seal. Allow no sealant to migrate onto exposed surfaces.
- I. Remove damaged work and replace with new, undamaged components.
- J. Clean exposed surfaces of panels and accessories after completion of installation. Leave in clean condition at date of substantial completion. Touch up minor abrasions and scratches in finish.

**3.04 CLEANING**

- A. Clean installed work in accordance with the manufacturer's instructions.
- B. Replace damaged work than cannot be restored by normal cleaning methods.

**3.05 CONSTRUCTION WASTE MANAGEMENT**

- A. Remove and properly dispose of waste products generated during construction. Comply with requirements of authorities having jurisdiction

**3.06 FINAL INSPECTION**

- A. At completion of installation and associated work, meet with Contractor, Architect, installer, installer of associated work, Owner, and other representatives directly concerned with performance of system.
- B. Inspect work and flashing of penetrations, walls, curbs and other equipment. List all items requiring correction or completion and furnish copy of list to each party in attendance.
- C. Repair or replace deteriorated or defective work found at time above inspection as required to produce an installation which is free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
- D. Notify the Contractor, Architect, Owner and Manufacturer Representative upon completion of corrections.
- E. Following the final inspection, provide written notice of acceptance of the installation from the system manufacturer.
- F. Immediately correct leakage during construction. If the Contractor does not respond within twenty-four (24) hours, the Owner will exercise rights to correct the Work under the terms of the Conditions of the Contract.

**END OF SECTION**

**PART 1 - GENERAL****1.01 RELATED DOCUMENTS**

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

**1.02 SUMMARY**

- A. Provide all labor, equipment, and materials to fabricate and install to industry standards the following:
1. Flashings and trim as shown, and all Systems requiring performance to physically protect from damage, and water leakage to building interior.
  2. Sheet metal fabrications and metal flashings required for complete Metal Roofing, and CMU Wall Systems.
  3. Continuous Wrapped Rake & Fascia.
  4. Gutters, Downspouts, and associated trim & accessories.
  5. Counter flashings over base flashings, roof mounted equipment, vent stacks and monitor.
- B. Coordinate sheet metal fabrications and metal flashings with Metal Roofing, Metal Wall Panels, CMU Wall and all Systems requiring performance to physically protect from damage, and water leakage to building interior.
- C. Flashing and sheet metal in this Section includes but is not limited to: Cap flashing, stepped flashing (if any), through-wall flashing, jambs, sills, and at base of exterior brick walls, edge flashing, hip flashing, ridge flashing, valley flashing, crickets (if needed to prevent leakage at roof penetrations), diverters at entries, gutters, scuppers, and downspouts (if any). Includes metal flashing at doors and windows unless noted otherwise in door and window details and specifications.
- D. Related Sections:
1. Division 06 Section Rough Carpentry.
  2. Division 07 Section Manufactured Metal Roof Panels.

**1.03 REFERENCES**

- A. American Society for Testing and Materials (ASTM)
  - 1. ASTM A653 Standard Specification for Steel Sheet, Zinc-Coated (galvanized) or Zinc-Iron Alloy-Coated (galvannealed) by the Hot-Dip Process.
  - 2. ASTM A792 Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy Coated by the Hot-Dip Process.
  - 3. ASTM B209 Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
  - 4. ASTM B221 Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
  - 5. ASTM D692 Standard Specification for Coarse Aggregate for Bituminous Paving Mixtures.
  
- B. American National Standards Institute and Single Ply Roofing Institute (ANSI/SPRI)
  - 1. ANSI/SPRI ES-1 Testing and Certification Listing of Shop Fabricated Edge Metal.
  
- C. Warnock Hersey International, Inc., Middleton, WI (WH)
  
- D. Factory Mutual Research Corporation (FMRC)
  
- E. Underwriters Laboratories (UL)
  
- F. Sheet Metal and Air Conditioning Contractors National Association (SMACNA)
  - 1. 1993 Edition Architectural Sheet Metal Manual
  
- G. National Roofing Contractors Association (NRCA)
  - 1. Roofing and Waterproofing Manual
  
- H. American Society of Civil Engineers (ASCE)
  - 1. ASCE 7-05 Minimum Design Loads for Buildings and Other Structures.

**1.04 SUBMITTALS FOR REVIEW**

- A. Product Data:
  - 1. Provide manufacturer's specification data sheets for each product.
  - 2. Metal material characteristics and installation recommendations.

3. Submit color chart prior to material ordering and/or fabrication so that equivalent colors to those specified can be approved.
- B. Samples:
1. Submit two (2) samples (one foot by material width), illustrating typical metal edge, coping, gutters, fascia extenders for material and finish.
  2. Submit sections of materials illustrating available surface texture and color range.
- C. Shop Drawings
1. For manufactured and ANSI/SPRI approved sheet metal fabrications.
  2. Indicate material profile, jointing pattern, jointing details, fastening methods, flashing, terminations, and installation details.
  3. Indicate type, gauge and finish of metal.
- D. Specimen Warranty:
1. Provide an unexecuted copy of the warranty specified for this Project, identifying the terms and conditions required of the Manufacturer, Contractor, Installer, and the Owner.

#### **1.05 CONTRACT CLOSEOUT**

- A. General: Comply with Requirements of Specification Division 01  
GENERAL CONDITIONS
- B. Project Warranty: Provide specified warranty for the Project, executed by the authorized agent of the Manufacturer.
- C. System Maintenance Instructions. Provide a manual of manufacturer's recommendations for maintenance of installed systems.

#### **1.06 QUALITY ASSURANCE**

- A. Engage an experienced contractor specializing in sheet metal flashing work with a minimum of five (5) years successful commercial experience.
- B. Source Limitation: Obtain components from a single manufacturer. Secondary products which cannot be supplied by the specified manufacturer shall be approved in writing by the primary manufacturer prior to bidding.

**1.07 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver materials in manufacturer's original, unopened containers or packages with labels intact and legible.
- B. Stack pre-formed and pre-finished material to prevent twisting, bending, or abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
- C. Prevent contact with materials which may cause discoloration or staining.

**1.08 PROJECT CONDITIONS**

- A. Determine that work of other trades will not hamper or conflict with necessary fabrication and storage requirements for pre-formed metal edge system.

**1.09 DESIGN AND PERFORMANCE CRITERIA**

- A. Thermal expansion and contraction:
  - 1. Completed metal edge flashing system shall be capable of withstanding expansion and contraction of components caused by changes in temperature without buckling, producing excess stress on structure, anchors or fasteners, or reducing performance ability.

**1.10 WARRANTIES**

- A. Owner shall receive:
  - 1. The Contractor shall provide the Owner with a written warranty assuring that all sheet metal work including caulking and fasteners to be watertight and secure for a period of one (1) year from the date of Substantial Completion. Warranty shall include all materials and workmanship required to repair any leaks that develop, and make good any damage to other work or equipment caused by such leaks or the repairs thereof.
  - 2. Installing roofing contractor shall be responsible for the installation of the edge metal system in general accordance with the membrane manufacturer's recommendations.
  - 3. Installing contractor shall certify that the edge metal system has been installed per the manufacturer's printed details and specifications.

**PART 2 - PRODUCTS****2.01 PRODUCTS, GENERAL**

- A. Refer to DIVISION 01 GENERAL REQUIREMENTS for general product requirements.
- B. Substitutions: Products proposed as equal to the products specified in this Section shall be submitted in accordance with Bidding Requirements and Division 01 provisions.
- C. The Owner's decision regarding substitutions will be considered final. Unauthorized substitutions will be rejected.

**2.02 ACCEPTABLE MANUFACTURERS**

- A. Manufacturers
  - a. AEP Span.
  - b. Epilay.
  - c. Firestone Building Products Company.
  - d. Morin, a Kingspan Group Company.
  - e. Taylor Metal Products.
  - f. The Breyer Company.
  - g. The Garland Company.
- B. Approved Equals
  - 1. Approved Equal Requests will be considered in accordance with provisions of DIVISION 01 GENERAL REQUIREMENTS

**2.03 MATERIALS**

- A. Trim Material: 24 ga. Galvanized G90 sheet steel conforming to ASTM A653/A653M and AISI SG03-3, type AZ-50.
- B. Finishes: Surfaces for coated panels.
  - 1. Factory-applied, oven-baked finish based on Kkynar 500 polyvinylidene fluoride resin. AAMA 2605.
    - a. Rake and Fascia Trim Color (MTL-1); Dark Bronze by Taylor Metal Products. All others as selected by Owner from manufacturer's standard colors. Approved equals to match.
    - b. Corner and Wall Trim (MTL-2); Building wall color to match "Slate Grey" by Fabral. Approved equals to match

**2.04 RELATED MATERIALS AND ACCESSORIES**

- A. Metal Primer: Zinc chromate type.
- B. Plastic Cement: ASTM D 4586
- C. Sealant: Specified in Section 07900 or on drawings.
- D. Underlayment:
  - 1. Synthetic underlayment shall be applied over entire roof area.
    - a. Underlayment shall be Protectite Platinum by Epilay or equal.
  - 2. Provide 40 mil "Grace" ice & water shield 4'-0" minimum @ all roof edges, lap under underlayment. Comply with roofing manufacturer requirements for high temperature ice & water shield materials.
- E. Slip Sheet: Rosin sized building paper.
- F. Fasteners:
  - 1. Corrosion resistant screw fastener as recommended by metal manufacturer. Finish exposed fasteners same as flashing metal.
  - 2. Fastening shall conform to Factory Mutual requirements or as stated on section details, whichever is more stringent.
- G. Gutter and Downspout Anchorage Devices: Material as specified or required for complete system.

**PART 3 - EXECUTION**

**3.01 EXECUTION, GENERAL**

- A. Refer to Specifications Division 07 for Thermal and Moisture Protection.

**3.02 PROTECTION**

- A. Isolate metal products from dissimilar metals, masonry or concrete with bituminous paint, tape, or slip sheet. Use gasketed fasteners where required to prevent corrosive reactions.

**3.03 GENERAL**

- A. Secure fascia to wood nailers at the bottom edge with a continuous cleat.

- B. Fastening of metal to walls and wood blocking shall comply with building code standards.
- C. All accessories or other items essential to the completeness of sheet metal installation, whether specifically indicated or not, shall be provided and of the same material as item to which applied.
- D. Allow sufficient clearances for expansion and contraction of linear metal components.
- E. Secure metal using fasteners as required by the system. Exposed face fastening will be rejected.

### **3.04 INSPECTION**

- A. Verify that curbs are solidly set and nailing strips located.
- B. Perform field measurements prior to fabrication.
- C. Coordinate work with work of other trades.
- D. Verify that substrate is dry, clean and free of foreign matter.
- E. Commencement of installation shall be considered acceptance of existing conditions.

### **3.05 MANUFACTURED SHEET METAL SYSTEMS**

- A. Furnish and install manufactured fascia and coping cap systems in strict accordance with manufacturer's printed instructions.
- B. Provide factory-fabricated accessories including, but not limited to, fascia extenders, miters, scuppers, joint covers, etc. Refer to Source limitation provision in Part 1.

### **3.06 SHOP-FABRICATED SHEET METAL**

- A. Metal work shall be shop fabricated to configurations and forms in accordance with recognized sheet metal practices.
- B. Hem exposed edges.
- C. Angle bottom edges of exposed vertical surfaces to form drip.

- D. Lap corners with adjoining pieces fastened and set in sealant.
- E. Form joints for gravel stop fascia system, coping cap with a 3/8" opening between sections. Back the opening with an internal drainage plate formed to the profile of fascia piece.
- F. Install sheet metal to comply with referenced ANSI/SPRI, SMACNA and NRCA standards.

### **3.07 INSTALLATION**

- A. Install sheet metal to:
  - 1. Comply with referenced ANSI/SPRI, SMACNA and NRCA standards.
  - 2. Per Manufacturer's Instructions
  - 3. To complete systems described in Working Drawings and Specifications.

### **3.08 GUTTERS & DOWNSPOUTS**

- A. Install Gutters & Downspouts to:
  - 1. Comply with referenced ANSI/SPRI, SMACNA and NRCA standards.
  - 2. Per Manufacturer's Instructions.
  - 3. To complete systems described in Working Drawings and Specifications.

### **3.09 CLEANING**

- A. Clean installed work in accordance with the manufacturer's instructions.
- B. Replace damaged work than cannot be restored by normal cleaning methods.

### **3.10 CONSTRUCTION WASTE MANAGEMENT**

- A. Remove and properly dispose of waste products generated. Comply with requirements of authorities having jurisdiction.

### **3.11 FINAL INSPECTION**

- A. At completion of installation and associated work, meet with Architect, Owner's Authorized Representative, installer, installer of associated work,

- roofing system manufacturer's representative, and other representatives directly concerned with performance of roofing system.
- B. Inspect work and flashing of roof penetrations, walls, curbs and other equipment. List all items requiring correction or completion and furnish copy of list to each party in attendance.
  - C. Repair or replace deteriorated or defective work found at time above inspection as required to produce an installation which is free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
  - D. Notify the Architect and Owner's Authorized Representative upon completion of corrections.
  - E. Following the final inspection, provide written notice of acceptance of the installation from the roofing system manufacturer.
  - F. Immediately correct roof leakage during construction. If the Contractor does not respond within twenty-four (24) hours, the Owner will exercise rights to correct the Work under the terms of Division 1.

**END OF SECTION**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. Section Includes:
  - 1. Prefabricated Gutters (SS-1).
  - 2. Outlets/Tail Piece Drainage (SS-1).
  - 3. Gutters and Downspouts Related Accessories.
  
- B. RELATED DOCUMENTS
  - 1. 07 41 13 METAL ROOF PANELS
  - 2. 07 62 00 SHEET METAL FLASHING AND TRIM.

**1.02 REFERENCES**

- A. Sheet Metal and Air Conditioning Contractors' National Association, Inc.: SMACNA Architectural Sheet Metal Manual.
  - 1. Conform to SMACNA Architectural Sheet Metal Manual; comply with recommended material weights and details except where Project requirements are more stringent.

**1.03 SUBMITTALS**

- A. Shop Drawings: Indicate locations, configurations, jointing methods, fastening methods, locations, and installation details.
  
- B. Product Data: Submit data on manufactured components, materials, and finishes.
  
- C. Samples: Submit two samples, 24 inches long illustrating component design, finish, color, and configuration.

**1.04 QUALITY ASSURANCE**

- A. Perform Work in accordance with SMACNA Manual; maintain one copy of manual on site.

**1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Stack products to prevent twisting, bending, and abrasion, and to provide ventilation; slope to drain.

## **07 71 23 MANUFACTURED GUTTERS AND DOWNSPOUTS**

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- B. Prevent contact with materials during storage capable of causing discoloration, staining, or damage.

### **1.06 WARRANTIES**

- A. Owner shall receive:
  - 1. Manufacturer's ten (10) year watertight warranty
  - 2. Manufacturer's ten (10) coverage on finish including checking, crazing, peeling, chalking, fading and/or adhesion.
  - 3. Manufacturer's written warranty covering ten (10) year rust perforation
  - 4. Installer shall provide Owner with ten (10) year warranty covering roofing system installation and water tightness.
  - 5. Warranties shall commence on date of Substantial Completion.

## **PART 2 - PRODUCTS**

### **2.01 GUTTERS AND OUTLETS/TAIL PIECES**

- A. Provide 24 gauge 316 stainless steel (SS-1) in shapes and profiles as detailed. Coordinate with metal building/roofing systems, and flashing.
  - 1. Finish on surfaces shall be clear natural color.

### **2.02 ACCESSORIES**

- A. Fasteners: Provide concealed clips, anchors, and accessories in sizes necessary and as required for installation of Work; compatible with material installed.
- B. Joint Sealer per Section 07 92 00.
- C. Conductor-Head Guards: 20-gage nonmagnetic stainless steel mesh, with selvaged edges and bee-hive type strainers.
- D. Solder: ASTM B 32, 60 - 40 acid-chloride flux for non-tinned stainless steel.

### **3.03 FABRICATION**

- A. Fabricate at the factory to greatest extent possible; smooth, square, true to line and profile, and dimensions indicated without tool marks, and excessive oil canning. Comply with details shown, SMACNA

Architectural Sheet Metal Manual, and material manufacturer's recommendations.

- B. Minimize noise and provide weatherproof and water-tight joints within system.
- C. Prevent contact between dissimilar metals, and incompatible materials which could result in deterioration of panel, and finish.
- D. Non-moving Seams: Flat-lock, tin edges to be seamed, form, and solder, Rivet joints for additional strength as necessary; show on shop drawings.
- E. Gutter: Prefinished steel sheet, "box" shaped with lap type expansion joints at intervals recommended by SMACNA.

### **PART 3 - EXECUTION**

#### **3.01 APPLICATION**

- A. Strictly follow manufacturer's instructions.
- B. Provide connections and fabrications as detailed, and/or to manufacturer standards.
- C. Install to provide ample support and proper drainage.
- D. Provide at least one expansion/contraction joint midway between each gutter outlet/tail piece leading to storm drainage system.
- E. Protect building surfaces from damage from hanger and strap connectors.
- F. Provide screens, strainers, and covers, to prevent debris from accumulating in drains.
- G. Keep gutters separated from wall surfaces to avoid staining and corrosion.
- H. Clean the work area and remove all scrap and excess materials from the site. Leave drains clean, and free of debris. Repair or replace defective work as directed by the Architect or Owner's Authorized Representative.

**END OF SECTION**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Preparing sealant substrate surfaces.
- B. Placement of joint fillers, backing, and sealants.

**1.02 SYSTEM DESCRIPTION**

- A. System performance to achieve moisture and air tight joint seals.

**1.03 QUALITY ASSURANCE**

- A. Perform Work in accordance to Sealant and Waterproofers Institute - Sealant and Caulking Guide Specification requirements for materials and installation.

**1.04 SUBMITTALS**

- A. Product Data: Provide data indicating sealant chemical characteristics, performance criteria, limitations, and color availability.

**1.05 ENVIRONMENTAL REQUIREMENTS**

- A. Do not install solvent curing sealants in enclosed building spaces.
- B. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

**1.06 WARRANTIES**

- A. Owner shall receive:
  - 1. Manufacturer's ten (10) year warranty commencing at date of building substantial completion that its products are of a consistent quality, within manufacturing tolerances, and conform to the references herein.

**PART 2 PRODUCTS**

**2.01 SEALANTS**

- A. Provide sealants and related materials as manufactured by: Dow Corning, or approved equal products by GE, Pecora, Bostik.

## **07 92 00 JOINT SEALANTS**

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- B. Provide sealant to suit conditions, refer to manufacturer's recommendations for joints, glazing, pedestrian – traffic exposure, non-sag conditions, and paintability requirements. Submit color sample for approval.
- C. Provide sealant at all joint conditions, including but not limited to:
  - 1. Material joints
  - 2. Mechanical equipment and louver joints
- D. Provide high quality, long lasting sealants and caulking throughout. Use silicone sealants as much as possible. Generally, to suit conditions as recommended by sealant mfr, provide Dow Corning 795 silicone, with primer to suit substrate.
- E. Between metal systems and masonry (if any)
- F. Provide bond breakers and polyurethane backer rods where needed to prevent three-point adhesion, and to achieve caulk manufacturer recommended caulking depth. Prime per manufacturer requirements. Provide masking tape.
- G. Deliver compounds in sealed, labeled containers.
- H. Provide “non sag” type sealant to suit conditions.

### **2.02 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. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION AND PREPARATION**

- A. Verify that surfaces are ready to receive work, and that joint measurements and surface conditions are as recommended by the sealant manufacturer.

- B. Remove loose materials and foreign matter which may impair adhesion of sealant.
- C. Verify that joint backing and release tapes are compatible with sealant.
- D. Perform preparation in accordance with ASTM C804 for solvent release and C790 for latex base sealants.

### 3.02 INSTALLATION

- A. Clean and prime seal joints in accordance with manufacturer's instructions.
- B. Install sealant in accordance with manufacturer's instructions.
- C. Measure joint dimensions and size materials to achieve required width/depth ratios.
- D. Install joint backing to achieve a neck thickness dimension no greater than 1/3 the joint width.
- E. Install bond breaker where joint backing is not used.
- F. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- G. Tool joints concave.

**END OF SECTION**

**PART 1 • GENERAL**

**1.01 SUMMARY**

- A. Extruded aluminum stationary louvers.

**1.02 RELATED SECTIONS**

- A. Examine Contract Documents for requirements that affect Work of this Section. Other Specification Sections that directly relate to Work of this Section include, but are not limited to.
  - 1. Section 06 10 00 • Rough Carpentry.
  - 2. Section 06 16 00 • Sheathing.
  - 3. Section 07 41 33 • Polycarbonate Panels.
  - 4. Section 07 42 13 • Metal Wall Panels.
  - 5. Section 07 62 00 • Sheet Metal Flashing and Trim.
  - 6. Section 07 92 00 • Joint Sealants.

**1.03 SUBMITTALS**

- A. Shop Drawings: Submit manufacturer's shop drawings, including, installation instructions, elevations, sections, and details, indicating dimensions, tolerances, materials, fabrication, doors, panels, framing, and finish.
  - 1. Product Schedule: LVR-1, Nominal size 66" long x 42" tall.
- B. Samples:
  - 1. Submit sample of louver to show frame, blades, gutters, downspouts, vertical support, sill accessories, finish and color.

**1.04 DELIVERY, STORAGE, AND HANDLING**

- A. Handling: Protect materials and finish from damage during handling and installation.

**1.05 WARRANTY**

- A. Owner shall receive:
  - a. Manufacturer's standard ten (10) year finish warranty covering checking, crazing, peeling, chalking, fading, or adhesion.
  - b. Installer's two (2) year warranty covering louver system installation.
  - c. Warranties shall commence on date of Substantial Completion.

**PART 2 • PRODUCTS**

**2.01 GENERAL**

- A. Refer to Division 01 Product Requirements.
- B. Basis of Design: Materials herein shall be regarded as the minimum standard of quality required for work of this Section. Comply with all manufacturer and contractor/fabricator quality and performance criteria specified in Part 1.
- C. Substitutions: Products proposed as equal to the products specified in this Section shall be submitted in accordance with Bidding Requirements and Division 01 provisions.
  - 1. Proposals shall be accompanied by a copy of the manufacturer's standard specification section.
  - 2. Equivalency of performance criteria, warranty terms, submittal procedures, and contractual terms will constitute the basis of acceptance.
  - 3. The Owner's decision regarding substitutions will be considered final.

**2.02 ACCEPTABLE MANUFACTURERS**

- A. Ruskin Company (816) 761-7476.
- B. Approved Equals
  - 1. Approved Equal Requests will be considered in accordance with provisions of DIVISION 01 GENERAL REQUIREMENTS.
  - 2. The Owner's decision regarding substitutions will be considered final.

**2.03 STATIONARY BLADE LOUVER**

- A. Materials:
  - 1. Model: ELF837 as manufactured by Ruskin Company.
- B. Fabrication:
  - 1. Stationary louver type with all welded construction. Hidden vertical supports to allow unlimited continuous line appearance with steeply angled integral sill.
  - 2. Frame: Four (4) inch depth; Nominal wall thickness of 0.081 inches; Extruded aluminum (Alloy 6063-T6).

3. Bladed: Non-drainable "J"-style, 37.5 degrees at 4¾ inches; Nominal wall thickness of 0.81 inches; Extruded aluminum (Alloy 6063-T6).
- C. Performance Data:
1. Accordance with AMCA 500:
  2. Free Area: Nominal 52%.
- D. Engineering:.
1. Windloading design per local code requirements.
  2. Seismic design per local code requirements.

## 2.04 FINISHES

- A. Factory-applied, oven-baked finish based on Kynar 500® polyvinylidene fluoride resin. AAMA 2605.
1. Coating systems shall provide nominal 1.2 mil dry film thickness, consisting of primer and color coat.
  2. Colors: Match building roof color, "Dark Bronze" by Taylor Metal Products. Approved equals to match.

## 2.05 ACCESSORY PRODUCTS

- A. Sealant:
1. Acceptable product:
    - a. Concealed Application: Non-curing butyl sealant or equal.
    - b. Exposed Application: Tripolymer of polyurethane sealant or equal.
  2. Colors: As selected by architect from sealant manufacturer's standard selection.

## PART 3 • EXECUTION

### 3.01 EXECUTION, GENERAL

- A. Comply with requirements of DIVISION 01 GENERAL REQUIREMENTS.

### 3.02 PREPARATION

- A. Inspection: Examine the alignment and placement of the screen structure and substrate. Correct any objectionable situations before proceeding with installation of the louvers.

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- B. Pre-installation conference: Prior to beginning the placement of louvers into mechanical screen a pre-installation conference shall be held to review work to be accomplished.
  - 1. Owner's Authorized Representative (OAR), Contractor, Louver Subcontractor, and all other Subcontractors who have work that may be impacted by the louver placement shall be present.

### **3.03 LOUVER INSTALLATION**

- A. All details will be shown on manufacturer's Shop Drawings to successful bidder; install louvers and flashings in accordance with approved Shop Drawings and manufacturer's product data, within specified erection tolerances.
- B. Isolate dissimilar metals from other metals with bituminous coating. Use gasketed fasteners where required to prevent corrosive action between fastener, substrate, and panels.
- C. Limit exposed fasteners to extent indicated on Shop Drawings.
- D. Installed system shall be true to line and plane and free of dents, and physical defects.
- E. Remove damaged work and replace with new, undamaged components.
- F. Clean exposed surfaces of louvers and accessories after completion of installation. Leave in clean condition at date of substantial completion. Touch up minor abrasions and scratches in finish.

### **3.04 CLEANING**

- A. Clean installed work in accordance with the manufacturer's instructions.
- B. Replace damaged work than cannot be restored by normal cleaning methods.

### **3.05 CONSTRUCTION WASTE MANAGEMENT**

- A. Remove and properly dispose of waste products generated during construction. Comply with requirements of authorities having jurisdiction

**3.06 FINAL INSPECTION**

- A. At completion of installation and associated work, meet with Contractor, Architect, installer, installer of associated work, Owner, and other representatives directly concerned with performance of system.
- B. Inspect work and list all items requiring correction or completion and furnish copy of list to each party in attendance.
- C. Repair or replace deteriorated or defective work found at time above inspection as required to produce an installation which is free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
- D. Notify the Contractor, Architect, Owner and Manufacturer Representative upon completion of corrections.

**END OF SECTION**

**PART 1 GENERAL**

**1.01 SYSTEM DESCRIPTION**

- A. Welded Wire Mesh Bird Screen Barrier: System performance to achieve nuisance bird barrier.
  - 1. Related Work Specified Elsewhere:
    - a. 06 10 00 Rough Carpentry.

**1.02 QUALITY ASSURANCE**

- A. Installer must obtain, review and understand all literature and installation specifications on Bird Screen Welded Wire Mesh Barriers.

**1.03 SUBMITTALS**

- A. Product Data: Provide data on grade of barrier and recommended fasteners along with 12" square piece of screening.

**1.04 STORAGE AND HANDLING**

- A. Provide storage to keep all rolls of welded wire mesh Barrier dry, clean and undamaged. Do not stack other packaging or objects on rolls.
- B. Keep in the original packaging or on shipping pallet until needed for installation.

**PART 2 PRODUCTS**

**2.01 PRODUCTS, GENERAL**

- A. Refer to Division 01 Product Requirements.
- B. Basis of Design: Materials herein shall be regarded as the minimum standard of quality required for work of this Section. Comply with all manufacturer and contractor/fabricator quality and performance criteria specified in Part 1.
- C. Substitutions: Products proposed as equal to the products specified in this Section shall be submitted in accordance with Bidding Requirements and Division 01 provisions.
  - 1. Proposals shall be accompanied by a copy of the manufacturer's standard specification section.

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2. Equivalency of performance criteria, warranty terms, submittal procedures, and contractual terms will constitute the basis of acceptance.
3. The Owner's decision regarding substitutions will be considered final.

### **2.02 ACCEPTABLE MANUFACTURERS**

- A. Suppliers:
  - a. Grainger, (800) 472-4643.
  - b. Nixalite, (800) 624-1189.
- B. Approved Equals
  1. Approved Equal Requests will be considered in accordance with provisions of DIVISION 01 GENERAL REQUIREMENTS.
  2. The Owner's decision regarding substitutions will be considered final.

### **2.03 BIRD SCREEN WELDED WIRE MESH BARRIERS**

- A. General.
  1. The products, quality, and performance criteria specified shall be regarded as the minimum standard of quality required for the project.
- B. Wire Roll Material (PP-1).
  1. .047 (18 gauge) diameter 304 stainless steel welded wire, 1/2" square mesh size, 4 foot wide x 100 foot long rolls.
  2. Black PVC coated .041 (19 gauge) diameter hot dipped galvanized steel wire, 1/2" square mesh, 4 foot wide x 100 foot long rolls.

### **2.04 WIRE MESH MOUNTING HARDWARE**

- A. Installer to contact manufacturer for up-to-date information and recommendations for hardware applications, item combinations, new items and new procedures. Use the hardware system recommended by the manufacturer.
- B. All stainless steel mounting hardware including; mounting clips, sheet metal screws, masonry anchors, drive screws and ductile stainless wire ties.

### **2.05 SURFACE CLEANING SYSTEM**

- A. Steri-Fab: surface disinfectant and bactericide designed to neutralize bird waste, making it safe for removal. Steri-Fab quickly kills disease causing bacteria, parasites, fungi, insects, etc. This is a non-residual product that

becomes completely inert after it dries. Do not use with Microcide-SQ on the same surface at the same time.

- B. Microcide-SQ: A broad spectrum disinfectant, cleaner and deodorizer used to sanitize hard surfaces as well as fabrics and clothing. Use to kill a wide spectrum of organisms and disease causing bacteria. Do not use with Steri-Fab on the same surface at the same time.
- C. Microsan: Anti-microbial personal protection products to help prevent disease transmittal before, during and after working on and around surfaces contaminated with bird and animal wastes. Use to compliment personal protection equipment standards (PPE).

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION AND PREPARATION**

- A. Visually inspect surfaces to receive bird screen barrier, mounting hardware, and all areas that will end up behind or inside the barrier installation. Note damaged surfaces or incomplete construction that could compromise the integrity of the barrier installation.
- B. Note all areas, surfaces or objects that may require maintenance or periodic replacement after bird screen is installed (i.e. lights, electrical equipment, etc.). Use the appropriate fastening system to allow access behind the installation.
- C. Note any objects or conditions that could damage the bird screen barrier. Install the mesh in a manner as to avoid these conditions.
- D. Verify dimensions of the areas to be enclosed. Make sure you have sufficient quantity of bird screening barrier, installation hardware and surface cleaning products to properly complete installation.

#### **3.02 SURFACE CLEANING**

- A. All surfaces to be clean, dry and free of obstruction before installation of bird screen.
- B. If bird waste is present; treat, neutralize and safely remove all bird waste from installation surfaces. Installer must follow all municipal, state and federal regulations regarding the proper removal and disposal of bird droppings and waste materials such as nests and dead birds.

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- C. Use Nixalite's surface cleaning products to neutralize any bird droppings, nests and related waste materials that may be present. Allow all surfaces to air dry completely, and then reapply to sanitize the surface before proceeding. Strictly follow treatment instruction provided with Nixalite's surface cleaning products.
- D. Use Nixalite ant-microbial and ant-bacterial personal protection products to help prevent disease transmittal when work around contaminated surfaces.

### 3.03 INSTALLATION

- A. Install bird screen as recommended by manufacturer.
- B. If necessary, cut the bird screen to fit the area.
- C. When following a radius or curved surface, bend mesh to follow contour. Forming to a curved or round surface will require additional installation hardware. **DO NOT BEND MESH AROUND CORNERS.** Cut the mesh flush to the edge of the corner (inside or outside corner), fasten as recommended, and then begin a new run of mesh on the opposite side of the corner.
- D. Premium Hardware: Snap stainless steel mounting clips onto top and bottom edges of wire mesh at 12" on center. Use fastener best suited for the installation surface to secure mesh to the surface.
- E. When joining separate pieces of mesh together end to end, overlap by at least 2" and secure with the appropriate wire tie or fastener.
- F. Finished welded wire mesh barrier installation to be clean, straight and gap-free.

### 3.04 ADJUSTMENTS/CLEANING

- A. Remove debris and waste from project site. Inspect finished installation and make adjustments needed to conform to specifications.
- B. Wire mesh barrier is a physical and passive barrier relying on optimal placement and proper installation. Each installation of mesh barrier must block off or seal up all routes and paths that pest birds follow to their

preferred roosts. Periodic inspections are recommended to make sure wire mesh stays in good condition.

- C. Note any holes, gaps or openings in the bird net installation that birds can use to bypass or get around barrier and promptly correct.

**END OF SECTION**