

City of Portland, Maine - Building or Use Permit Application

389 Congress Street, 04101 Tel: (207) 874-8703, Fax: (207) 874-8716

Permit No: 10-1141	Issue Date:	CBL: 041 A017001
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Location of Construction: 254 COMMERCIAL ST	Owner Name: WATERFRONT MAINE	Owner Address: 14 MAINE ST	Phone:
Business Name:	Contractor Name: Metric Construction Inc	Contractor Address: 55 Henshaw Street Boston	Phone: 6177871158
Lessee/Buyer's Name	Phone:	Permit Type: Alterations - Commercial	Zone: WCZ

Past Use: Commercial - Storage SI Moderate Hazard	Proposed Use: Commercial - undetermined - Phase 2- Masonry restoration work at the west side of the building and new structural framing, decking, insulation, and membrane roofing installation at the north end of the	Permit Fee: \$3,595.00	Cost of Work: \$350,000.00	CEO District: 1	
Proposed Project Description: Phase 2- Masonry restoration work at the west side of the building and new structural framing, decking, insulation, and membrane roofing installation at the north end of the building as described in the attached drawings & Spec		FIRE DEPT: <input checked="" type="checkbox"/> Approved <input type="checkbox"/> Denied * See Conditions	INSPECTION: Use Group: Vacant Type: 3B IBC 2003		
		Signature:	Signature:		
		PEDESTRIAN ACTIVITIES DISTRICT (P.A.D.)			
		Action: <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/Conditions <input type="checkbox"/> Denied			
		Signature: _____ Date: _____			

Permit Taken By: Idobson	Date Applied For: 09/10/2010	Zoning Approval	
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<p>1. This permit application does not preclude the Applicant(s) from meeting applicable State and Federal Rules.</p> <p>2. Building permits do not include plumbing, septic or electrical work.</p> <p>3. Building permits are void if work is not started within six (6) months of the date of issuance. False information may invalidate a building permit and stop all work..</p>	<p>Special Zone or Reviews</p> <p><input type="checkbox"/> Shoreland</p> <p><input type="checkbox"/> Wetland</p> <p><input type="checkbox"/> Flood Zone</p> <p><input type="checkbox"/> Subdivision</p> <p><input type="checkbox"/> Site Plan</p> <p>Maj <input type="checkbox"/> Minor <input type="checkbox"/> MM <input type="checkbox"/></p> <p>Date: <u>3/14/10</u></p>	<p>Zoning Appeal</p> <p><input type="checkbox"/> Variance</p> <p><input type="checkbox"/> Miscellaneous</p> <p><input type="checkbox"/> Conditional Use</p> <p><input type="checkbox"/> Interpretation</p> <p><input type="checkbox"/> Approved</p> <p><input type="checkbox"/> Denied</p> <p>Date: _____</p>	<p>Historic Preservation</p> <p><input checked="" type="checkbox"/> Not in District or Landmark</p> <p><input type="checkbox"/> Does Not Require Review</p> <p><input type="checkbox"/> Requires Review</p> <p><input type="checkbox"/> Approved</p> <p><input type="checkbox"/> Approved w/Conditions</p> <p><input type="checkbox"/> Denied</p> <p>Date: </p>
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PERMIT ISSUED

OCT 20 2010

City of Portland

CERTIFICATION

I hereby certify that I am the owner of record of the named property, or that the proposed work is authorized by the owner of record and that I have been authorized by the owner to make this application as his authorized agent and I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in the application is issued, I certify that the code official's authorized representative shall have the authority to enter all areas covered by such permit at any reasonable hour to enforce the provision of the code(s) applicable to such permit.

SIGNATURE OF APPLICANT _____ ADDRESS _____ DATE _____ PHONE _____

BUILDING PERMIT INSPECTION PROCEDURES

Please call 874-8703 or 874-8693 (ONLY)

or email: buildinginspections@portlandmaine.gov

With the issuance of this permit, the owner, builder or their designee is required to provide adequate notice to the City of Portland Inspection Services for the following inspections. Appointments must be requested 48 to 72 hours in advance of the required inspection. The inspection date will need to be confirmed by this office.

- **Please read the conditions of approval that is attached to this permit!! Contact this office if you have any questions.**
- **Permits expire in 6 months, if the project is not started or ceases for 6 months.**
- **If the inspection requirements are not followed as stated below additional fees may be incurred due to the issuance of a "Stop Work Order" and subsequent release to continue with construction.**

 X **An inspection of the installation of the exterior masonry ties and the structural roof work shall be conducted by a licensed structural engineer. A report shall be submitted stating the work complies with the approved permit.**

 X **Framing/Rough Plumbing/Electrical: Prior to Any Insulating or drywalling**

 X **Final inspection required at completion of work.**

The project cannot move to the next phase prior to the required inspection and approval to continue, REGARDLESS OF THE NOTICE OR CIRCUMSTANCES.

IF THE PERMIT REQUIRES A CERTIFICATE OF OCCUPANCY, IT MUST BE PAID FOR AND ISSUED TO THE OWNER OR DESIGNEE BEFORE THE SPACE MAY BE OCCUPIED.

PERMIT ISSUED

OCT 20 2010

City of Portland

City of Portland, Maine - Building or Use Permit

389 Congress Street, 04101 Tel: (207) 874-8703, Fax: (207) 874-8716

Permit No: 10-1141	Date Applied For: 09/10/2010	CBL: 041 A017001
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Location of Construction: 254 COMMERCIAL ST	Owner Name: WATERFRONT MAINE	Owner Address: 14 MAINE ST	Phone:
Business Name:	Contractor Name: Metric Construction Inc	Contractor Address: 55 Henshaw Street Boston	Phone: (617) 787-1158
Lessee/Buyer's Name	Phone:	Permit Type: Alterations - Commercial	

Proposed Use: Commercial - undetermined - Phase 2- Masonry restoration work at the west side of the building and new structural framing, decking, insulation, and membrane roofing installation at the north end of the building as described in the attached drawings & Spec	Proposed Project Description: Phase 2- Masonry restoration work at the west side of the building and new structural framing, decking, insulation, and membrane roofing installation at the north end of the building as described in the attached drawings & Spec
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Dept: Zoning **Status:** Approved with Conditions **Reviewer:** Marge Schmuckal **Approval Date:** 09/14/2010

Note: **Ok to Issue:** ✓

- 1) No use of the structure has been declared by permit yet. Separate permits are required for the established use and for any interior tenant fit-up.
- 2) This work is only being approved for the shell of the existing building. It is not allowing any expansions of the existing shell of the building.

Dept: Building **Status:** Approved **Reviewer:** Tammy Munson **Approval Date:** 10/20/2010

Note: **Ok to Issue:** ✓

Dept: Fire **Status:** Approved with Conditions **Reviewer:** Capt Keith Gautreau **Approval Date:** 09/28/2010

Note: **Ok to Issue:** ✓

- 1) All re-inforeement to be done according to engineer's recommendations.
- 2) Work to be done according to engineers report.

PERMIT ISSUED

OCT 20 2010

City of Portland



CITY OF PORTLAND, MAINE
 Department of Building Inspections

Original Receipt

_____ 9.10 20 10 _____

Received from Waterfront Marine

Location of Work 254 Commercial

Cost of Construction \$ _____ Building Fee _____

Permit Fee \$ _____ Site Fee _____

Certificate of Occupancy Fee _____

Total 435.00

_____ (PL) _____ Plumbing (PS) _____ Electrical (E) _____ Sign Plan (SP)

Order # 41-A-13

Check # 3362 Total Collected \$ 3500

No work is to be started until permit is issued. Please keep original receipt for your records.

Taken by: J. A.

WHITE - Applicant's Copy
 YELLOW - Office Copy
 PINK - Permit Copy



General Building Permit Application

If you or the property owner owes real estate or personal property taxes or user charges on any property within the City, payment arrangements must be made before permits of any kind are accepted.

Location/Address of Construction: MERRILL'S WHARF, 254 COMMERCIAL STREET PHASE 2		
Total Square Footage of Proposed Structure/Area 93,665 S.F.		Square Footage of Lot 69,313 S.F.
Tax Assessor's Chart, Block & Lot Chart# 41 Block# A Lot# 18	Applicant *must be owner, Lessee or Buyer* Name WATERFRONT MAINE, LP Address 14 MAINE ST. City, State & Zip BRUNSWICK, ME04011	Telephone: CHRIS PACHIOS/ DONAL CARROLL 212-695-8090
Lessee/DBA (If Applicable)	Owner (if different from Applicant) Name SAME AS APPLICANT Address City, State & Zip	Cost Of PHASE 2 Work: \$ \$350,000 C of O Fee: \$ 0 Total Fee: \$ 3,520
Current legal use (i.e. single family) STORAGE USE - S1-MODERATE HAZARD		
If vacant, what was the previous use?		
Proposed Specific use: BUSINESS USE-OFFICE FLRS 2-5 / FLR. 1 NOT YET DETERMINED		
Is property part of a subdivision? NO If yes, please name		
Project description: PHASE 2 SCOPE OF WORK INCLUDES MASONRY RESTORATION WORK AT THE WEST SIDE OF THE BUILDING AND NEW STRUCTURAL FRAMING, DECKING, INSULATION, AND MEMBRANE ROOFING INSTALLATION AT THE NORTH END OF THE BUILDING AS DESCRIBED IN THE ATTACHED DRAWINGS & SPECIFICATIONS.		
Contractor's name: METRIC CONSTRUCTION, INC.		
Address: 55 HENSHAW STREET		
City, State & Zip BOSTON, MA 01235		Telephone: 617-787-1158
Who should we contact when the permit is ready: DONAL CARROLL		Telephone: 212-695-8090
Mailing address: WATERFRONT MAINE, LP, 14 MAINE ST., BRUNSWICK, ME 04011		

Please submit all of the information outlined on the applicable Checklist. Failure to do so will result in the automatic denial of your permit.

In order to be sure the City fully understands the full scope of the project, the Planning and Development Department may request additional information prior to the issuance of a permit. For further information or to download copies of this form and other applications visit the Inspections Division on-line at www.portlandmaine.gov, or stop by the Inspections Division office, room 315 City Hall or call 874-8703.

I hereby certify that I am the Owner of record of the named property, or that the owner of record authorizes the proposed work and that I have been authorized by the owner to make this application as his/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in this application is issued, I certify that the Code Official's authorized representative shall have the authority to enter all areas covered by this permit at any reasonable hour to enforce the provisions of the codes applicable to this permit.

Signature: *D. Carroll* Date: **SEPTEMBER 3, 2010**

This is not a permit; you may not commence ANY work until the permit is issued.

RECEIVED
SEP 10 2010
Dept. of Building Inspections
City of Portland Maine



Certificate of Design Application

From Designer:

STEPHEN WEATHERHEAD, WINTON SCOTT ARCHITECTS, PA

Date:

AUGUST 11, 2010

Job Name:

RENOVATIONS TO THE CUMBERLAND COLD STORAGE BUILDING

Address of Construction:

MERRILL'S WHARF, 254 COMMERCIAL STREET

2003 International Building Code

Construction project was designed to the building code criteria listed below:

Building Code & Year IBC, 2006 Use Group Classification (s) BUSINESS USE FLRS 2-5/FLR 1 NOT YET DETERMINED
Type of Construction NFPA 101, 2006 TYPE III - B

Will the Structure have a Fire suppression system in Accordance with Section 903.3.1 of the 2003 IRC YES

Is the Structure mixed use? YES If yes, separated or non separated or non separated (section 302.3) SEPARATED

Supervisory alarm System? YES Geotechnical/Soils report required? (See Section 1802.2) YES

Structural Design Calculations

COMPLETED Submitted for all structural members (106.1 - 106.11)

Design Loads on Construction Documents (1603)

Uniformly distributed floor live loads (7603.11, 1807)

Floor Area Use	Loads Shown
<u>N/A THIS PHASE</u>	

Wind loads (1603.1.4, 1609)

METHOD 2 Design option utilized (1609.1.1, 1609.6)
100 MPH Basic wind speed (1809.3)
1.0 Building category and wind importance Factor, I_w (Table 1604.5, 1609.5)
C Wind exposure category (1609.4)
+/- 0.18 Internal pressure coefficient (ASCE 7)
50 PSF Component and cladding pressures (1609.1.1, 1609.6.2.2)
28 PSF Main force wind pressures (7603.1.1, 1609.6.2.1)

Earth design data (1603.1.5, 1614-1623)

N/A - EXISTING Design option utilized (1614.1)
STRUCTURE. Seismic use group ("Category")
UPGRADES N/A Spectral response coefficients, S_D & S_1 (1615.1)
THIS PHASE Site class (1615.1.5)

N/A Live load reduction
20 PSF Roof live loads (1603.1.2, 1607.11)
42 PSF + DRIFT Roof snow loads (1603.7.3, 1608)
60 Ground snow load, P_g (1608.2)
42 PSF + DRIFT If $P_g > 10$ psf, flat-roof snow load P_f
0.9 If $P_g > 10$ psf, snow exposure factor, C_e
1.0 If $P_g > 10$ psf, snow load importance factor, I_s
1.1 Roof thermal factor, C_t (1608.4)
42 PSF Sloped roof snowload, P_s (1608.4)
N/A Seismic design category (1616.3)
EXISTING Basic seismic force resisting system (1617.6.2)
STRUCTURE. Response modification coefficient, R , and
UPGRADES deflection amplification factor, C_d (1617.6.2)
N/A THIS Analysis procedure (1616.6, 1617.5)
PHASE Design base shear (1617.4, 1617.5.1)

Flood loads (1803.1.6, 1612)

N/A Flood Hazard area (1612.3)
N/A Elevation of structure

Other loads

N/A Concentrated loads (1607.4)
N/A Partition loads (1607.5)
N/A Misc. loads (Table 1607.8, 1607.6.1, 1607.7, 1607.12, 1607.13, 1610, 1611, 2404)



Commercial Interior & Change of Use Permit Application Checklist

All of the following information is required and must be submitted. Checking off each item as you prepare your application package will ensure your package is complete and will help to expedite the permitting process.

One (1) complete set of construction drawings must include:

Note: Construction documents for costs in excess of \$50,000.00 must be prepared by a Design Professional and bear their seal.

- Cross sections w/framing details
- Detail of any new walls or permanent partitions
- Floor plans and elevations
- Window and door schedules
- Complete electrical and plumbing layout.
- Mechanical drawings for any specialized equipment such as furnaces, chimneys, gas equipment, HVAC equipment or other types of work that may require special review
- Insulation R-factors of walls, ceilings, floors & U-factors of windows as per the IECC 2003
- Proof of ownership is required if it is inconsistent with the assessors records.
- Reduced plans or electronic files in PDF format are required if originals are larger than 11" x 17".
- Per State Fire Marshall, all new bathrooms must be ADA compliant.

Separate permits are required for internal and external plumbing, HVAC & electrical installations.

For additions less than 500 sq. ft. or that does not affect parking or traffic, a site plan exemption should be filed including:

- The shape and dimension of the lot, footprint of the existing and proposed structure and the distance from the actual property lines.
- Location and dimensions of parking areas and driveways, street spaces and building frontage.
- Dimensional floor plan of existing space and dimensional floor plan of proposed space.

A Minor Site Plan Review is required for any change of use between 5,000 and 10,000 sq. ft. (cumulatively within a 3-year period)

Fire Department requirements.

NOT APPLICABLE TO PHASE 2 WORK

The following shall be submitted on a separate sheet:

- Name, address and phone number of applicant and the project architect.
- Proposed use of structure (NFPA and IBC classification)
- Square footage of proposed structure (total and per story)
- Existing and proposed fire protection of structure.
- Separate plans shall be submitted for
 - a) Suppression system
 - b) Detection System (separate permit is required)
- A separate Life Safety Plan must include:
 - a) Fire resistance ratings of all means of egress
 - b) Travel distance from most remote point to exit discharge
 - c) Location of any required fire extinguishers
 - d) Location of emergency lighting
 - e) Location of exit signs
 - f) NFPA 101 code summary
- Elevators shall be sized to fit an 80" x 24" stretcher.

For questions on Fire Department requirements call the Fire Prevention Officer at (207) 874-8405.

Please submit all of the information outlined in this application checklist. If the application is incomplete, the application may be refused.

In order to be sure the City fully understands the full scope of the project, the Planning and Development Department may request additional information prior to the issuance of a permit. For further information or to download copies of this form and other applications visit the Inspections Division on-line at www.portlandmaine.gov, or stop by the Inspections Division office, room 315 City Hall or call 874-8703.

Permit Fee: \$30.00 for the first \$1000.00 construction cost, \$10.00 per additional \$1000.00 cost

This is not a Permit; you may not commence any work until the Permit is issued.



Accessibility Building Code Certificate


Designer: STEPHEN WEATHERHEAD, WINTON SCOTT ARCHITECTS, PA

Address of Project: MERRILL'S WHARF, 254 COMMERCIAL STREET

Nature of Project: RENOVATION OF 5 STORY BRICK WAREHOUSE BUILDING FOR CONVERSION INTO COMMERCIAL OFFICE SPACE. PROJECT INCLUDES ALL NEW SYSTEMS INCLUDING HVAC, ELEC, SPRINKLER, ALARM, ELEVATORS, EXIT STAIRS, BATHROOMS. ALSO MASONRY RESTORATION, WINDOWS AND ROOFING

The technical submissions covering the proposed construction work as described above have been designed in compliance with applicable referenced standards found in the Maine Human Rights Law and Federal Americans with Disability Act. Residential Buildings with 4 units or more must conform to the Federal Fair Housing Accessibility Standards. Please provide proof of compliance if applicable.

NOT APPLICABLE TO PHASE 2 WORK

Signature: 

Title: SENIOR ASSOCIATE

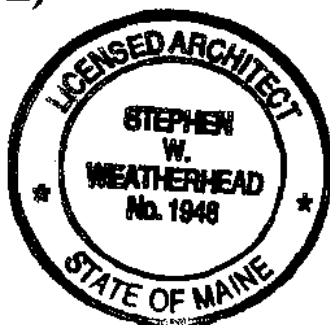
Firm: WINTON SCOTT ARCHITECTS, PA

Address: 5 MILK STREET

PORTLAND, ME 04101

Phone: 207-774-4811 EXT. 3

(SEAL)



For more information or to download this form and other permit applications visit the Inspections Division on our website at www.portlandmaine.gov



Certificate of Design

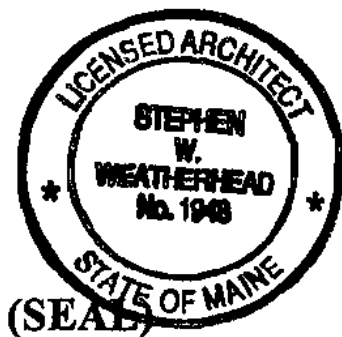
Date: AUGUST 11, 2010

From: STEPHEN WEATHERHEAD, WINTON SCOTT ARCHITECTS, PA

These plans and / or specifications covering construction work on:

RENOVATIONS TO THE CUMBERLAND COLD STORAGE BUILDING AT MERRILL'S WEARF,
254 COMMERCIAL STREET, PORTLAND, ME

Have been designed and drawn up by the undersigned, a Maine registered Architect / Engineer according to the *2003 International Building Code* and local amendments.



Signature: *Stephen W. Weatherhead*

Title: SENIOR ASSOCIATE

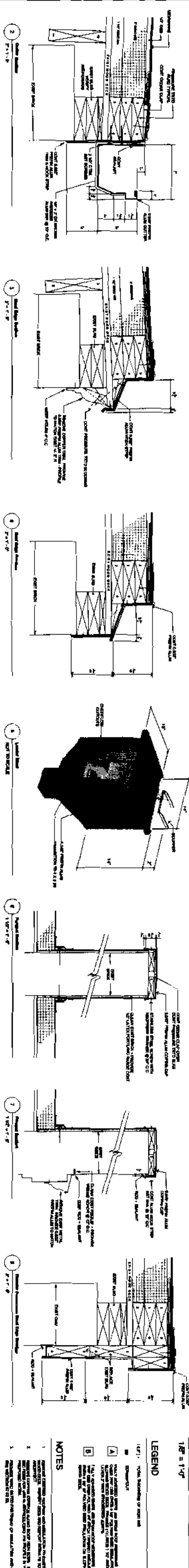
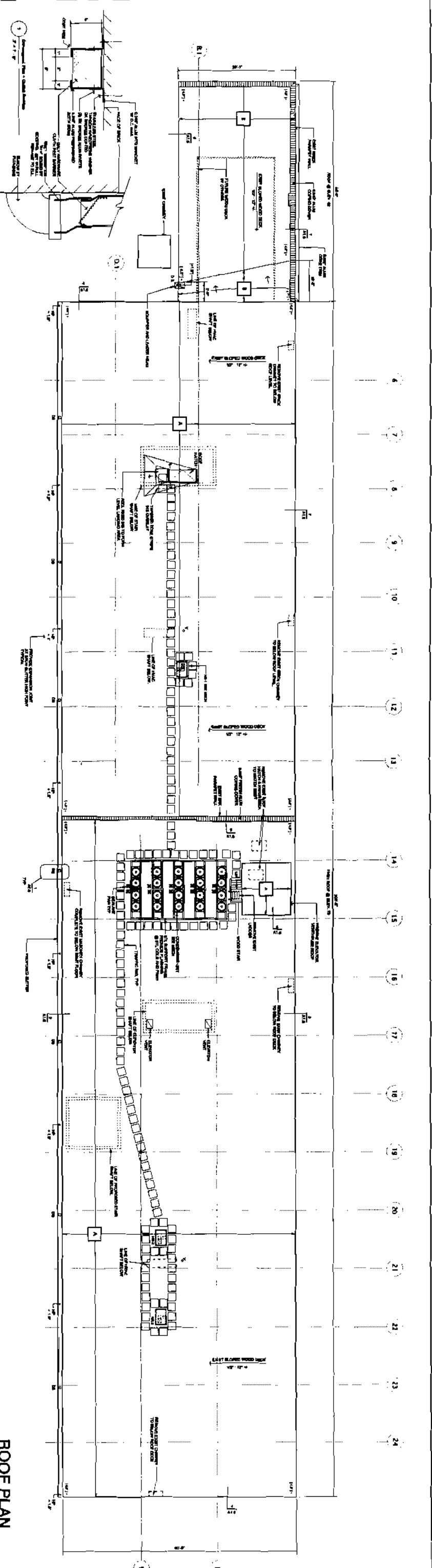
Firm: WINTON SCOTT ARCHITECTS

Address: 5 MILK STREET

PORTLAND, ME 04101

Phone: 207-774-4811 EXT. 3

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ROOF PLAN

1/8" = 1'-0"

LEGEND

- (L1) - Total thickness of roof and deck
- (A) - Total thickness of roof and deck
- (B) - Total thickness of roof and deck

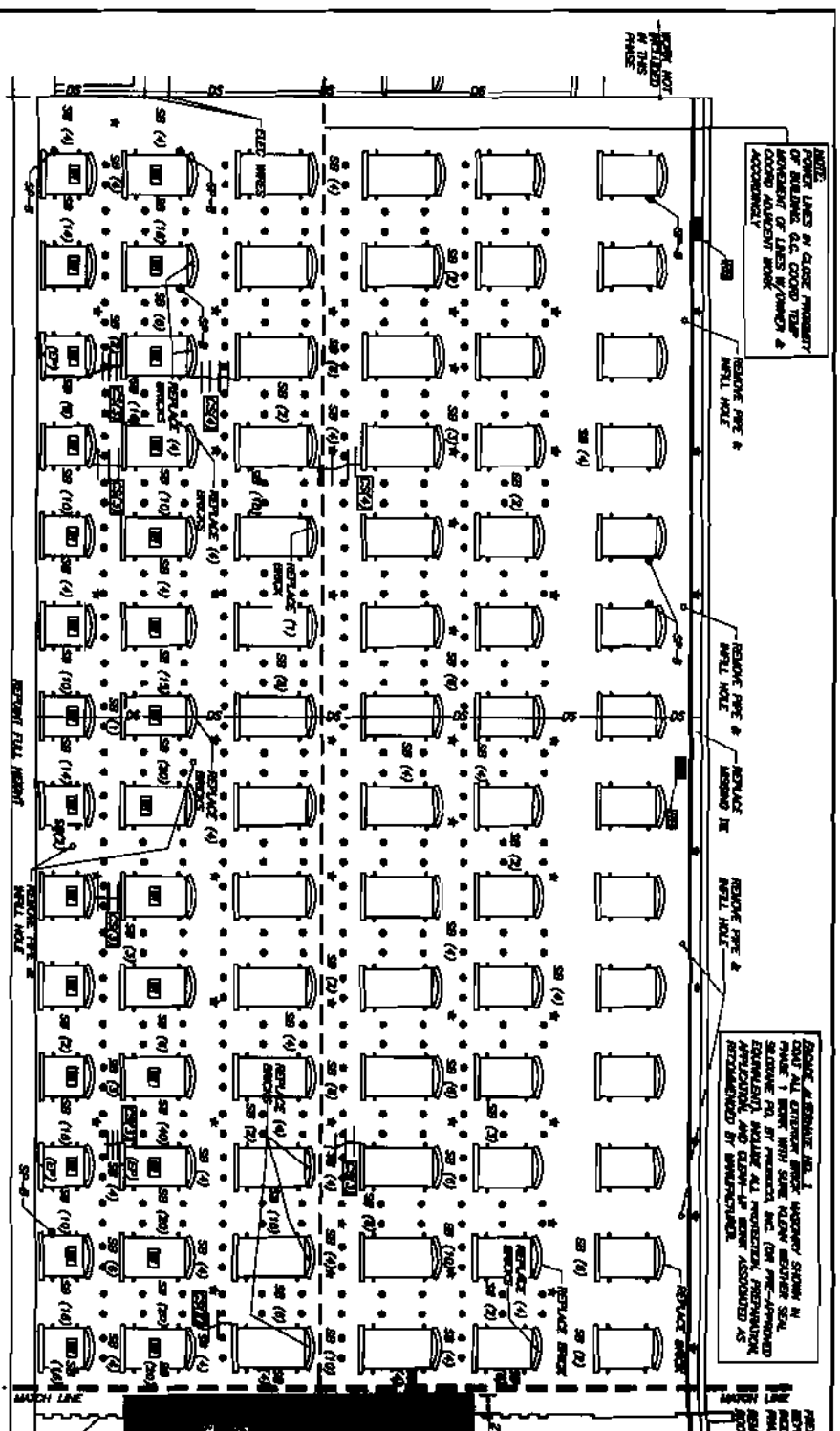
NOTES

1. ALL ROOF DECKING SHALL BE 1/2" THICK CONCRETE ON 2" X 4" JOISTS.
2. ALL ROOF DECKING SHALL BE FINISHED WITH 1" OF 1500 PSI CONCRETE.
3. ALL ROOF DECKING SHALL BE FINISHED WITH 1" OF 1500 PSI CONCRETE.

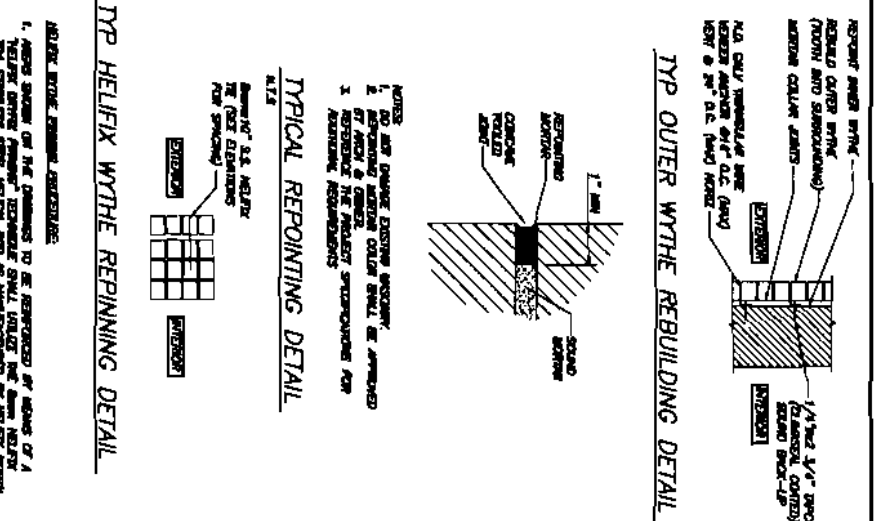
	<p>Bartlett Design 500 Washington Street Portland, ME 04101 T. 207.443.8487 F. 207.443.8800 www.bartlettdesign.com</p>	<p>Mechanical Systems Engineers Royal Bank Center, Unit 410 10 Forest Field Drive, Westbrook, ME 04090 T. 207.748.1441 F. 207.282.1443</p>	<p>Carroll Associates Landscape Architects 217 Commercial Street, Suite 200 Portland, ME 04101 T. 207.772.1828 F. 207.0712</p>
	<p>Becker Structural Engineers, Inc. 75 York Street, Portland, ME 04101 T. 207.476.1000 F. 207.879.1822 www.beckerstructural.com</p>		
	<p>Winton Scott Architects, PA 1588 State Street, Portland, ME 04107 207.774.6871 www.winton-scott.com</p>		
	<p>Renovating To: CUMBERLAND COLD STORAGE BUILDING Merrill's Wharf, Portland, Maine</p>		
	RECEIVED		
	<p>ROOF PLAN A1.6 9.3.2010</p>		

SEP 10 2010

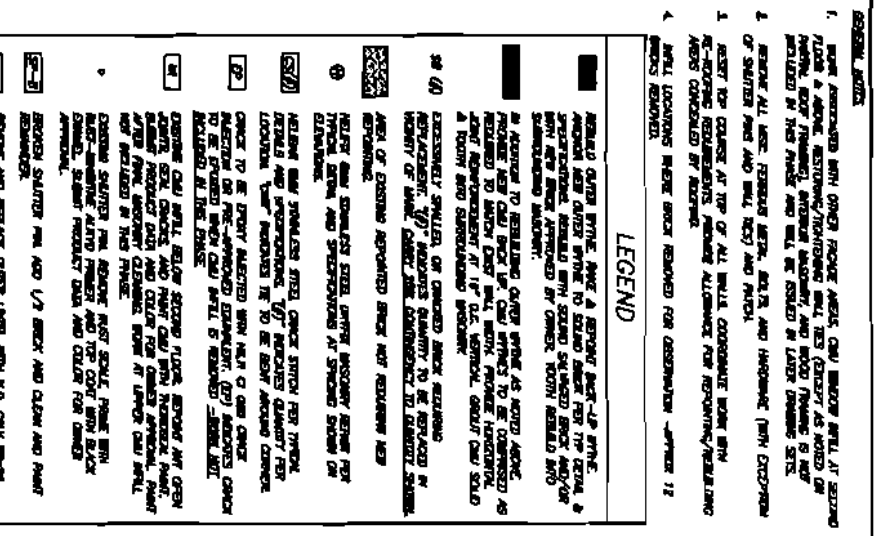
Dept. of Building Inspections
City of Portland, Maine



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

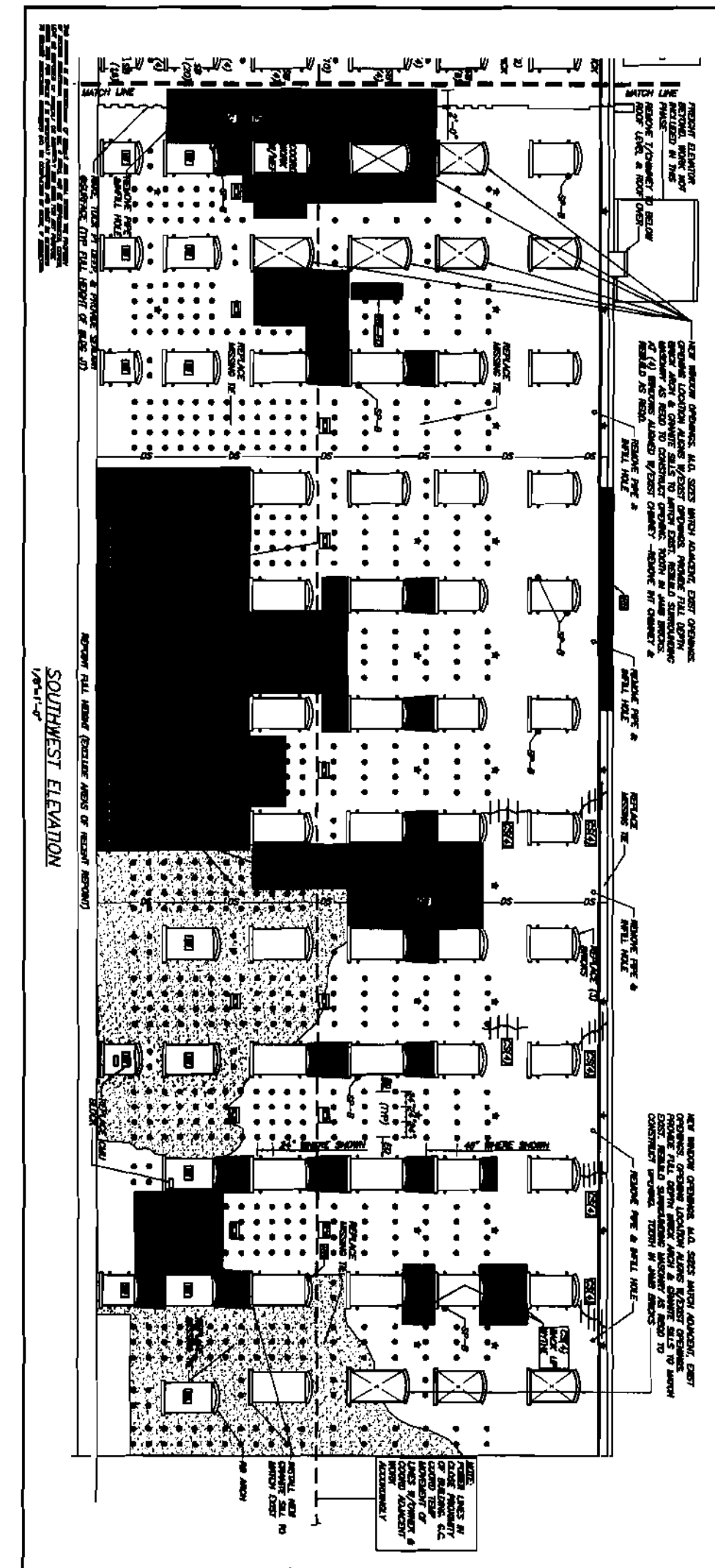


TYP HELIX WYTHE REPINNING DETAIL

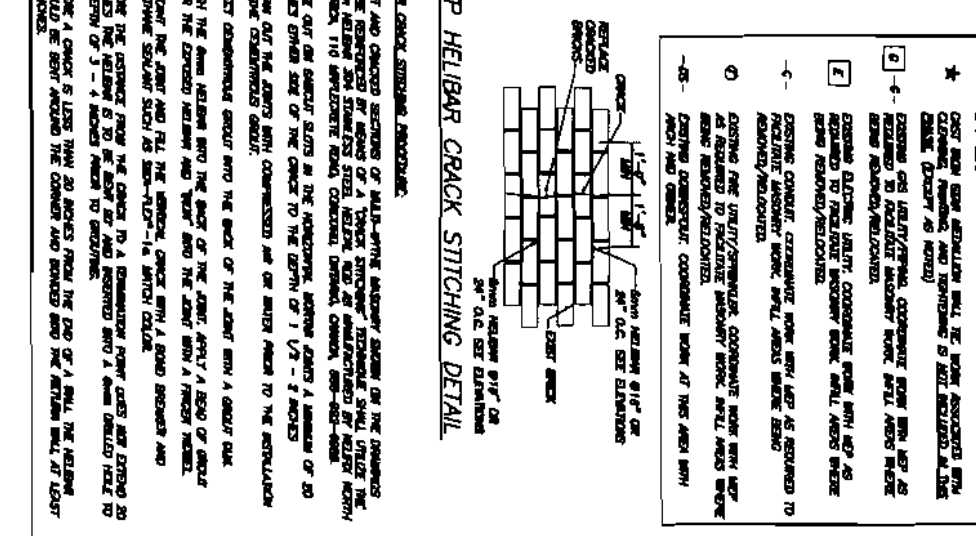


TYP HELIX CRACK STITCHING DETAIL

BECKER
Structural Engineers, Inc.
1000 Main Street
Portland, ME 04101
Tel: 603-866-1100
Fax: 603-866-1101
www.becker-engineers.com



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



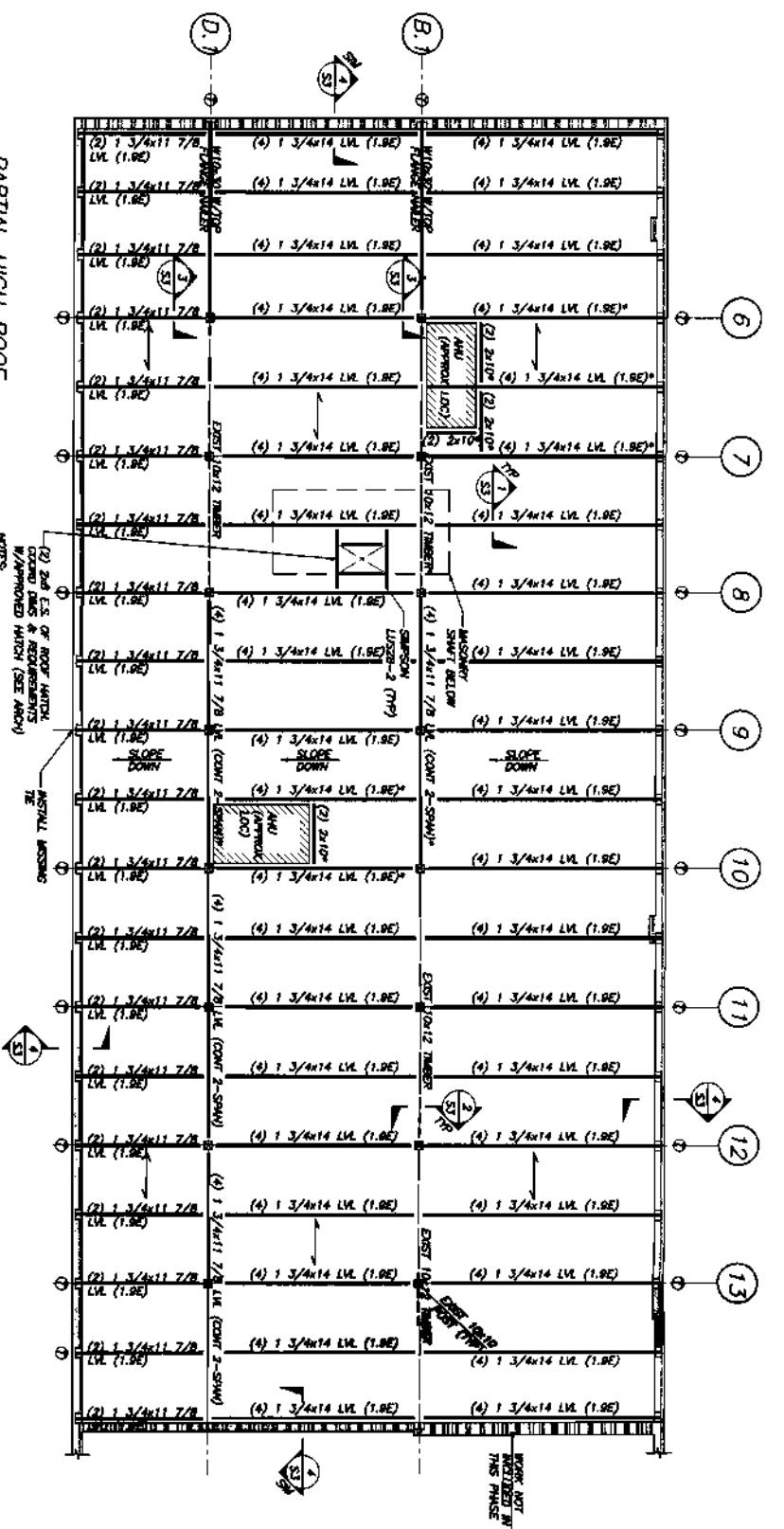
TYP HELIX CRACK STITCHING DETAIL

PH2-S1

RENOVATIONS TO CUMBERLAND COLD STORAGE BUILDING - PORTLAND, ME

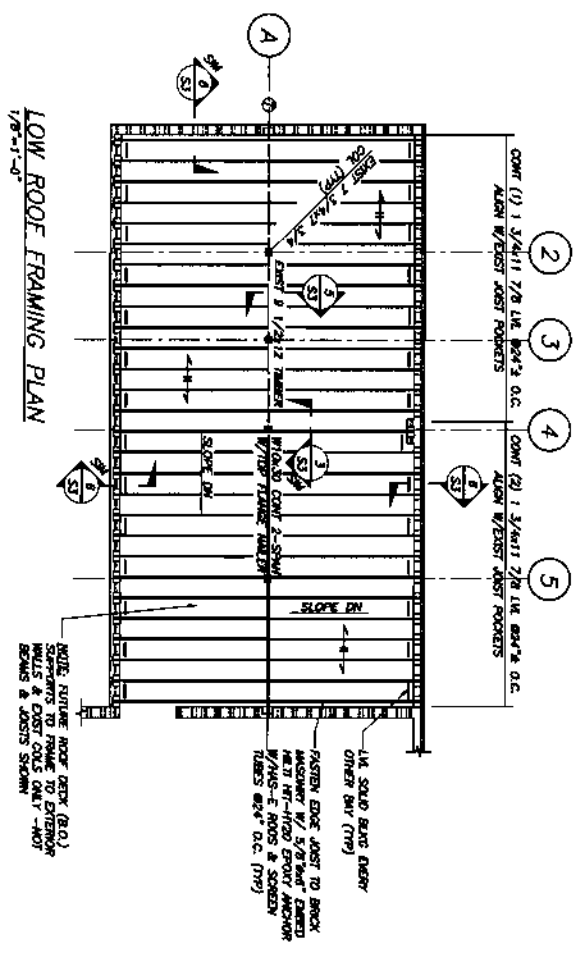
PHASE 2 FACADE RESTORATION

DATE: 08/27/10
DRAWN BY: [Signature]
CHECKED BY: [Signature]



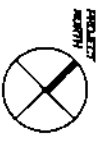
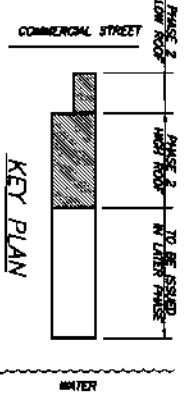
PARTIAL HIGH ROOF FRAMING PLAN 1/8"=1'-0"

1. INDICATES SLOPE DIRECTION OF 3" OF 4" SLOPE STRONG FLOORING, ETC.
2. SET ONE END OF ROOF JOIST TO BE APPROXIMATELY W/ APPROVED FINISH (SEE ARCH).
3. INDICATES SLOPE DIRECTION OF 3" OF 4" SLOPE STRONG FLOORING, ETC.
4. INDICATES SLOPE DIRECTION OF 3" OF 4" SLOPE STRONG FLOORING, ETC.
5. INDICATES SLOPE DIRECTION OF 3" OF 4" SLOPE STRONG FLOORING, ETC.
6. INDICATES SLOPE DIRECTION OF 3" OF 4" SLOPE STRONG FLOORING, ETC.
7. INDICATES SLOPE DIRECTION OF 3" OF 4" SLOPE STRONG FLOORING, ETC.



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

1. INDICATES SLOPE DIRECTION OF 3" OF 4" SLOPE STRONG FLOORING, ETC.
2. SET ONE END OF ROOF JOIST TO BE APPROXIMATELY W/ APPROVED FINISH (SEE ARCH).
3. INDICATES SLOPE DIRECTION OF 3" OF 4" SLOPE STRONG FLOORING, ETC.
4. INDICATES SLOPE DIRECTION OF 3" OF 4" SLOPE STRONG FLOORING, ETC.



- GENERAL NOTES**
1. THE NOTES ON THESE DRAWINGS ARE NOT INTENDED TO REPLACE SPECIFICATIONS FOR MATERIALS OR CONSTRUCTION METHODS. REFER TO THE SPECIFICATIONS FOR MATERIALS AND CONSTRUCTION METHODS FOR THE PROJECT.
 2. STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH JOB SPECIFICATIONS AND CONTRACT DOCUMENTS. REFER TO THE SPECIFICATIONS FOR MATERIALS AND CONSTRUCTION METHODS FOR THE PROJECT.
 3. ALL DIMENSIONS, EXISTING CONDITIONS, AND AS-BUILT CONDITIONS MUST BE VERIFIED BY THE CONTRACTOR BEFORE PROCEEDING WITH THE PROJECT.
 4. THE STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE ONLY AFTER THE STRUCTURE WORK COMPLETED BY THE 3RD FLOOR IS COMPLETE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE DURING CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE DURING CONSTRUCTION.
 5. THE CONTRACTOR SHALL SUBMIT COMPLETE SHOP DRAWINGS FOR ALL WORK OF THE WORK, INCLUDING DETAILING OF JOISTS, AND CONSTRUCTION DETAILS AND CONNECTIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE DURING CONSTRUCTION.
 6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE DURING CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE DURING CONSTRUCTION.

- DESIGN LOADS**
1. DEAD LOAD: 10 PSF
 2. LIVE LOAD: 40 PSF
 3. WIND LOAD: 100 MPH
 4. SEISMIC LOAD: 0.10
- STRUCTURAL STEEL NOTES**
1. STRUCTURAL STEEL FABRICATOR, ERECTOR, AND CONNECTION DESIGN SHALL COMPLY TO AISC "SPECIFICATIONS FOR THE DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL" LATEST EDITION AND THE CODE OF STANDARD PRACTICE, LATEST EDITION.
 2. STRUCTURAL STEEL SHALL BE FABRICATED AND ERRECTED TO A572 GR 50 UNLESS NOTED OTHERWISE. ALL STRUCTURAL STEEL SHALL BE GALVANNEAL UNLESS NOTED OTHERWISE.
 3. WELDED CONNECTIONS SHALL BE DESIGNED AND ERRECTED TO AISC 360 UNLESS NOTED OTHERWISE.
 4. ALL STEEL SHALL BE FABRICATED AND ERRECTED TO AISC 360 UNLESS NOTED OTHERWISE.

- WOOD NOTES**
1. ALL WOOD FRAMING SHALL BE IN ACCORDANCE WITH THE AIA TRUSS CONSTRUCTION MANUAL - LATEST EDITION AND THE "A" IN NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION (NDS) LATEST EDITION.
 2. WOOD FRAMING SHALL BE USUALLY GRADED LAMINAR GRADE UNLESS OTHERWISE NOTED ON THE DRAWINGS.
 3. ENGINEERED WOOD PRODUCTS SHALL BE AS SPECIFIED ON THE DRAWINGS REFER TO MANUFACTURER'S LITERATURE FOR PROPER HANDLING AND INSTALLATION GUIDELINES.
 4. ALL WOOD SHALL BE TREATED TO RESIST DECAY AND TERMITES.
 5. ALL WOOD SHALL BE TREATED TO RESIST DECAY AND TERMITES.
 6. ALL WOOD SHALL BE TREATED TO RESIST DECAY AND TERMITES.

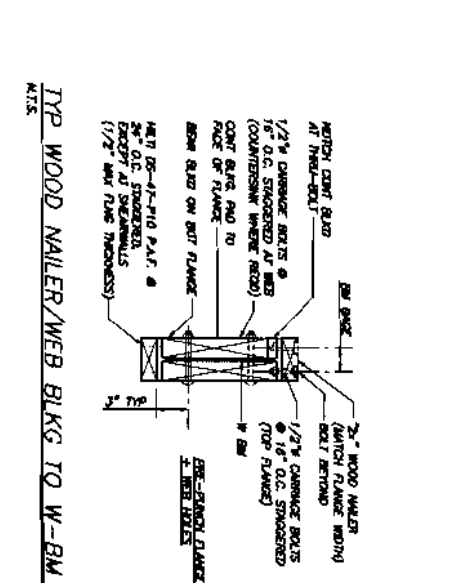
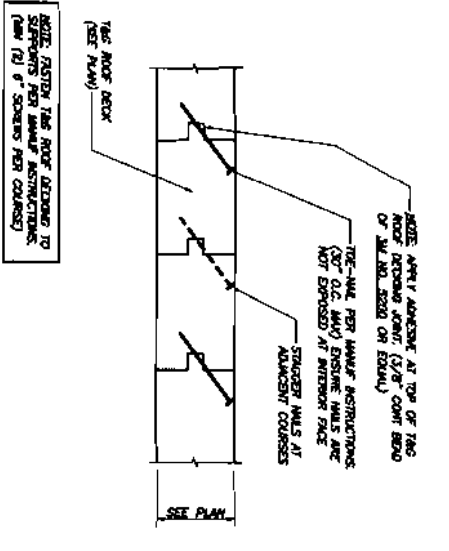
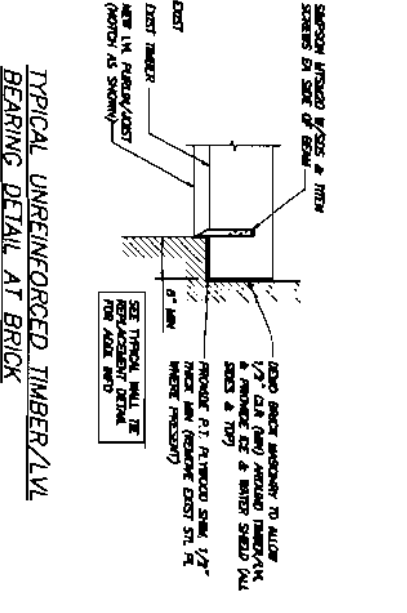
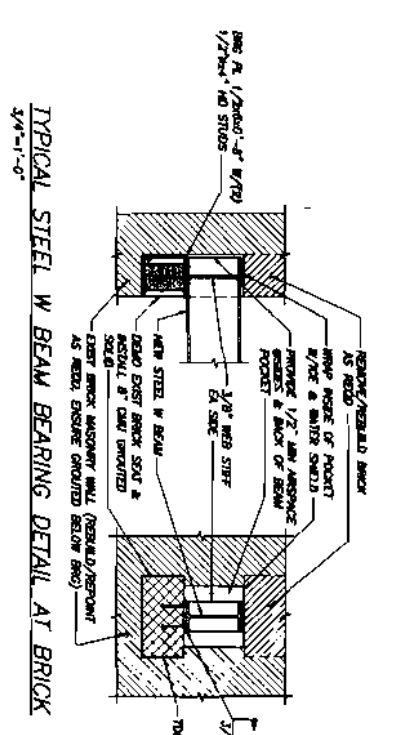
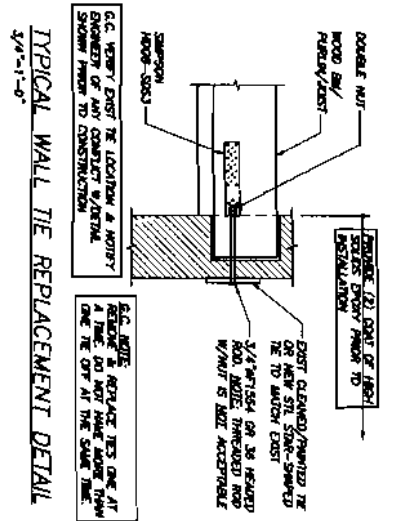
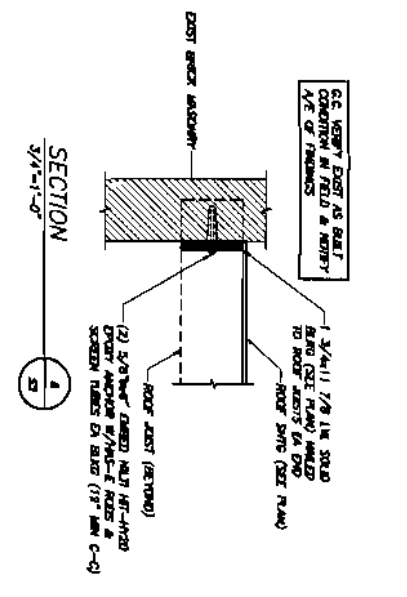
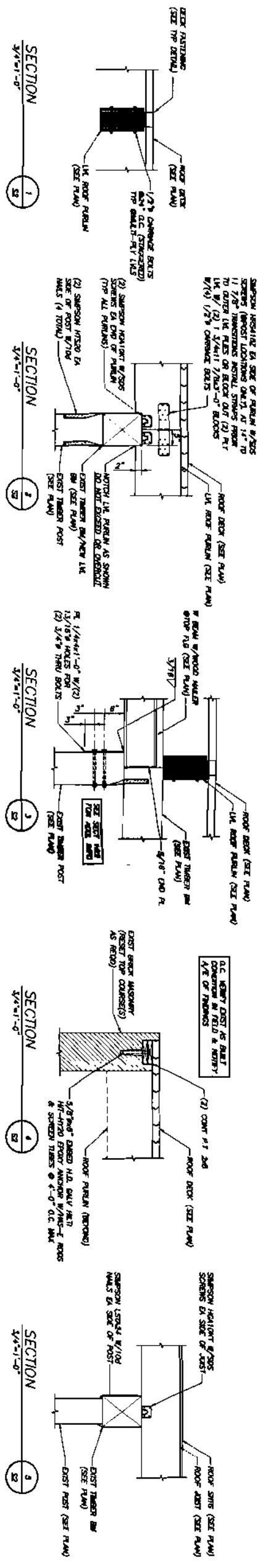
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RENOVATIONS TO CUMBERLAND COLD STORAGE BUILDING - PORTLAND, ME

PHASE 2 FRMG PLANS & GEN NOTES

DATE: 08/27/10
DRAWN BY: JAS

BECKER
structural engineers, inc.



TYP T & G WOOD ROOF DECKING FASTENING DETAIL
M.T.S.

TYP WOOD NAILER/WEB BLK TO W-BM DETAIL
M.T.S.

TYPICAL STEEL W BEAM BEARING DETAIL AT BRICK
3/4\"/>

TYPICAL UNREINFORCED TIMBER/LVL BEARING DETAIL AT BRICK
3/4\"/>

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Project	PH2-S3
Client	AS NOTED
Date	08/27/10
Drawn	2/1/10

RENOVATIONS TO CUMBERLAND COLD STORAGE BUILDING - PORTLAND, ME
PHASE 2 SECTIONS & DETAILS

Rev No	Date	Issued For	App'd

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SECTION 07 53 23 - ETHYLENE-PROPYLENE-DIENE-MONOMER (EPDM) ROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Adhered EPDM membrane roofing system.
2. Roof insulation.
3. Walkway pads.
4. Expansion joints.

B. Related Sections:

1. Division 01 Section "Alternates" for alternates related to this section.
2. Division 06 Section "Rough Carpentry" for wood nailers, curbs, and blocking.
3. Division 07 Section "Sheet Metal Flashing and Trim" for metal roof penetration flashings, flashings, and counterflashings.
4. Division 07 Section "Joint Sealants" for joint sealants, joint fillers, and joint preparation.
5. Division 22 Section "Storm Drainage Piping Specialties" for roof drains.

1.3 DEFINITIONS

- A. **Roofing Terminology:** See ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" for definitions of terms related to roofing work in this Section.

1.4 PERFORMANCE REQUIREMENTS

- A. **General Performance:** Installed membrane roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Membrane roofing and base flashings shall remain watertight.
- B. **Material Compatibility:** Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by membrane roofing manufacturer based on testing and field experience.
- C. **Roofing System Design:** Provide membrane roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency to resist wind speed of 100 mph (measured 30 feet above the ground).

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- D. **Energy Performance:** Provide roofing system with initial Solar Reflectance Index not less than 78 when calculated according to ASTM E 1980 based on testing identical products by a qualified testing agency.

1.5 SUBMITTALS

- A. **Product Data:** For each type of product indicated.
- B. **LEED Submittals:**
1. **Product Test Reports for Credit SS 3.2 if applicable:** For roof materials, documentation indicating that roof materials comply with Solar Reflectance Index requirement. To comply material shall have SRI equal to or greater than: Low slope roof ($\leq 2:12$) SRI 78; Steep slope roof ($\geq 2:12$) SRI 29 for 75% of roof area.
- C. **Shop Drawings:** For roofing system. Include plans, elevations, sections, details, and attachments to other work.
1. Base flashings and membrane terminations.
 2. Tapered insulation, including slopes.
 3. Insulation fastening patterns for corner, perimeter, and field-of-roof areas.
- D. **Samples for Verification:** For the following products, in manufacturer's standard sizes:
1. Sheet roofing, of color specified, including T-shaped side and end lap seam.
 2. Roof insulation.
 3. Six insulation fasteners of each type, length, and finish.
 4. Six roof cover fasteners of each type, length, and finish.
- E. **Qualification Data:** For qualified installer and manufacturer.
- F. **Manufacturer Certificate:** Signed by roofing manufacturer certifying that membrane roofing system complies with requirements specified in "Performance Requirements" Article.
1. Submit evidence of complying with performance requirements.
- G. **Manufacturer's installation rating of the roofing contractor.**
- H. **Product Test Reports:** Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for components of membrane roofing system.
- I. **Maintenance Data:** For membrane roofing system to include in maintenance manuals.
- J. **Warranties:** Sample of special warranties.
- K. **Inspection Report:** Copy of roofing system manufacturer's inspection report of completed roofing installation.

1.6 QUALITY ASSURANCE

- A. **Manufacturer Qualifications:** A qualified manufacturer that is FM Approvals approved for membrane roofing system identical to that used for this Project.
- B. **Installer Qualifications:** Engage an experienced installer to perform work of this Section who has specialized in installing roofing similar to that required for this Project and who is approved, authorized, or licensed by the roofing system manufacturer to install manufacturer's product. Contractor shall have installed a minimum of 500,000 square feet and have a manufacturer's installation rating of 9.0 or better.
1. Installer for GAF products shall be a Master Select or Master Certified Contractor.
 2. Work associated with single-ply membrane roofing, including (but not limited to) insulation, flashing, and membrane sheet joint sealers, shall be performed by Installer of this Work.
- C. **Source Limitations:** Obtain components including roof insulation and fasteners Insert products for membrane roofing system from same manufacturer as membrane roofing or approved by membrane roofing manufacturer.
- D. **Exterior Fire-Test Exposure:** ASTM E 108, Class A; for application and roof slopes indicated, as determined by testing identical membrane roofing materials by a qualified testing agency. Materials shall be identified with appropriate markings of applicable testing agency.
- E. **Fire-Resistance Ratings:** Where indicated, provide fire-resistance-rated roof assemblies identical to those of assemblies tested for fire resistance per ASTM E 119 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
- F. **Preliminary Roofing Conference:** Before starting roofing installation, conduct conference at Project site.
1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
 2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
 3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 4. Review requirements for deck substrate conditions and finishes, including flatness and fastening.
 5. Review structural loading limitations of roof deck during and after roofing.
 6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
 7. Review governing regulations and requirements for insurance and certificates if applicable.
 8. Review temporary protection requirements for roofing system during and after installation.
 9. Review roof observation and repair procedures after roofing installation.

- G. Upon completion of the installation, an inspection shall be made by the system manufacturer to ascertain that the roofing system has been installed according to the applicable manufacturer's specifications and details. No "early bird" warranty will be accepted. The results of the warranty inspection shall be submitted in writing to Owner for their review and records.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.
- B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
 - 1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.
- C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.
- D. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.

1.8 PROJECT CONDITIONS

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

1.9 WARRANTY

- A. General Warranty: The warranties specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.
- B. A manufacturer's sole source 15-year written Roofing System Warranty shall be provided with a peak gust wind speed limitation of 100 mph (measured 30 feet above the ground). Warranty shall cover both labor and materials with no dollar limitation and shall state that the Total roofing System will remain in a watertight condition. The contractor shall provide as part of the shop drawing submittal process, certification indicating that the manufacturer has reviewed and has agreed to such wind coverage indicated.
 - 1. Roofing System is defined as the following materials and provided by the roof system manufacturer: membrane, flashings, counterflashings, adhesives, sealants, insulation, overlayment, fasteners, fastener plates, fastener strips, hard rubber, metal edging. Metal

- termination anchor bars, roof drain flashing and sealants, and any other product utilized in this system installation.
2. The warranty shall be for fifteen (15) years starting after final acceptance of the total roofing system by the roof system manufacturer. Defective materials or installation shall be removed, properly disposed of, and replaced at the manufacturer's expense.
 3. The warranty shall provide that if within the warranty period the roofing system becomes non-watertight or if the elastomeric sheet splits, tears, or separates at the seams because of defective materials and/or materials and cost thereof shall be the responsibility of the manufacturer. Should the manufacturer or his approve applicator fail to perform repairs within 72 hours of notification, the warranty will not be voided because of work being performed by others to repair the roofing regardless of the manufacturer's warranty to the contrary.
 4. The Roofing System shall be applied by a roofing Contractor approved by the system manufacturer. After inspection and acceptance of the installed roof system, the warranty will be issued.
 5. Submit an Extended Wind Speed Request Form for acceptance of 85 mph wind warranty prior to start of work. Notify Architect if request form is rejected from the manufacturer.

PART 2 - PRODUCTS

2.1 EPDM MEMBRANE ROOFING

- A. EPDM: ASTM D 4637, Type I, non-reinforced, uniform, flexible EPDM sheet.
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Carlisle SynTec Incorporated.
 - b. Firestone Building Products.
 - c. GAF Materials Corporation.
 - d. Versico Incorporated.
 2. Thickness: 60 mils, nominal.
 3. Exposed Face Color: White.

2.2 AUXILIARY MEMBRANE ROOFING MATERIALS

- A. General: Auxiliary membrane roofing materials recommended by roofing system manufacturer for intended use and compatible with membrane roofing.
 1. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.
 2. Adhesives and sealants that are not on the exterior side of weather barrier shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 - a. Plastic Foam Adhesives: 50 g/L.
 - b. Gypsum Board and Panel Adhesives: 50 g/L.

- c. Multipurpose Construction Adhesives: 70 g/L.
 - d. Fiberglass Adhesives: 80 g/L.
 - e. Contact Adhesive: 80 g/L.
 - f. Single-Ply Roof Membrane Sealants: 450 g/L.
 - g. Nonmembrane Roof Sealants: 300 g/L.
 - b. Sealant Primers for Nonporous Substrates: 250 g/L.
 - i. Sealant Primers for Porous Substrates: 775 g/L.
 - j. Other Adhesives and Sealants: 250 g/L.
- B. Sheet Flashing: 60-mil- thick EPDM, partially cured or cured, according to application.
 - C. Protection Sheet: Epichlorohydrin or neoprene non-reinforced flexible sheet, 55- to 60-mil-thick, recommended by EPDM manufacturer for resistance to hydrocarbons, non-aromatic solvents, grease, and oil.
 - D. Bonding Adhesive: Manufacturer's standard.
 - E. Seaming Material: Manufacturer's standard, synthetic-rubber polymer primer and 6-inch- wide minimum, butyl splice tape with release film.
 - F. Lap Sealant: Manufacturer's standard, single-component sealant, colored to match membrane roofing.
 - G. Water Cutoff Mastic: Manufacturer's standard butyl mastic sealant.
 - H. Metal Termination Bars: Manufacturer's standard, predrilled stainless-steel or aluminum bars, approximately 1 by 1/8 inch thick; with anchors.
 - I. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening membrane to substrate, and acceptable to roofing system manufacturer.
 - J. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, reinforced EPDM securement strips, T-joint covers, in-seam sealants, termination reglets, cover strips, and other accessories.

2.3 ROOF INSULATION

- A. General: Preformed roof insulation boards manufactured or approved by EPDM membrane roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses indicated and that produce FM Approvals-approved roof insulation.
- B. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Class 1, Grade 2, felt or glass-fiber mat facer on both major surfaces.
 - I. Thickness: Two layers of 3 inch thick insulation, providing a total in place thickness of 6 inches, unless indicated otherwise.
- C. Tapcred Insulation: Provide factory-tapered insulation boards fabricated to slope of 1/4 inch per 12 inches unless otherwise indicated.

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

2.4 INSULATION ACCESSORIES

- A. General: Furnish roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with membrane roofing.
- B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roof insulation[and cover boards] to substrate, and acceptable to roofing system manufacturer.
- C. Cover Board: DOC PS 2, Exposure 1, OSB, 7/16 inch (11 mm) thick.

2.5 WALKWAYS

- A. Flexible Walkways: Factory-formed, nonporous, heavy-duty, solid-rubber, slip-resisting, surface-textured walkway pads or rolls, approximately 3/16 inch thick, and acceptable to membrane roofing system manufacturer.

2.6 ROOF DRAINS

- A. All roof drains shall be furnished with 15 inch diameter cast iron body, integral flashing flange and clamp device, cast iron dome strainer, top-set deck clamp. Equal to Zurn ZC-100-DP. See plumbing riser piping for sizes.
- B. Roofing contractor to supply and install pressure-treated wood blocking as required for roof drains.

2.7 EXPANSION JOINTS

- A. Deck-To-Deck and Deck-To-Wall Expansion Joints: Provide manufacturers standard joint system consisting of expansion joint support or support sponge, anchor plates, and flashing.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:
 1. Verify that roof openings and penetrations are in place and curbs are set and braced and that roof drain bodies are securely clamped in place.
 2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.

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

3.2 PREPARATION

- A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.
- B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.
- C. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

3.3 SUBSTRATE BOARD

- A. Install substrate board with long joints in continuous straight lines, perpendicular to roof slopes with end joints staggered between rows. Tightly butt substrate boards together.
 - 1. Fasten substrate board to top flanges of steel deck according to manufacturer's recommendations.
 - 2. Fasten substrate board to top flanges of steel deck to resist uplift pressure at corners, perimeter, and field of roof according to membrane roofing system manufacturers' written instructions.

3.4 INSULATION INSTALLATION

- A. Coordinate installing membrane roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.
- B. Comply with membrane roofing system and insulation manufacturer's written instructions for installing roof insulation.
- C. Install tapered insulation under area of roofing to conform to slopes indicated.
- D. Install insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2.7 inches or greater, install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches in each direction.
- E. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.
- F. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch with insulation.
 - 1. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.

- G. Loosely Laid Insulation: Loosely lay insulation units over substrate.
- H. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches in each direction. Loosely butt cover boards together.
 - 1. Fasten cover boards according to requirements of manufacturer's warranty.

3.5 ADHERED MEMBRANE ROOFING INSTALLATION

- A. Adheremembrane roofing over area to receive roofing according to membrane roofing system manufacturer's written instructions. Unroll membrane roofing and allow to relax before installing.
- B. Accurately align membrane roofing and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.
- C. Bonding Adhesive: Apply to substrate and underside of membrane roofing at rate required by manufacturer and allow to partially dry before installing membrane roofing. Do not apply to splice area of membrane roofing.
- D. In addition to adhering, mechanically fasten membrane roofing securely at terminations, penetrations, and perimeters.
- E. Apply membrane roofing with side laps shingled with slope of roof deck where possible.
- F. Tape Seam Installation: Clean and prime both faces of splice areas, apply splice tape, and firmly roll side and end laps of overlapping membrane roofing according to manufacturer's written instructions to ensure a watertight seam installation. Apply lap sealant and seal exposed edges of membrane roofing terminations.
- G. Repair tears, voids, and lapped seams in roofing that does not comply with requirements.
- H. Spread sealant or mastic bed over deck drain flange at roof drains and securely seal membrane roofing in place with clamping ring.

3.6 BASE FLASHING INSTALLATION

- A. Install sheet flashings and preformed flashing accessories and adhere to substrates according to membrane roofing system manufacturer's written instructions.
- B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate and allow to partially dry. Do not apply to seam area of flashing.
- C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.
- D. Clean splice areas, apply splicing cement, and firmly roll side and end laps of overlapping sheets to ensure a watertight seam installation. Apply lap sealant and seal exposed edges of sheet flashing terminations.

3.7 WALKWAY INSTALLATION

- A. **Flexible Walkways:** Install walkway products in locations indicated. Adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

3.8 ROOF DRAIN INSTALLATION

- A. **Install roof drain and accessories in strict accordance with manufacturer's written instructions, providing a permanent weather tight installation.**
 - 1. **Inspect and determine substrate to be in satisfactory condition, with deck fully anchored and aligned at proper location and elevation. All surfaces shall be smooth, dry, clean, free of sharp edges, and other irregularities.**
 - 2. **Attach deck flange securely to substrate.**
 - 3. **Assemble and flash gravel stop flange into roof system per roof system and roof drain manufacturer requirements.**
 - 4. **Securely attach strainer basket.**

3.9 FIELD QUALITY CONTROL

- A. **Final Roof Inspection:** Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.
 - 1. **Notify Architect or Owner 48 hours in advance of the date and time of inspection.**
- B. **Repair or remove and replace components of membrane roofing system where inspections indicate that they do not comply with specified requirements.**
- C. **Additional inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.**

3.10 PROTECTING AND CLEANING

- A. **Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.**
- B. **Correct deficiencies in or remove membrane roofing system that does not comply with requirements, repair substrates and repair or reinstall membrane roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.**
- C. **Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.**

END OF SECTION 07 53 23

SECTION 07 62 00 - SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes sheet metal flashing and trim in the following categories:
 - 1. Exposed trim, gravel stops, and fasciae.
 - 2. Copings.
 - 3. Metal flashing.
 - 4. Gutters.
 - 5. Downspouts.

- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 4 Sections for through-wall flashing and other integral masonry flashings specified as part of masonry work.
 - 2. Division 7 Section "Roof Accessories" for set-on-type curbs, equipment supports, roof hatches, vents, and other manufactured roof accessory units.
 - 3. Division 7 Section "Joint Sealants" for elastomeric sealants.
 - 4. Division 7 Roofing Sections for flashing and roofing accessories installed integral with roofing membrane as part of roofing-system work.

1.2 PERFORMANCE REQUIREMENTS

- A. General: Install sheet metal flashing and trim to withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failing.

- B. Fabricate and install flashings at roof edges to comply with recommendations of FM Loss Prevention Data Sheet 1-49 for the following wind zone:
 - 1. Wind Zone 2: Wind pressures of 31 to 45 psf.

1.3 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.

- B. Shop Drawings of each item specified showing layout, profiles, methods of joining, and anchorage details.

- C. Samples of sheet metal flashing, trim, and accessory items, in the specified finish. Where finish involves normal color and texture variations, include Sample sets composed of 2 or more units showing the full range of variations expected.
 - 1. 8-inch- square Samples of specified sheet materials to be exposed as finished surfaces.

1.4 QUALITY ASSURANCE

- A. **Installer Qualifications:** Engage an experience Installer who has completed sheet metal flashing and trim work similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.

1.5 PROJECT CONDITIONS

- A. **Coordinate Work** of this Section with interfacing and adjoining Work for proper sequencing of each installation. Ensure best possible weather resistance, durability of Work, and protection of materials and finishes.

PART 2 - PRODUCTS

2.1 METALS

- A. **Aluminum Sheet:** ASTM B 209, alloy as standard with manufacturer for finish required, with temper as required to suit forming operations and performance required.
 - 1. **Surface:** Smooth, flat.
 - 2. **Exposed Coil-Coated Finishes:**
 - a. **Two-Coat Fluoropolymer:** AAMA 620. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 - b. **Provide finish color** on both sides of sheet where shown.

2.2 MISCELLANEOUS MATERIALS AND ACCESSORIES

- A. **Fasteners:** Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal.
 - 1. **Fasteners for Aluminum Sheet:** Aluminum or Series 300 stainless steel.
- B. **Asphalt Mastic:** SSPC-Paint 12, solvent-type asphalt mastic, nominally free of sulfur and containing no asbestos fibers, compounded for 15-mil dry film thickness per coat.
- C. **Mastic Sealant:** As specified in Division 7 Section "Joint Sealants".
- D. **Elastomeric Sealant:** Generic type recommended by sheet metal manufacturer and fabricator of components being sealed and complying with requirements for joint sealants as specified in Division 7 Section "Joint Sealants."
- E. **Epoxy Seam Sealer:** Two-part, noncorrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior nonmoving joints, including riveted joints.

- F. **Metal Accessories:** Provide sheet metal clips, straps, anchoring devices, and similar accessory units as required for installation of Work, matching or compatible with material being installed; noncorrosive; size and thickness required for performance.
- G. **Roofing Cement:** ASTM D 4586, Type I, asbestos free, asphalt based.

2.3 FABRICATION, GENERAL

- A. **Sheet Metal Fabrication Standard:** Fabricate sheet metal flashing and trim to comply with recommendations of SMACNA's "Architectural Sheet Metal Manual" that apply to the design, dimensions, metal, and other characteristics of the item indicated.
 - 1. Conform to referenced details of SMACNA's "Architectural Sheet Metal Manual" – 5th Edition.
- B. Comply with details shown to fabricate sheet metal flashing and trim that fit substrates and result in waterproof and weather-resistant performance once installed. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
- C. Form exposed sheet metal Work that is without excessive oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems.
- D. **Seams:** Fabricate nonmoving seams with flat-lock seams. Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use. Rivet joints where necessary for strength.
- E. **Expansion Provisions:** Space movement joints at maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped or bayonet-type expansion provisions in Work cannot be used or would not be sufficiently weatherproof and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).
- F. **Sealed Joints:** Form nonexpansion, but movable, joints in metal to accommodate elastomeric sealant to comply with SMACNA standards.
- G. Separate metal from noncompatible metal or corrosive substrates by coating concealed surfaces at locations of contact with asphalt mastic or other permanent separation as recommended by manufacturer.
- H. Conceal fasteners and expansion provisions where possible.
- I. Fabricate cleats and attachment devices from same material as sheet metal component being anchored or from compatible, noncorrosive metal recommended by sheet metal manufacturer.
 - 1. **Size:** As recommended by SMACNA manual or sheet metal manufacturer for application but never less than thickness of metal being secured.

2.4 SHEET METAL FABRICATIONS

- A. **General:** Fabricate sheet metal items in thickness or weight needed to comply with performance requirements but not less than that listed below for each application and metal.

- B. **Metal Fasciae:** Fabricate from the following material:
 - 1. Aluminum: 0.032 inch thick.
 - 2. Conform to drawings and applicable SMACNA details.
- C. **Copings:** Fabricate from the following material:
 - 1. Aluminum: 0.040 inch thick.
 - 2. Conform to drawings and applicable SMACNA details.
- D. **Gutters:** Fabricate from the following material:
 - 1. Aluminum: 0.040 inch thick.
 - 2. Conform to drawings and applicable SMACNA details.
- E. **Downspouts and Leader Box:** Fabricate from the following material:
 - 1. Aluminum: 0.040 inch thick.
 - 2. Finish: Prefinished with selected color on both sides.
 - 3. Conform to drawings and applicable SMACNA details.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions under which sheet metal flashing and trim are to be installed and verify that Work may properly commence. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. **General:** Unless otherwise indicated, install sheet metal flashing and trim to comply with performance requirements, manufacturer's installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Anchor units of Work securely in place by methods indicated, providing for thermal expansion of metal units; conceal fasteners where possible, and set units true to line and level as indicated. Install Work with laps, joints, and seams that will be permanently watertight and weatherproof.
- B. Install exposed sheet metal Work that is without excessive oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
- C. **Roof-Edge Flashings:** Secure metal flashings at roof edges according to FM Loss Prevention Data Sheet 1-49 for specified wind zone.
- D. **Expansion Provisions:** Provide for thermal expansion of exposed sheet metal Work. Space movement joints at maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped or bayonet-type expansion provisions in Work cannot be used or would not be sufficiently weatherproof and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

- E. **Sealed Joints:** Form nonexpansion, but movable, joints in metal to accommodate elastomeric sealant to comply with SMACNA standards. Fill joint with sealant and form metal to completely conceal sealant.
- F. **Seams:** Fabricate nonmoving seams in sheet metal with flat-lock seams.
- G. **Separations:** Separate metal from noncompatible metal or corrosive substrates by coating concealed surfaces, at locations of contact, with asphalt mastic or other permanent separation as recommended by manufacturer.
 - 1. **Underlayment:** Where installing stainless steel or aluminum directly on cementitious or wood substrates, install a slip sheet of red-rosin paper and a course of polyethylene underlayment.
 - 2. **Bed flanges of Work** in a thick coat of roofing cement where required for waterproof performance.

3.3 CLEANING AND PROTECTION

- A. **Clean exposed metal surfaces,** removing substances that might cause corrosion of metal or deterioration of finishes.
- B. **Provide final protection and maintain conditions that ensure sheet metal flashing and trim Work during construction is without damage or deterioration other than natural weathering at the time of Substantial Completion.**

END OF SECTION 07 62 00

SECTION 07 72 00 - ROOF ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Roof hatches.

1.3 SUBMITTALS

- A. Product Data: For each type of roof accessory indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Shop Drawings: Show fabrication and installation details for roof accessories. Show layouts of roof accessories including plans and elevations. Indicate dimensions, weights, loadings, required clearances, method of field assembly, and components. Include plans, elevations, sections, details, and attachments to other work.
- C. Warranty: Special warranty specified in this Section.

1.4 QUALITY ASSURANCE

- A. Sheet Metal Standard: Comply with SMACNA's "Architectural Sheet Metal Manual" details for fabrication of units, including flanges and cap flashing to coordinate with type of roofing indicated.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Pack, handle, and ship roof accessories properly labeled in heavy-duty packaging to prevent damage.

1.6 PROJECT CONDITIONS

- A. Field Measurements: Verify required openings for each type of roof accessory by field measurements before fabrication and indicate measurements on Shop Drawings.

1.7 COORDINATION

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

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers listed in other Part 2 articles.

2.2 METAL MATERIALS

- A. Galvanized Steel Sheet: ASTM A 653/A 653M, G90 coated and mill phosphatized for field painting.
- B. Steel Shapes: ASTM A 36/A 36M, hot-dip galvanized to comply with ASTM A 123/A 123M, unless otherwise indicated.
- C. Steel Tube: ASTM A 500, round tube, baked-enamel finished.
- D. Galvanized Steel Tube: ASTM A 500, round tube, hot-dip galvanized to comply with ASTM A 123/A 123M.
- E. Galvanized Steel Pipe: ASTM A 53/A 53M.

2.3 MISCELLANEOUS MATERIALS

- A. Cellulosic-Fiber Board Insulation: ASTM C 208, Type II, Grade 1, 1 inch thick.
- B. Glass-Fiber Board Insulation: ASTM C 726, 1 inch thick.
- C. Polyisocyanurate Board Insulation: ASTM C 1289, 1 inch thick.
- D. Wood Nailers: Softwood lumber, pressure treated with waterborne preservatives for aboveground use, complying with AWPA C2; not less than 1-1/2 inches thick.
- E. Fasteners: Same metal as metals being fastened, or nonmagnetic stainless steel or other noncorrosive metal as recommended by roof accessory manufacturer. Match finish of exposed fasteners with finish of material being fastened. Provide nonremovable fastener heads to exterior exposed fasteners.
- F. Gaskets: Manufacturer's standard tubular or fingered design of neoprene, EPDM, or PVC; or flat design of foam rubber, sponge neoprene, or cork.

2.4 ROOF HATCHES

- A. **General:** Provide a custom fabricated unit to withstand 40-lbf/sq. ft. external and 20-lbf/sq. ft. internal loading pressure. Frame with minimum 9-inch high, integral-curb, double-wall construction with 2 inch polyisocyanurate rigid insulation (R-14 value), formed cants and cap flashing (roofing counterflashing), with welded or sealed mechanical corner joints. Provide double-wall cover (lid) construction with 2- inch thick polyisocyanurate rigid insulation insulation core (R-14 value). Provide gasketing and equip with corrosion-resistant or hot-dip galvanized hardware including pintle hinges, hold-open devices, interior padlock hasps, and both interior and exterior latch handles. Provide heavy-duty pneumatic hold-open devices capable of handling the extra hatch cover weight of 12 pound load.
- B. **Type:** Single-leaf personnel access.
 - 1. **For Ship's Ladder Access:** 30 by 78 inches.
 - 2. **Material:** Aluminum sheets.
 - a. **Finish:** Mill finish.
 - 3. **Available Products:**
 - a. **Bilco:** Custom model similar to "L-50T".

PART 3 - EXECUTION

3.1 EXAMINATION

- A. **Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions, and other conditions affecting performance of work.**
 - 1. **Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored and is ready to receive roof accessories.**
 - 2. **Verify dimensions of roof openings for roof accessories.**
 - 3. **Proceed with installation only after unsatisfactory conditions have been corrected.**

3.2 INSTALLATION

- A. **General:** Install roof accessories according to manufacturer's written instructions. Anchor roof accessories securely in place and capable of resisting forces specified. Use fasteners, separators, sealants, and other miscellaneous items as required for completing roof accessory installation. Install roof accessories to resist exposure to weather without failing, rattling, leaking, and fastener disengagement.
- B. **Install roof accessories to fit substrates and to result in watertight performance.**
- C. **Metal Protection:** Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.

- D. Install roof accessories level, plumb, true to line and elevation, and without warping, jogs in alignment, excessive oil canning, buckling, or tool marks.
- E. Roof Hatch Installation:
 - 1. Check roof hatch for proper operation. Adjust operating mechanism as required. Clean and lubricate joints and hardware.

3.3 TOUCH UP

- A. Touch up factory-primed surfaces with compatible primer ready for field painting in accordance with Division 09 painting Sections.
- B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

3.4 CLEANING

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

END OF SECTION 07 72 00

SECTION 04 01 20

CLAY MASONRY RESTORATION AND CLEANING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section includes restoration and cleaning of brick as follows:
1. Repairing clay masonry, including replacing damaged units.
 2. Re-Building clay masonry to re-establish integrity of wall
 3. Repointing mortar joints.
 4. Cleaning exposed clay masonry and surfaces.
 5. Mechanical anchorage and crack stitching.
- B. Related Sections include the following:
1. Division 01 – Submittal Procedures
- C. Allowances: Base Bid includes clay masonry work based on the scope of work indicated in the contract documents.
1. Provide unit prices for additions or deletions from the project. Unit prices shall be established for the following
 - a. masonry removal & rebuilding
 - b. masonry rake & repointing
 - c. masonry pinning and crack stitching
 - d. caulking.
 2. Unit prices apply to additions or deletions to Work as authorized by ~~Change Orders~~ Building Inspections
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1.03 DEFINITIONS

- A. Low-Pressure Spray: 100 to 400 psi (690 to 2750 kPa); 4 to 6 gpm (0.25 to 0.4 L/s).

1.04 SUBMITTALS

- A. Product Data: For each type of product indicated. Include recommendations for application and use. Include test data substantiating that products comply with requirements.
- B. Samples: Provide samples as follows;
1. For each type of mortar proposed for pointing and repair and re-building, provide a sample mortar strip 6 inches long by 12 inch wide, set in aluminum or plastic channels.

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2. Each type of masonry repair anchor.
- C. Qualifications Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- D. Cleaning Program: Describe cleaning process in detail, including materials, methods and equipment to be used and protection of surrounding materials on buildings and project site, and control of runoff during operations.
 1. If materials and methods other than those indicated are proposed for cleaning work, provide a written description, including evidence of successful use on comparable projects, and a testing program to demonstrate their effectiveness for this project.
- E. LEED Documentation: Refer to paragraph 1.09 of this section and Division 1

1.05 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of material for masonry restoration (face brick, cement, sand, etc.) from one source with resources to provide materials of consistent quality in appearance and physical properties.
- B. Masonry Restoration Company Qualifications: Company shall have been performing work of a similar nature to the proposed project for a minimum of 5 years.
- C. Chemical Manufacturer Qualifications: A company regularly engaged in producing masonry cleaners that have been used for similar applications with successful results, and with factory-trained representatives who are available for consultation and Project site inspection and assistance at no additional cost.
- D. Mockups: Prepare field samples for restoration methods and cleaning procedures to demonstrate aesthetic effects and qualities of materials and execution. Use materials and methods proposed for completed Work and prepare samples under same weather conditions to be expected during remainder of Work.
 1. Locate mockups on the building where directed by Architect/Owner.
 2. Masonry Repair: Prepare sample panels of size indicated for each type of masonry material indicated to be patched, rebuilt, or replaced. Erect sample panels into an existing wall, unless otherwise indicated, to demonstrate the quality of materials and workmanship.
 3. Cleaning: Prepare sample approximately 25 sq. ft. in area for each type of clay masonry and surface condition. Test cleaners and methods on samples of adjacent materials for possible adverse reactions, unless cleaners and methods are known to have a deleterious effect. Allow a waiting period of not less than 7 days after completion of sample cleaning to permit a study of sample panels for negative reactions.
 4. Repointing: Prepare 2 separate sample areas approximately 36 inches high by 72 inches wide for each type of repointing required; 1 for demonstrating methods and quality of workmanship expected in removing mortar from joints and the other for demonstrating quality of materials and workmanship expected in pointing mortar joints.
 5. Notify Architect/Owner 7 days in advance of the dates and times when samples will be prepared.

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6. Obtain Architect/Owner's approval of mockups before starting the remainder of clay masonry restoration and cleaning.
 7. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
- E. Pre-Installation Conference: Conduct conference at Project site to comply with requirements in Division 01 and this spec.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver masonry units to Project site strapped together in suitable pecks or pallets or in heavy-duty cartons. Palletize and store salvaged brick on site until ready to use.
- B. Deliver other materials to Project site in manufacturer's original and unopened containers, labeled with manufacturer's name and type of products.
- C. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- D. Store hydrated lime in manufacturer's original and unopened containers. Discard lime if containers have been damaged or have been opened for more than two days.
- E. Store lime putty covered with water in sealed containers.
- F. Store sand where grading and other required characteristics can be maintained and contamination avoided.

1.07 PROJECT CONDITIONS

- A. Repoint mortar joints and repair masonry only when air temperature is between and 40 and 90 deg F (4 and 32 deg C) and is predicted to remain so for at least 7 days after completion of work.
- B. Cold-Weather Requirements: Comply with the following procedures for masonry repair and mortar-joint pointing:
 1. When air temperature is below 40 deg F (4 deg C), heat mortar ingredients, masonry repair materials, and existing masonry walls to produce temperatures between 40 and 120 deg F (4 and 49 deg C).
 2. When mean daily air temperature is below 40 deg F (4 deg C), provide enclosure and heat to maintain temperatures above 32 deg F (0 deg C) within the enclosure for 7 days after repair and pointing.
- C. Hot-Weather Requirements: Protect masonry repair and mortar-joint pointing when temperature and humidity conditions produce excessive evaporation of water from mortar and repair materials. Provide artificial shade and wind breaks and use cooled materials as required. Do not apply mortar to substrates with temperatures of 90 deg F (32 deg C) and above.
- D. Patch masonry only when air and surface temperatures are between and 55 and 100 deg F (13 and 38 deg C) and are predicted to remain above 55 deg F (13 deg C) for at least 7 days after completion of work. On days when air temperature is predicted to go above 90 deg F (32 deg C), schedule patching work to coincide with time that surface being patched will be in shade or during cooler morning hours.

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- E. Clean masonry surfaces only when air temperature is 40 deg F (4 deg C) and above and is predicted to remain so for at least 7 days after completion of cleaning.

1.08 SEQUENCING AND SCHEDULING

- A. Order replacement materials at earliest possible date, to avoid delaying completion of the Work.
- B. Perform masonry restoration work in the following sequence:
 - 1. Repair existing masonry, including replacing existing masonry with new masonry materials.
 - 2. Rake out existing mortar from joints indicated to be repointed.
 - 3. Inspect for open mortar joints and repair before cleaning to prevent the intrusion of water and other cleaning materials into the wall.
 - 4. Point existing mortar joints of masonry indicated to be restored.
 - 5. Clean masonry surfaces.
- C. As scaffolding is removed, patch anchor holes used to attach scaffolding. Patch holes in masonry units to match existing color and texture. Patch holes in mortar joints to comply existing color and texture.

1.09 LEED Requirements

- A. Local/Regional Materials: Masonry and mortar supplier shall be located within 500 miles of the project location. In addition, all ingredients within the mortar mix shall be extracted, harvested or recovered within 500 miles of the project location. Submit documentation of manufacturing locations and origins of materials.
- B. Low emitting adhesives and sealants: Provide water-based, biodegradable form coating with maximum VOC content of 55 grams/liter. Provide cut sheet and/or material safety data sheet for form coating with VOC levels highlighted.
- C. Waste Management:
 - 1. Before work commences, designate locations or uses for excess mortar.
 - 2. Designate a location for cleaning out mixers.
 - 3. Collect waste and place in designated area for recycling.

PART 2 -PRODUCTS

2.01 MASONRY MATERIALS

- A. Salvaged Face Brick and Accessories: Provide face brick to the greatest extent possible using salvaged bricks from the same job site. Bricks shall be clean and free of mortar/paint and other foreign material. If salvaged bricks are not available in sufficient quantity or quality, provide new face brick and accessories.
 - 1. Source salvaged bricks from demolition areas or other new exterior wall openings.

- B. **New Face Brick and Accessories:** Provide new face brick and accessories, including specially molded, ground, cut, or sawed shapes where required to complete masonry restoration work.
 - 1. Provide units with colors, size and shape, surface texture, and physical properties to match existing and meet owner's approval.
 - 2. Provide specially molded shapes for applications where shapes produced by sawing would result in sawed surfaces being exposed to view.
 - 3. Provide specially ground units, shaped to match patterns, for arches and where indicated.
- C. **Building Brick:** Provide building bricks complying with ASTM C 62, of same vertical dimension as face brick, for masonry work concealed from view.
 - 1. Grade SW, MW, or NW for concealed backup.

2.02 MORTAR MATERIALS

- A. **Portland Cement:** ASTM C 150, Type I or Type II.
- B. **Hydrated Lime:** ASTM C 207, Type S.
- C. **Factory-Prepared Lime Putty:** Screened, fully-slaked lime putty, prepared from pulverized lime complying with ASTM C 5.
- D. **Mortar Sand:** ASTM C 144, unless otherwise indicated.
 - 1. For pointing mortar, provide sand with rounded edges.
 - 2. Match size, texture, and gradation of existing mortar sand as closely as possible. Blend several sands, if necessary, to achieve suitable match.
- E. **Mortar Pigments:** Natural and synthetic iron oxides and chromium oxides, compounded for mortar mixes. Use only pigments with a record of satisfactory performance in masonry mortars. Use as required to match existing mortar color.
- F. **Water:** Potable

2.03 CLEANING MATERIALS

- A. **Water for Cleaning:** Potable.
- B. **Job-Mixed Detergent Solution:** Solution prepared by mixing 2 cups (0.5 L) of tetrasodium polyphosphate (TSPP), 1/2 cup (125 mL) of laundry detergent, and 20 quarts (20 L) of hot water for every 5 gal. (20 L) of solution required.
- C. **Nonacidic Gel Cleaner:** Manufacturer's standard nonacidic gel containing detergents and chelating agents and specifically formulated for cleaning masonry surfaces. Cleaner shall have a pH between 6 and 9 and shall not be considered a hazardous waste according to 40 CFR 261.
- D. **Nonacidic Liquid Cleaner:** Manufacturer's standard mildly alkaline liquid cleaner formulated for removing mold, mildew, and other organic soiling from ordinary building materials, including polished stone, brick, aluminum, plastics, and wood.
- E. **Alkaline Prewash Cleaner:** Manufacturer's standard alkaline cleaner for prewash applications used only where followed by an acidic cleaner of type indicated for afterwash.
- F. **Products:** Subject to compliance with requirements, provide one of the following:

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1. Restoration Cleaning:
 - a. Restoration Cleaner; ProSoCo, Inc.
 - b. Diedrich 101; Diedrich Chemicals, Inc.
 - c. 801 Heavy Duty Masonry Cleaner; ABR Products, Inc.
2. Nonacidic Liquid Cleaner:
 - a. Bio-Cleanse; Dominion Restoration, Inc.
3. Alkaline Prewash Cleaner:
 - a. Sure Klean 786 Prewash; ProSoCo, Inc.

2.04 MISCELLANEOUS MATERIALS

- A. Masonry Veneer Anchors, Triangular, Non-Adjustable Type: Anchors designed for masonry veneer attachment consisting of a 3/16-inch - diameter, hot-dipped galvanized triangular tie factory assembled to 12 gage, hot-dipped galvanized anchor with 5/16" hole for fastener.
- B. Masonry Repair Anchors, Spiral Type: Type 304 stainless-steel spiral rods designed to anchor to backing and veneer. Anchors are flexible in plane of veneer but rigid perpendicular to it.
 1. Provide driven in anchors designed to be installed in drilled holes and relying on screw effect rather than adhesive to secure them to backup and veneer.
 - a. Helifix 8mm Stainless Steel Helibar™
 - b. Heckmann Building Products, Inc. #391 Remedial Tie
 - c. Hohmann & Barnard, Inc., Helix Spiro-Ties
- C. Concrete Masonry Units: ASTM C90, Type 1 Standard, F'm: 1500 psi in 28 Days.

2.05 MORTAR MIXES

- A. Measurement and Mixing: Measure cementitious materials and sand in a dry condition by volume or equivalent weight. Do not measure by shovel; use known measure. Mix materials in a clean, mechanical batch mixer.
 1. Mixing Pointing Mortar: Thoroughly mix cementitious materials and sand together before adding any water. Then mix again adding only enough water to produce a damp, workable mix that will retain its form when pressed into a ball. Maintain mortar in this dampened condition for 15 to 30 minutes. Add remaining water in small portions until mortar reaches desired consistency. Use mortar within one hour of final mixing; do not re-temper or use partially hardened material.
- B. Do not use admixtures of any kind in mortar, unless otherwise indicated.
- C. Mortar Proportions: Mix mortar materials in the following proportions:
 1. Pointing Mortar for Brick: 1 part portland cement, 1 parts lime, and 6 parts sand (Type N).
 2. Rebuilding (Setting) Mortar: Same as pointing mortar.
- D. Colored Mortar: Produce mortar of color required by using selected ingredients. Do not adjust proportions without Architect's approval.
 1. Mortar Pigments: Where mortar pigments are indicated, do not exceed a pigment-to-cement ratio of 1:10 by weight.

PART 3 -EXECUTION

3.01 PROTECTION

- A. Protect persons, motor vehicles, surrounding surfaces of building being restored, building site, plants, and surrounding buildings from harm resulting from masonry restoration work.
 - 1. Erect temporary protective covers over walkways and at points of pedestrian and vehicular entrance and exit that must remain in service during course of restoration and cleaning work.
- B. Prevent mortar from staining face of surrounding masonry and other surfaces.
 - 1. Cover sills, ledges, and projections to protect from mortar droppings.
 - 2. Keep wall area wet below rebuilding and pointing work to discourage mortar from adhering.
 - 3. Immediately remove mortar in contact with exposed masonry and other surfaces.
 - 4. Clean mortar splatters from scaffolding at end of each day.
- C. Cleaning
 - 1. Prevent chemical cleaning solutions from coming into contact with pedestrians, motor vehicles, landscaping, buildings, and other surfaces that could be injured by such contact.
 - 2. Do not clean masonry during winds of sufficient force to spread cleaning solutions to unprotected surfaces. Neutralize and collect alkaline wastes for disposal off Owner's property. (NOTE: Contractor may seek approval for environmentally friendly materials, through Utility, to allow for their runoff into the city storm sewer.).
 - 3. Dispose of runoff from cleaning operations by legal means and in a manner that prevents soil erosion, undermining of paving and foundations, damage to landscaping, and water penetration into building interiors.
 - 4. Erect temporary protection covers over pedestrian walkways and at points of entrance and exit for persons and vehicles that must remain in operation during course of masonry restoration work.

3.02 UNUSED ANCHOR REMOVAL

- A. Remove masonry anchors, brackets, wood nailers, embedded ferrous metals and other extraneous items no longer in use unless indicated to remain.
 - 1. Remove items carefully to avoid spalling or cracking masonry.
 - 2. If item cannot be removed without damaging surrounding masonry, cut off item flush with surface and core drill surrounding masonry and item as close around item as practical. Core to a minimum depth of 2" below surface and a maximum depth of 4". Remove core and cut back item. Patch brick or replace brick as required.
 - 3. Patch holes where items were removed unless directed to remove and replace units.

3.03 BRICK REMOVAL AND REPLACEMENT

- A. Remove bricks that are damaged, heavily spalled, deteriorated, or as otherwise indicated. Carefully demolish or remove entire units from joint to joint, without damaging surrounding masonry, in a manner that permits replacement with full-size units.
 - 1. When removing single bricks, remove material from center of brick and work toward

outside edges.

- B. Support and protect remaining masonry that surrounds removal area. Maintain flashing, reinforcement, lintels, and adjoining construction in an undamaged condition.
- C. Notify Engineer of unforeseen detrimental conditions including voids, cracks, bulges, and loose masonry units in existing masonry backup, rotted wood, rusted metal, and other deteriorated items.
- D. Remove in an undamaged condition (Salvage) as many whole bricks as possible.
 - 1. Remove mortar, loose particles, and soil from brick by cleaning with hand chisels, brushes, and water.
 - 2. Store brick for reuse, as indicated.
 - 3. Deliver cleaned brick not required for reuse to Owner, unless otherwise directed.
- E. Clean bricks surrounding removal areas by removing mortar, dust, and loose particles in preparation for replacement.
- F. Install replacement brick into bonding and coursing pattern of existing brick. If cutting is required, use a motor-driven saw designed to cut masonry with clean, sharp, unchipped edges.
- G. In areas of rebuild, repoint back-up wythe, mortar collar joint, and fasten new wythe to sound back-up with veneers anchors spaced at 24" o.c. (max) horizontal and 16" o.c. (max) vertical.
- H. Lay replacement brick with completely filled bed, head, and collar joints. Butter ends with sufficient mortar to fill head joints and shove into place. Wet both replacement and surrounding bricks that have ASTM C 67 initial rates of absorption (suction) of more than 30 g/30 sq. in. per min. (30 g/194 sq. cm per min.). Use wetting methods that ensure that units are nearly saturated but surface is dry when laid. Maintain joint width for replacement units to match existing joints.
 - 1. Tool exposed mortar joints to be concave.

3.04 CLEANING MASONRY, GENERAL

- A. Proceed with cleaning in an orderly manner; work from top to bottom of each scaffold width and from one end of each elevation to the other.
- B. Use only those cleaning methods indicated for each masonry material and location.
 - 1. Do not use wire brushes or brushes that are not resistant to chemical cleaner being used. Do not use plastic-bristle brushes if natural-fiber brushes will resist chemical cleaner being used.
 - 2. Use spray equipment that provides controlled application at volume and pressure indicated, measured at spray tip. Adjust pressure and volume to ensure that cleaning methods do not damage masonry.
 - a. Equip units with pressure gages.
 - 3. For water spray application, use fan-shaped spray tip that disperses water at an angle of 25 to 50 degrees.
- C. Perform each cleaning method indicated in a manner that results in uniform coverage of all surfaces, including corners, moldings, and interstices, and that produces an even effect

without streaking or damaging masonry surfaces.

- D. Preliminary Cleaning: Before beginning general cleaning, remove extraneous substances that are resistant to cleaning methods being used. Extraneous substances include paint, caulking, asphalt, and tar.
 - 1. Carefully remove heavy accumulations of material from surface of masonry with a sharp chisel. Do not scratch or chip masonry surface.
- E. Water Spray Applications: Unless otherwise indicated, hold spray nozzle at least 8 inches (150 mm) from surface of masonry and apply water in horizontal back and forth sweeping motion, overlapping previous strokes to produce uniform coverage.
- F. After cleaning is complete, remove protection no longer required. Remove tape and adhesive marks.

3.05 CLEANING BRICKWORK

- A. Detergent Cleaning:
 - 1. Wet masonry with cold water applied by low-pressure spray.
 - 2. Scrub masonry with detergent solution using medium-soft brushes until soil is thoroughly dislodged and can be removed by rinsing. Use small brushes to remove soil from mortar joints and crevices. Dip brush in solution often to ensure that adequate fresh detergent is used and that masonry surface remains wet.
 - 3. Rinse with cold water applied by medium-pressure spray to remove detergent solution and soil.
 - 4. Repeat procedure above where required to produce the cleaning effect established by mockup.

3.06 REPOINTING MASONRY

- A. Rake out and re-point mortar joints to the following extent:
 - 1. All joints in areas indicated.
 - 2. Joints where mortar is missing or where they contain holes.
 - 3. Cracked joints where cracks can be penetrated at least 1/4 inch (6 mm) by a knife blade 0.027 inch (0.7 mm) thick.
 - 4. Cracked joints where cracks are 1/8 inch (3 mm) or more in width and of any depth.
 - 5. Joints where they sound hollow when tapped by metal object.
 - 6. Joints where they are worn back 1/4 inch (6 mm) or more from surface.
 - 7. Joints where they are deteriorated to point that mortar can be easily removed by hand.
 - 8. Joints, other than those indicated as sealant-filled joints, where they have been filled with substances other than mortar.
- B. Do not rake out and re-point joints where not required
- C. Rake out joints as follows:
 - 1. Remove mortar from joints to depth not less than 1 inch or not less than that required to expose sound, unweathered mortar.

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2. Remove mortar from masonry surfaces within raked-out joints to provide reveals with square backs and to expose masonry for contact with pointing mortar. Brush, vacuum, or flush joints to remove dirt and loose debris.
3. Do not spall edges of masonry units or widen joints. Replace or patch damaged masonry units as directed by Architect/Engineer.
 - a. Cut out mortar by hand with chisel and mallet. Power-operated grinders may be used with Engineer's approval based on demonstrated ability of operators to use tools without damaging masonry. In no case shall vertical joints be cut with power tools.
 - b. Cut out center of mortar bed joints using angle grinders with diamond-impregnated metal blades. Remove remaining mortar by hand with chisel and mallet.
- D. Notify Architect/Engineer of unforeseen detrimental conditions including voids in mortar joints, cracks, loose masonry units, rotted wood, rusted metal, and other deteriorated items.
- E. Point joints as follows:
 1. Rinse masonry-joint surfaces with water to remove dust and mortar particles. Time rinsing application so, at time of pointing, joint surfaces are damp but free of standing water. If rinse water dries, dampen masonry-joint surfaces before pointing.
 2. Apply pointing mortar first to areas where existing mortar was removed to depths greater than surrounding areas. Apply in layers not greater than 3/8 inch (9 mm) until a uniform depth is formed. Fully compact each layer thoroughly and allow it to become thumbprint hard before applying next layer.
 3. After low areas have been filled to same depth as remaining joints, point all joints by placing mortar in layers not greater than 1/4 inch (6 mm). Fully compact each layer and allow to become thumbprint hard before applying next layer. Where existing bricks have worn or rounded edges, slightly recess finished mortar surface below face of masonry to avoid widened joint faces. Take care not to spread mortar over edges onto exposed masonry surfaces or to feather edge mortar.
 4. When mortar is thumbprint hard, tool joints to concave. Remove excess mortar from edge of joint by brushing.
- F. Cure mortar by maintaining in thoroughly damp condition for at least 72 hours including weekends and holidays.
 1. Acceptable curing methods include covering with wet burlap and plastic sheeting, periodic hand misting, and periodic mist spraying using system of pipes, mist heads, and timers.
 2. Adjust curing methods to ensure that pointing mortar is damp throughout its depth without eroding surface mortar.
- G. Where repointing work precedes cleaning of existing masonry, allow mortar to harden at least 30 days before beginning cleaning work.

3.07 FINAL CLEANING

- A. After mortar has fully hardened, thoroughly clean exposed masonry surfaces of excess mortar and foreign matter; use wood scrapers, stiff-nylon or -fiber brushes, and clean water, spray applied at low pressure.
 1. Do not use metal scrapers or brushes.
 2. Do not use acidic or alkaline cleaners.
- B. Wash adjacent woodwork and other non-masonry surfaces. Use detergent and soft brushes or

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cloths.

- C. Clean masonry debris from roof; remove debris from gutters and downspouts. Rinse off roof and flush gutters and downspouts.
- D. Sweep and rake adjacent pavement and grounds to remove masonry debris. Where necessary, pressure wash surfaces to remove mortar, dust, dirt, and stains.

3.08 FIELD QUALITY CONTROL

- A. Owner's Project Representatives: Project representatives will be observing progress and quality of portion of the Work completed. Allow Project representatives use of scaffolding, as needed, to observe progress and quality of portion of the Work completed.
- B. Notify Project representatives in advance of times when lift devices and scaffolding will be relocated. Do not relocate lift devices and scaffolding until Project representatives have had reasonable opportunity to make observations of work areas at lift device or scaffold location.

END OF SECTION

SECTION 06 10 00

ROUGH CARPENTRY

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. The drawings and general conditions of the contract including General and Supplementary Conditions and other Division 1 Specification sections apply to work of this section.
- B. Examine all other sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.
- C. Coordinate work with that of all trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 DESCRIPTION OF WORK

- A. Work included: Provide labor, materials, and equipment necessary to complete the work of this Section, and without limiting the generality thereof furnish and install the following:
 - 1. Wood framing, including joists, rafters, outriggers, scab-ons, headers, posts, plates, and similar members.
 - 2. Wood grounds, nailars, and blocking.
 - 3. Roof sheathing and wood decking.
 - 4. Miscellaneous carpentry as indicated or required and not specified under other Sections of the Specifications.
 - 5. Fasteners and accessories as indicated and required for rough carpentry.
 - 6. Treated wood as specified.
- B. Related Work Specified Elsewhere:
 - 1. Clay Masonry Restoration and Cleaning: Section 040120.
 - 2. Underlayments, roofing, waterproofing: Division 7.

1.03 QUALITY ASSURANCE

- A. Codes and Standards: Comply with provisions of the latest edition of the following except where more stringent requirements are shown or specified:
 - 1. International Building Code, 2006 Edition – International Code Council
 - 2. ANSI/AF&PA (American Forest & Paper Association) – NDS National Design Specification for Wood Construction – Latest Edition

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3. ALSC (American Lumber Standards Committee) – Softwood Lumber Standards.
4. APA (American Plywood Association).
5. AWWA (American Wood Preservers Association) C1-All Timber Products – Preservative Treatment by Pressure Process.
6. NELMA (New England Lumber Manufacturer's Association).
7. NLGA (National Lumber Grades Authority)
8. NIST (National Institute of Standards and Technology, U. S. Department of Commerce [DOC])
9. NFPA (National Forest Products Association)
10. SPIB (Southern Pine Inspection Bureau).
11. WCLIB (West Coast Lumber Inspection Bureau).
12. WWPA (Western Wood Products Association).
13. ANSI/AITC A190.1 - Standard for Dimensions of Structural Glued Laminated timber.
14. ASTM D 2559 - Standard Specification for Adhesives for Structural Laminated Wood Products for Use Under Exterior (Wet Use) Exposure Conditions.
15. "Code of Federal Regulations, Part 1926" per the Occupational Safety and Health Administration (OSHA), Department of Labor (Latest Revision).

B. Lumber shall be supplied in accordance with the following agencies:

1. Lumber Grading Agency: Certified by NLGA for structural framing.
2. Sheathing Grading Agency: Certified by APA or ICBO approved certification agency. For non-APA rated plywood, provide ICC ES Evaluation report.
3. Grading stamp shall be on lumber and plywood.
4. Submit manufacturer's certificate certifying that products meet or exceed specified requirements.

1.04 SUBMITTALS

- A. Unless otherwise specified, submittals required in this section shall be submitted for review. Submittals shall be prepared and submitted in accordance with Division 1.
- B. General Contractor shall submit a Submittal Schedule to the engineer within 30 days after they have received the Owner's Notice to Proceed.
- C. All submittals shall be reviewed and returned to the Architect within 10 working days.
- D. Incomplete submittals will not be reviewed.

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- E. Submittals not reviewed by the General Contractor prior to submission to the Engineer will not be reviewed. Include on the submittal statement or stamp of approval by Contractor, representing that the Contractor has seen and examined the submittal and that all requirements listed in sections Division 1 have been complied with.
- F. Engineer will review submittals a maximum of two review cycles as part of their normal services. If submittals are incomplete or otherwise unacceptable and re-submitted, General Contractor shall compensate Engineer for additional review cycles.
- G. Hardcopy Submittals: Submit three prints. Prints will be reviewed by the Engineer, and then the Architect. One marked print will be returned to Contractor for printing and distribution. Multiple copies will not be marked by the Engineer.
- H. Electronic Submittals:
 - 1. Contractor shall include in the submittal schedule an indication of submittals that are intended to be submitted electronically. Upon receipt of the submittal schedule, the Engineer reserves the right to indicate submittals that will not be accepted electronically. Paper copies of such submittals shall be furnished as referenced in this specification.
 - 2. The submission of submittals electronically does not relieve the contractor of their responsibility to review the submittal prior to transmission to the Engineer. Electronic Submittals shall include contractor comments, and a statement and/or stamp of approval by Contractor, representing that the Contractor has seen and examined the submittal and that all requirements listed in this Section and Division 1 have been complied with. Electronic submittals without the Contractor's approval will be rejected and returned.
 - 3. The Engineer assumes no responsibility for the printed reproduction of submittals reviewed electronically, transmission errors or returned electronic submittals that become corrupted or are otherwise not accessible by the Contractor's or Subcontractor's computer hardware and/or software.
- I. Product Data: Submit producer's or manufacturer's specifications and installation instructions for the following products. Include laboratory test reports and other data to show compliance with specifications (including specified standards). Product data shall include ICC/ICBO Evaluation Reports indicating conformance to standards specified here within.
 - 1. Engineered Wood Products
 - 2. Pressure Treated Lumber
 - 3. Wood Decking including installation methods and product certification to meet design loads
 - 4. Sheathing
 - 5. Samples of Exposed to View Wood Members: Submit two samples, 6 inches long, illustrating wood grain, stain, and finish.
 - 6. Hangers, Hardware and Accessories

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- J. Wood Decking Samples: Two complete sets of finish samples of the specified species and with the specified pattern, size, texture, and finish.
- K. LEED Documentation: Refer to paragraph 1.06 of this section and Section 01352.

1.05 LEED Requirements

- A. Regional materials, regional manufacture: Use dimensioned lumber manufactured within 500 mile radius of project.
- B. Regional materials, regional extraction: Use dimensioned lumber extracted, harvested or recovered within 500 mile radius of project.
- C. Certified Wood: Provide lumber certified in accordance with the Forest Stewardship Council's (FSC) Principles and Criteria, for components including, but not limited to structural framing and general dimension framing, non-vented temporary construction applications such as bracing, concrete form work and pedestrian barriers.
- D. Waste Management:
 - 1. Schedule ordering of lumber and materials to minimize field cuts. Submit schedule as part of LEED documentation.
 - 2. Collect offcuts and scrap and place in designated areas for salvage use.
 - 3. Utilized offcut as blocking or for short length members.

1.06 DELIVERY, STORAGE, AND PROTECTION

- A. Protect materials from warping or other distortion by stacking to resist movement.
- B. Follow manufacturer's recommendations for storage of wood decking and connection hardware.
- C. Follow manufacturer's recommendations for storage of Engineered Wood Products and connection hardware.

PART 2 PRODUCTS

2.01 LUMBER MATERIALS

- A. Lumber, General: Factory-mark each piece of lumber with type, grade, mill and grading agency, except omit marking from surfaces to be exposed with transparent finish or without finish.
- B. Nominal sizes are indicated, except as shown by detail dimensions. Provide actual sizes as required by PS 20, for moisture content specified for each use.
 - 1. Provide dressed lumber, S4S, unless otherwise indicated.
 - 2. Provide seasoned lumber with 19% maximum moisture content at time of dressing.

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C. For structural framing (4" and wider and from 2" to 4" thick), provide the following grade and species:

1. Spruce-Pine-Fir (SPF) #1/2 or better, NLGA Graded, unless noted otherwise on Structural Drawings, Minimum Design Stresses:
 - a. Fb: 875 psi
 - b. Ft: 450 psi
 - c. Fv: 135 psi
 - d. Fc_u: 425 psi
 - e. Fc: 1,150 psi
 - f. E: 1,400,000 psi
2. Pressure treated lumber: Southern Yellow Pine #2 or better. Minimum Design Stresses:
 - a. Fb: 1,300 psi
 - b. Ft: 775 psi
 - c. Fv: 175 psi
 - d. Fc_u: 565 psi
 - e. Fc: 1,850 psi
 - f. E: 1,400,000 psi
3. See structural drawings for grades and bending stress at specific locations.

D. Wood Decking:

1. Provide decking designed for wind pressures per ASCE 7-05.
2. Species: Douglas Fir/Larch / Southern Pine. Grade: Service. Pattern: Standard Vee. Tongue-And Groove Edges: Center laminations shall be offset and machined to form a tongue and groove on both the edges. Ends: End matched (tongue-and-groove). Random Length Continuous Spans: 6' to 16', shipped in multiples of 1 foot and 1 inch short of nominal. Nominal Size: 3x8. Surface Texture: Coarse Sanded (18 grit). Moisture Content: 10% to 12% average, maximum 15%. Factory Finish - Stain: One coat of factory-applied, oven-dried acrylic, semi-transparent stain with mildewcide/fungicide – color to be coordinated with owner / architect.
3. Acceptable Manufacturer: Disdero Lumber Co., which is located at: P. O. Box 489 ; Clackamas, OR 97015; Toll Free Tel: 800-547-4209; Tel: 503-239-8888; Email: request_info@disdero.com; Web: www.lockdeck.com . Substitution requires pre-approval.

E. Miscellaneous Lumber: Provide wood for support or attachment of other work including

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cant strips, bucks, nails, blocking, furring, grounds, stripping and similar members. Provide lumber of sizes indicated, worked into shapes shown, and as follows:

1. Moisture content: 19% maximum for lumber items not specified to receive wood preservative treatment.
2. Grade: Construction Grade light framing size lumber of any species or board size lumber as required. Provide construction grade boards (NELMA, NLGA or WCLB) or No.2 boards (SPIB, NLGA, NELMA, or WWPA).

2.02 SHEATHING LOCATIONS

- A. Roof Sheathing: NIST/DOC PS-1 or PS-2 rated, Exposure 1, 5/8 inch thick, 48 x 96 inch sized sheets, square edges, unless noted. Provide H-clips per the manufacturer's recommendations.
- B. Thicknesses indicated are nominal.
- C. Sheathing shall be stamped with grading agency stamp

2.03 ENGINEERED WOOD PRODUCTS

- A. General: Provide engineered wood products acceptable to authorities having jurisdiction and for which, current model code research or evaluation reports exist that evidence compliance with building code in effect for Project. Provide depths and widths as indicated.
 1. Allowable Design Stresses: Provide engineered wood products with allowable design stresses, as published by manufacturer that meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis, and demonstrated by comprehensive testing performed by a qualified independent testing agency.
 2. Source and Species: Unless otherwise indicated, lumber sources in Engineered Wood Products shall be of single source and species.
 3. Adhesives shall be exterior type, complying with ASTM D2559.
 4. Substitutions: Substitutions of Engineered Wood Products other than those specified will be permitted only with written certification from the manufacturer that the substituted items "meets or exceeds" all properties of the specified product, including engineering, serviceability, aesthetic and durability characteristics. Substitutions shall not be made without written approval of the Architect and Engineer.
- B. Laminated-Veneer Lumber (LVL): Lumber manufactured by laminating wood veneers in a continuous press using an exterior-type adhesive complying with ASTM D 2559 to produce members with grain of veneers parallel to their lengths and complying with the following requirements:

Boise Cascade $F_b = 3080 \text{ psi}, E = 2.0 \times 10^6$
I-Level: $F_b = 2600 \text{ psi}, E = 1.9 \times 10^6$

2.04 ACCESSORIES

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A. Fasteners, Anchors, Connectors and Hardware:

1. Fasteners (for wood framing): Nail fasteners shall meet requirements of ASTM F1667. Unless noted otherwise, nails referenced on drawings are to be Common Nails with dimensions as follows:
 - a. 6d: 2" long by 0.113" diameter shank with 0.266" diameter head
 - b. 8d: 2 1/2" long by 0.131" diameter shank with 0.281" diameter head
 - c. 10d: 3" long by 0.148" diameter shank with 0.312" diameter head
 - d. 12d: 3 1/4" long by 0.148" diameter shank with 0.312" diameter head
 - e. 16d: 3 1/2" long by 0.162" diameter shank with 0.344" diameter head
 - f. 20d: 4" long by 0.192" diameter shank with 0.408" diameter head
 - g. 30d: 4 1/2" long by 0.207" diameter shank with 0.438" diameter head
 2. Anchor Bolts: ASTM A307 headed and SSTB Anchor Bolts by Simpson StrongTie, unless noted otherwise. "J" or "L" type anchor bolts shall not be substituted.
 3. Screw fasteners (where indicated on drawings or required to install connection hardware):
 - a. SD & SDS Screws by Simpson Strong Tie
 - b. RSS Screws by GRK Fasteners, (800) 263-0463
 - c. Timberlok Screws by Fasten Master.
 - d. Wood Screws: ANSI/ASME Standard B18.6.1
 4. Lag Screws: ANSI/ASME Standard B18.2.1. Provide lead hole per NDS Chapter 11.
 5. Through Bolts: ANSI/ASME Standard B18.2.1:
 - a. Holes for through bolts shall be a minimum of 1/32nd and a maximum of 1/16th larger than bolt diameter.
 - b. A standard cut washer shall be provided between the wood and bolt head, and wood and nut, unless noted otherwise.
- B. Structural Framing Connectors, Hardware or Joist Hangers: As indicated on the drawings or sized to suit framing conditions, manufactured by Simpson or approved alternate.
1. Unless noted, fill all nail holes to achieve manufacturer's maximum reaction rating.
 2. Use nail diameter and length as specified by connector manufacturer. Substitutions of pneumatic nails or "joist hanger" (non standard length) nails shall not be made without written authorization of the Engineer.

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- C. Construction Adhesive: APA AFG-01, approved for use with type of construction panel indicated by both adhesive and panel manufacturer.
- D. ALL ANCHORS, CONNECTORS AND FASTENERS IN CONTACT WITH PRESSURE TREATED LUMBER, AND/OR AT EXTERIOR EXPOSURE SHALL HAVE COATINGS AS FOLLOWS, UNLESS NOTED OTHERWISE:
 - 1. Anchor Bolts/Bolts/Lag Bolts: Hot Dipped Galvanized, ASTM A123
 - 2. Connection Hardware, unless otherwise noted: Simpson Strongtie Z-Max (G185 per ASTM A653) or Hot Dipped Galvanized (HDG, ASTM A123). Use hot dipped galvanized fasteners, ASTM A153 with these hangers.
 - 3. Nails and Fasteners, unless otherwise noted: Hot Dipped Galvanized, ASTM A153. Use type 304 or 316 stainless steel fasteners with stainless hardware
 - 4. Proprietary coatings used in conjunction with pressure treated fastener coatings will be permitted with written permission from the Architect and Engineer.

2.05 FACTORY WOOD TREATMENT

A. PRESSURE TREATED LUMBER (P. T.)

- 1. Wood Preservative (Pressure Treatment): AWWA Treatment, ACQ-C (amine formulated), ACQ-D or CA-B, ammonia free.
- 2. The use of ACZA and CCA treated lumber is strictly prohibited.
- 3. Retention:
 - a. Above Ground Use: ACQ: 0.25 pcf, CA-B: 0.10 pcf
 - b. Ground Contact Use: ACQ: 0.40 pcf, CA-B: 0.21 pcf.
- 4. See Section the "Fasteners, Anchors, Connectors and Hardware" portion of this specification for fastener, anchor and hardware requirements for use with pressure treated lumber.
- 5. Pressure treated lumber shall not contain ammonia unless authorized by the Architect and Engineer. Ammonia content shall be verified with the Pressure Treatment manufacturer.

PART 3 EXECUTION

3.01 FRAMING

- A. Set members level and plumb, in correct position.
- B. Make provisions for erection loads, and for sufficient temporary bracing to maintain structure safe, plumb, and in true alignment until completion of erection and installation of permanent bracing.
- C. Place horizontal members, crown side up.

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- D. Construct load bearing framing members full length without splices.
- E. Coordinate installation of wood decking, joist members, rafter members.
- F. Curb roof openings except where prefabricated curbs are provided. Form corners by alternating lapping side members.
- G. Coordinate curb installation with installation of decking and support of deck openings, and roofing vapor retardant.
- H. Rough Carpentry Fastening Schedule: Unless otherwise indicated on the drawings, provide minimum nailing and fastening per IBC Table 2304.9.1.

3.02 SHEATHING

- A. Install wood decking per manufacturer's instructions.
- B. Secure roof sheathing with longer edge perpendicular to framing members and with ends staggered and sheet ends over bearing provide gap between panels as recommended by manufacturer. Utilize H-clips at panel edges per manufacturer's recommendations or as indicated. Provide blocking where indicated on the Drawings.

3.03 TOLERANCES

- A. Framing Members: 1/4 inch from true position, maximum.
- B. Fasteners Driving Tolerance: Unless noted otherwise, fastener heads shall be driven flush with attached framing member or sheathing. Maximum indentation tolerance from flush shall be 1/16 inch.

END OF SECTION