



ADDENDUM 001

Project: HCCS West Loop South Roofing Retrofit
5505 West Loop South
Houston, Texas 77081

Addendum No: 001

Owner: Houston Community College System
C/O Procurement Officer: Mr. Arturo Lopez
Procurement Operations Department
3100 Main Street, 11th Floor
Houston, Texas 77002

Addendum Issued by: Walter P Moore
1301 McKinney, Suite 1100
Houston, Texas 77010

Owner Bid Number: IFB No. 20-15

Issue Date: January 16, 2020

Note: This Addendum forms a part of the Contract Documents and modifies the original Bidding Documents and previous addenda as noted below. Acknowledge receipt of this Addendum as part of the bid submittal package as required by the Owner. Failure to do so may subject Bidder to disqualification.

Modifications to Previous Addenda:

None

Description:

- 001-1. Houston Community College Procurement/Administrative personnel and Walter P Moore have provided responses to questions and inquiries submitted by prospective bidders. See Appendix A.
- 001-2. Houston Community College Administrative personnel have provided original roof framing plan construction drawings provided as part of this Addendum for reference. See Appendix B.
- 001-3. Walter P Moore has reissued Specification Section "Task Items" to correct terminology regarding the type of facility. See Appendix C.
- 001-4. Walter P Moore has reissued Specification Section "Metal Roof Recover Retrofit" to update accessory products for the cover board and liquid-applied flashing applications. See Appendix C.
- 001-5. Walter P Moore has issued supplementary Details EX1 and EX2 for new raised primary and secondary thru-wall scuppers. Details EX1 and EX2 shall supersede Details 3/R3.0 and 4/R3.0, respectively, as issued in the original roofing retrofit construction documents for the east perimeter gutter. Contractor shall include an allowance in their bid submittal to install crickets between the new scuppers along the east perimeter wall for diverting water to the new scuppers and provide positive drainage. See Appendix D.

Attachments:

Appendix A: Questions and Answers No. 001

Appendix B: Original Construction Drawings (select sheets)

- Roof Framing Plan by BGA Engineers, Sheet S3 dated February 17, 1999
- Roof Framing Plan by Rigid Building Systems, Sheet E1 dated May 10, 1999
- Roof Sheeting Layout by Rigid Building Systems, Sheet E2 dated May 10, 1999

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HCCS IFB No. 20-15


Appendix C: Specifications

- Section 01 10 00 – Task Items (updated)
 - Original specification section has been modified. Additions indicated by bold italicized text.
- Section 07 32 70 – Metal Roof Recover Retrofit (updated)
 - Original specification section has been modified. Additions indicated by bold italicized text.

Appendix D: Supplemental Details

- Detail EX1: Existing Thru-Wall Scuppers
- Detail EX2: New Thru-Wall Scuppers

Issued by: Walter P Moore and Associates



Project Manager: Kimani Augustine, P.E.

APPENDIX A

Questions and Answer No. 001

REQUEST FOR PROPOSAL
PROJECT NO. IFB 20-15
WEST SOUTH LOOP ROOFING RETROFIT
QUESTIONS AND ANSWERS No. 001

Date: **January 16, 2020**

Subject: Questions and Answers Responses

Q1. Will temporary auxiliary Air Conditioning be required during HVAC modifications?

HCC Administrative Response: *Temp A/C will be required if the contractor has plans to shut down A/C units during the facility's standard work hours. The hours of operation are: M-Th 7am to 7pm; Fri. 7am to 5pm; Sat 8am till noon.*

Q2. Will weekend or temporary shutdown of HVAC during HVAC modifications be acceptable in lieu of temporary auxiliary standalone HVAC units?

HCC Administrative Response: *Weekend and/or after-hours work is acceptable with approval of building occupants and HCC project manager.*

Q3. What ambient temperature ranges will require the use of temporary auxiliary standalone HVAC units if needed?

HCC Administrative Response: *69-72 °F*

Q4. What will be the working hours and days? Will there be any time constraints on work hours and days?

HCC Administrative Response: *M—F standard work hours. We don't anticipate any time constraints for roof top work. All work inside the building will need to be coordinated and approved by the building occupants and the HCC project manager.*

Q5. When will HVAC jobsite visit take place?

HCC Administrative Response: *01-16-2020 at 11:00 AM*

Q6. Will we have the opportunity to re-visit project site with subcontractors i.e. electricians, plumbers, lightning protection?

HCC Administrative Response: *Yes*

Q7. What are the existing conditions of the HVAC units on the interior of the building?

HCC Administrative Response: *All Roof Top Units are currently being used to condition the building.*

Q8. Are there Blueprints/Plans of the current tenants (Houston Methodist) space?

HCC Administrative Response: Yes

Q9. Can we schedule a walk-through of the space to inspect the existing conditions before the bid due date?

HCC Administrative Response: 01-16-20 at 11:00 AM

Q10. Substitution Requests.

Walter P Moore (Engineer) Response: *Substitution requests have not been approved due to lack of submittal of all the requested information and documentation.*

Q11. What is the interior use schedule for the various areas? This is of particular concern given the OSHA requirement of working overhead to create the access required for the interior insulation removal and replacement.

Walter P Moore (Engineer) Response: *Refer to Specification Section "Task Items". These spaces may also be inspected by the prospective bidders during the interior space walkthrough (refer to Question 9).*

Q12. *Contractor A* believes that the coating of the existing interior gutter system is problematic. To address this *Contractor A* would like to submit an alternate drainage system whereby *Contractor A* would fill in the existing gutter and install new through-wall scuppers with drainage cricketing to equal the existing drainage profile and in accordance with roofing industry standards. This would also afford the roof side of the drainage system to be included in the roof membrane manufacturer's warranty when the specified gutter lining with a coating would not be included. Would this be considered as an acceptable alternate installation?

Walter P Moore (Engineer) Response: *See Item 001.5 in Bid Addendum 001. These details shall supersede the originally issued details for this condition.*

Q13. The front parapet is quite low. Are you going to require the height to be raised to 8" over finished roof membrane height so as to install a sheet metal parapet cap? Or can this be detailed with a nailer equaling the new insulation height and install a warrantable metal roof edge detail?

Walter P Moore (Engineer) Response: *See Detail 2/R3.0 in Roofing Retrofit Construction Documents issued by Walter P Moore.*

Q14. The IBC code requirement for a retrofit roof installation is that a structural engineer performs a load calculation and issue a stamped report stating that the newly added roof system weight will not overload the existing structures' design limits. Has this evaluation been performed or is the contractor expected to get this done once the contract is awarded? The latter could bring up all kinds of design issues requiring change orders dealing with an unforeseen adverse structural load condition.

Walter P Moore (Engineer) Response: *Structural loading impacts of the recover roofing system was considered in the design of the signed and sealed construction documents package issued by Walter P Moore.*

- Q15. The specification requires the pullout tests to be performed by the contractor after the contract has been awarded. This is critical information in determining how many fasteners will be required for the new system attachment.

Walter P Moore (Engineer) Response: *Contractor shall follow specified requirements in the design documents during Construction.*

- Q16. Specs state that this is a Law Enforcement Critical Facility. What specific site access requirements are associated with this classification of facility?

Walter P Moore (Engineer) Response: *The facility is **not** a Law Enforcement Critical Facility. The Task Item Specification has been reissued in this addendum to address this item.*

- Q17. Will a fully enclosed plastic enclosure be required at areas of insulation replacement? If No, please describe extent of protection required for bidding purposes.

Walter P Moore (Engineer) Response: *Refer to Specification Section "Task Items".*

- Q18. Where interior access is required, will foot traffic protection be required in hall ways?

Walter P Moore (Engineer) Response: Yes

- Q19. At site walk we all agreed that internal gutter needs to be eliminated. Plans call for existing internal gutter to be coated but specifications detail internal gutter to be replaced with new stainless steel soldered internal gutter. Please clarify if we can eliminate internal gutter, if not then clarify if internal gutters are to be coated or replaced with stainless steel.

Walter P Moore (Engineer) Response: *See Q12 response.*

- Q20. If internal gutters are eliminated and crickets are added, It was suggested that scupper opening be widened to accommodate roof drainage. Please specify size of scupper openings.

Walter P Moore (Engineer) Response: *See Q12 response.*

- Q21. Will over flow scuppers be required and if so what size?

Walter P Moore (Engineer) Response: *See Q12 response.*

Q22. In lieu of widening existing scuppers and adding overflow scuppers, can new primary and overflow roof drains be added and plumbed to exterior walls with associated conductor heads and downspouts? We feel this will be more cost effective.

Walter P Moore (Engineer) Response: *See Q12 response. Roof drains will not be considered for this application.*

Q23. Please clarify if sheet metal is required to be 24 GA. Kynar 500 prefinished steel or stainless steel?

Walter P Moore (Engineer) Response: *Refer to Specification Section "Sheet Metal Flashing".*

Q24. If sheet metal is 24 GA. Kynar 500 prefinished sheet metal is required, please specify if color is to be metallic or standard color range?

Walter P Moore (Engineer) Response: *Refer to Specification Section "Sheet Metal Flashing".*

Q25. Please specify which construction assemblies will require mock ups?

Walter P Moore (Engineer) Response: *Mockups will be required at typical sheet metal flashing applications such as coping, counterflashing, etc. Refer to Specification Section "Sheet Metal Flashing" for additional information.*

Q26. In Section 2 - Sealed Bid Form there is not a task item for the \$63,500 contingency amount. How will the \$63,500 contingency amount be applied to proposal?

HCC Procurement Response: *No, bidders were instructed that the contingency amount was provided but not to include their base bid.*

Q27. Will the \$63,500 contingency amount be included in base bid or as separate line item?

HCC Procurement Response: *See Q26 response.*

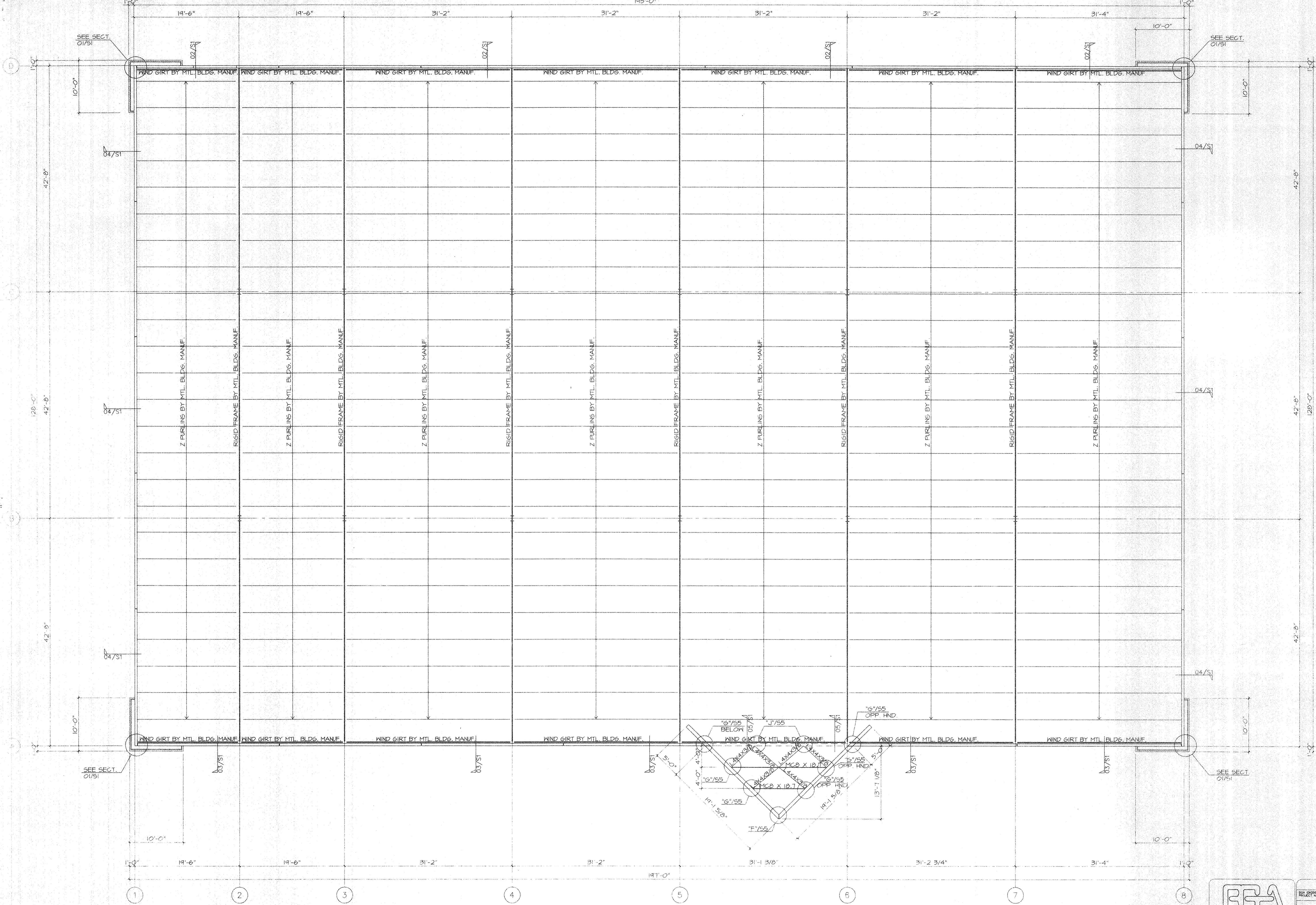
Q28. What amount of evaluation points are dedicated to SBE participation rate? The section is blank in Section 5 - General Information

HCC Procurement Response: *Construction projects have no point evaluation. HCC asks contractors to consider certified small business to help meet the 35% goal.*

APPENDIX B

Original Construction Documents (select sheets)





ROOF FRAMING PLAN
SCALE: 1/8" = 1'-0"

NOTE: SEE METAL BUILDING MANUFACTURER'S DRAWINGS FOR ROOF SLOPE, PURLIN SIZE AND SPACING, COLUMN SIZE AND RIGID FRAME

SEA
98190

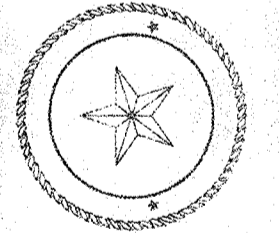
SEA
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SEA
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3/5/99 ISSUED FOR CONSTRUCTION

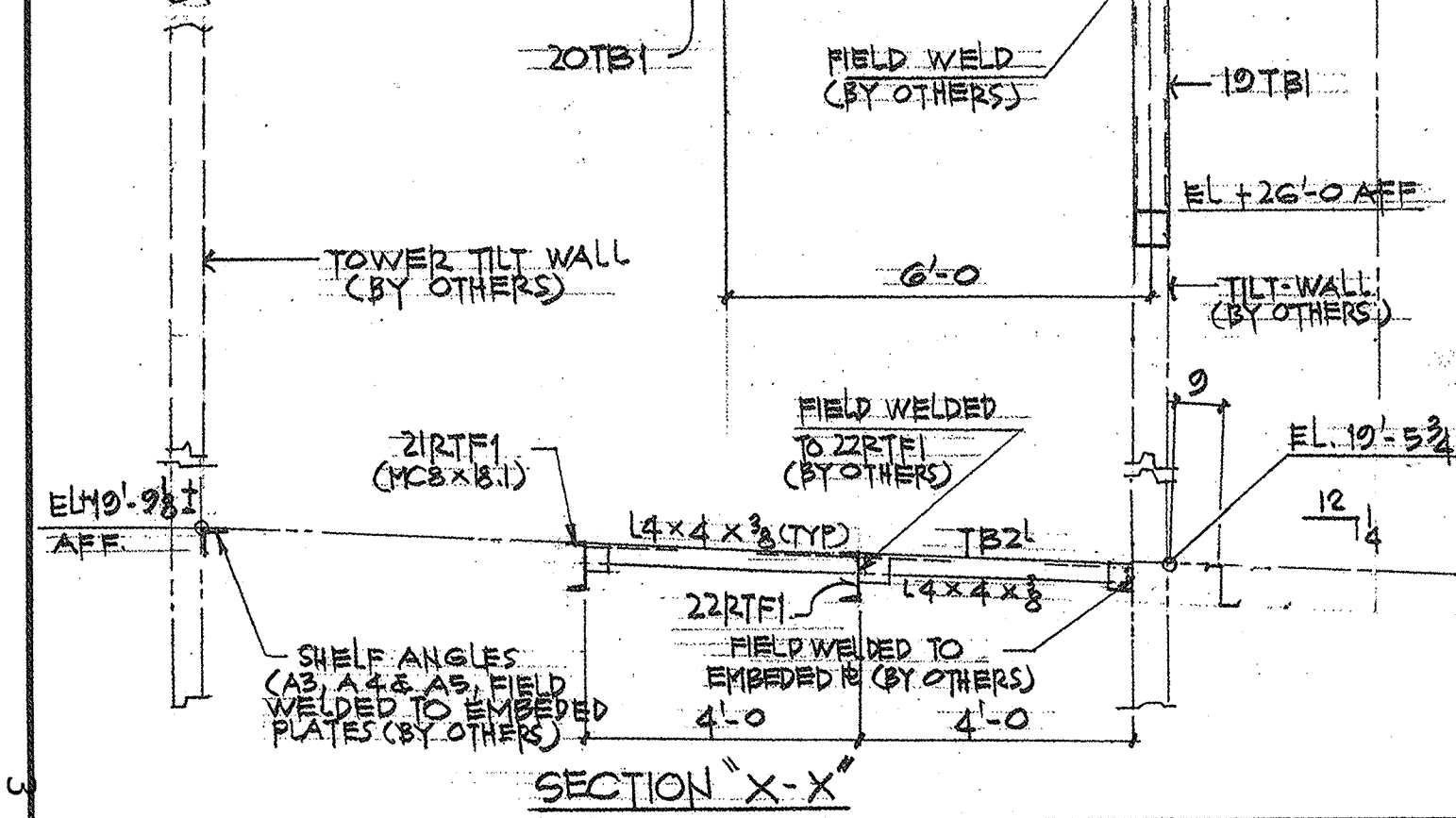
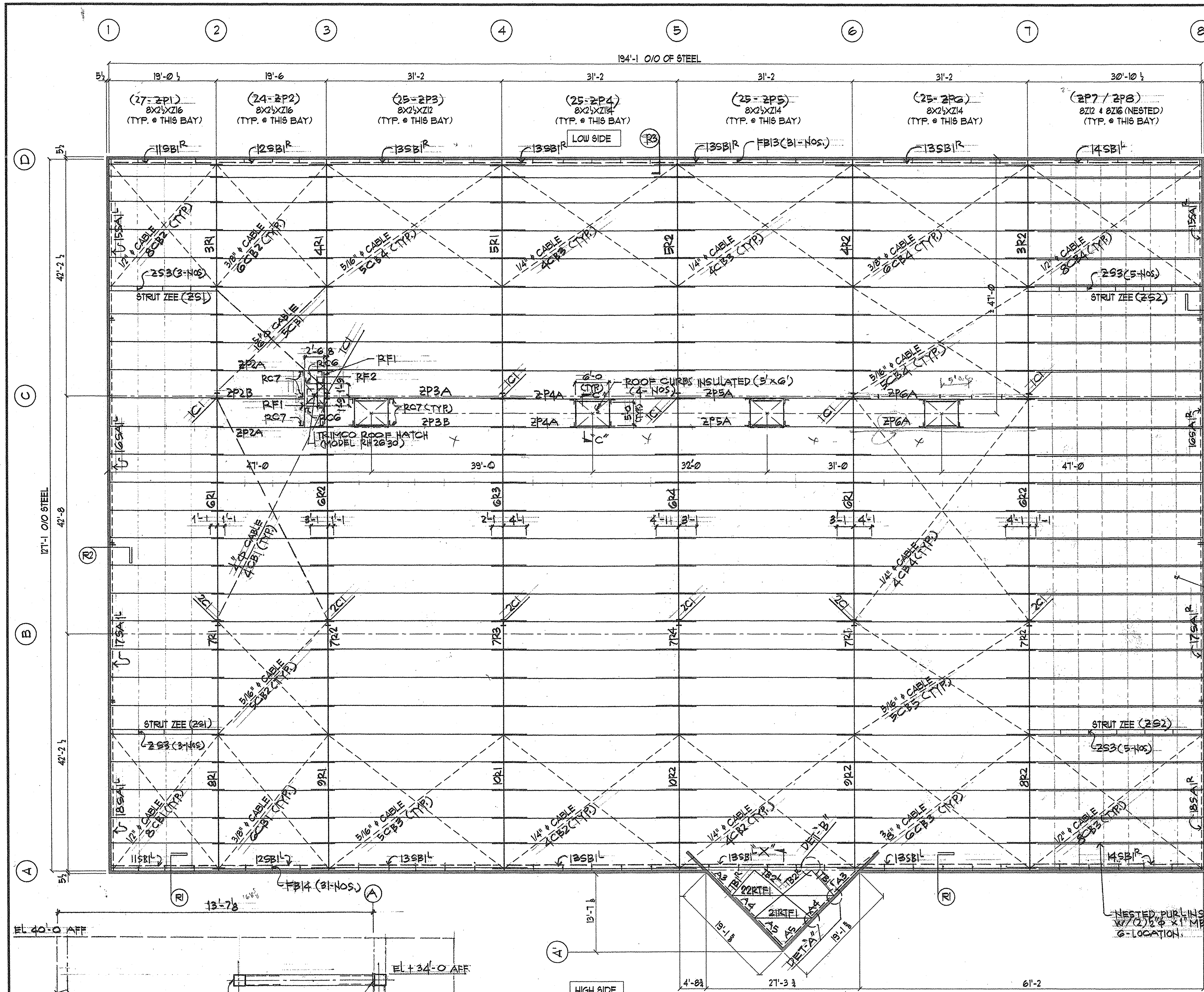
SHEET
OF **S3**
JOB NO



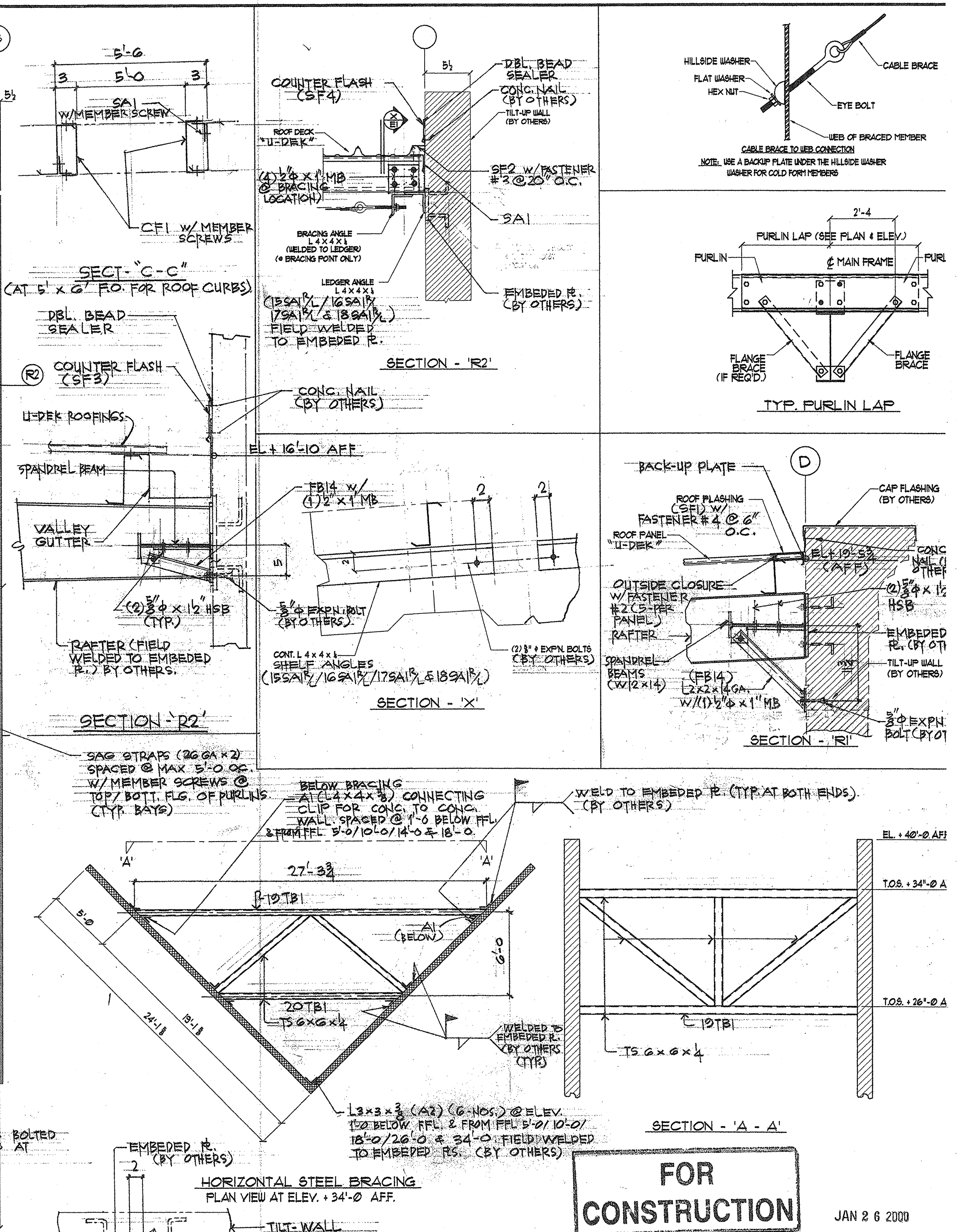
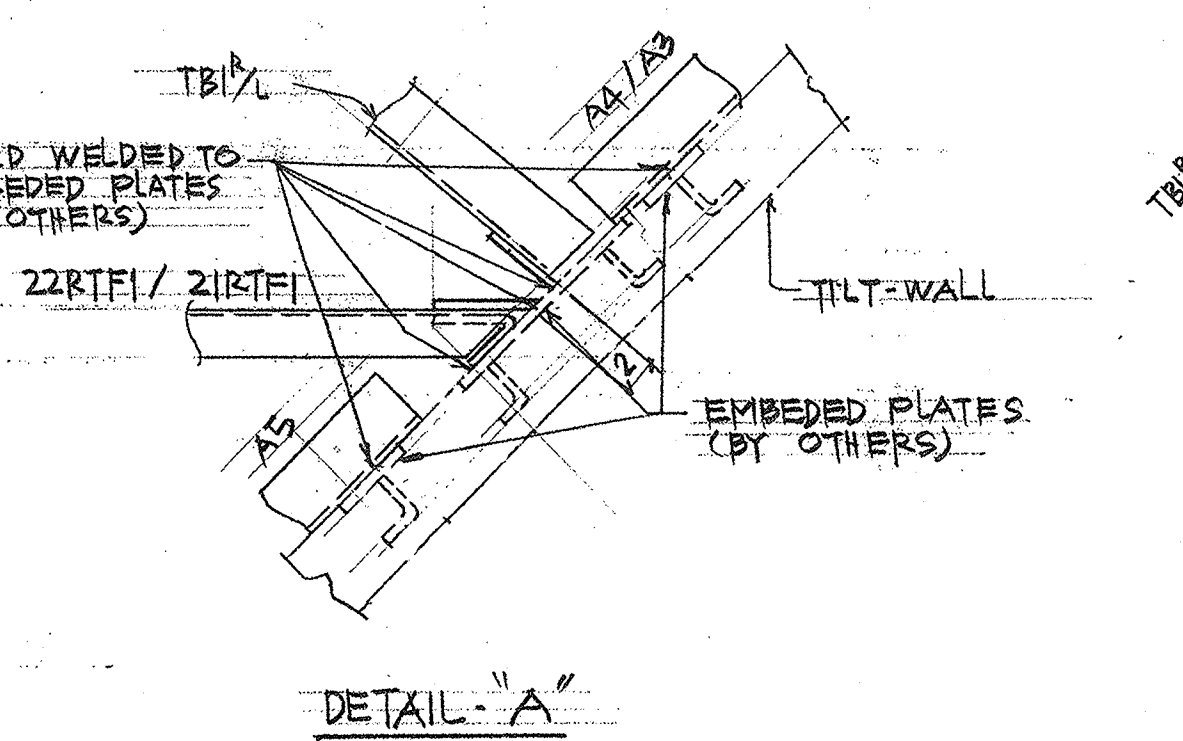
02/17/99



CONN'S AT PINOAK & W. LOOP 610
HOUSTON, TEXAS



ROOF FRAMING PLAN
 NOTES: 1. USE (4) 5" x 1" MB. ON ALL PURLIN CONN. EXCEPT ON ENDWALLS UN.
 2. FIELD WELD ENDRAY SPANDREL BEAMS (11SB1R & 14SB1R) @ 4 CORNERS TO EMBEDDED RS (BY OTHERS)
 3. ALL SPANDREL BEAMS ARE SUPPLIED W/ FLANGE BRACE (FB14) SPACED @ 6'-0" MAX. O.C. & TO BE FIXED W/ 1-1/2" EXPN. BOLT TO WALL.
 4. ALL SPANDREL BEAMS ARE TO BE FIELD WELDED TO EMBEDDED RS. (BY OTHERS)



FOR CONSTRUCTION

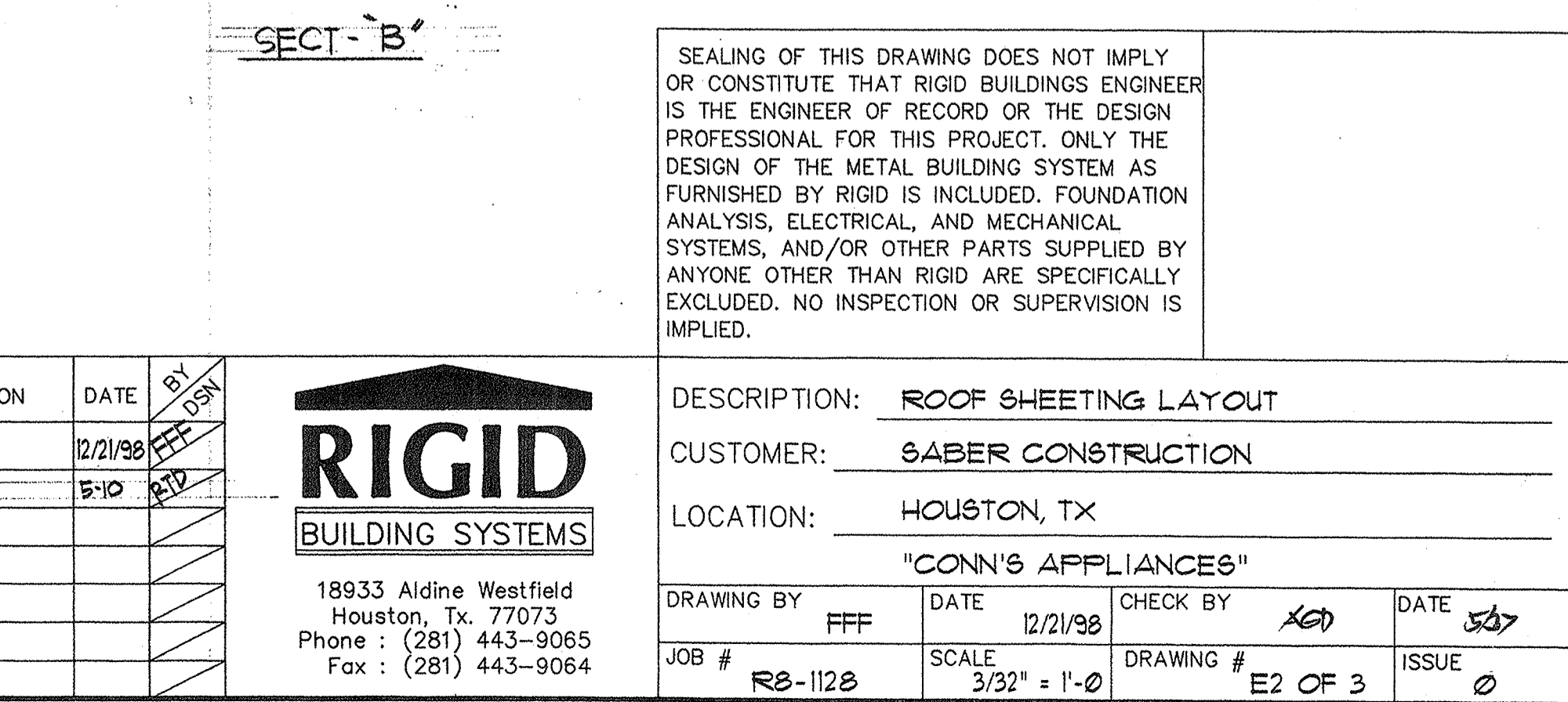
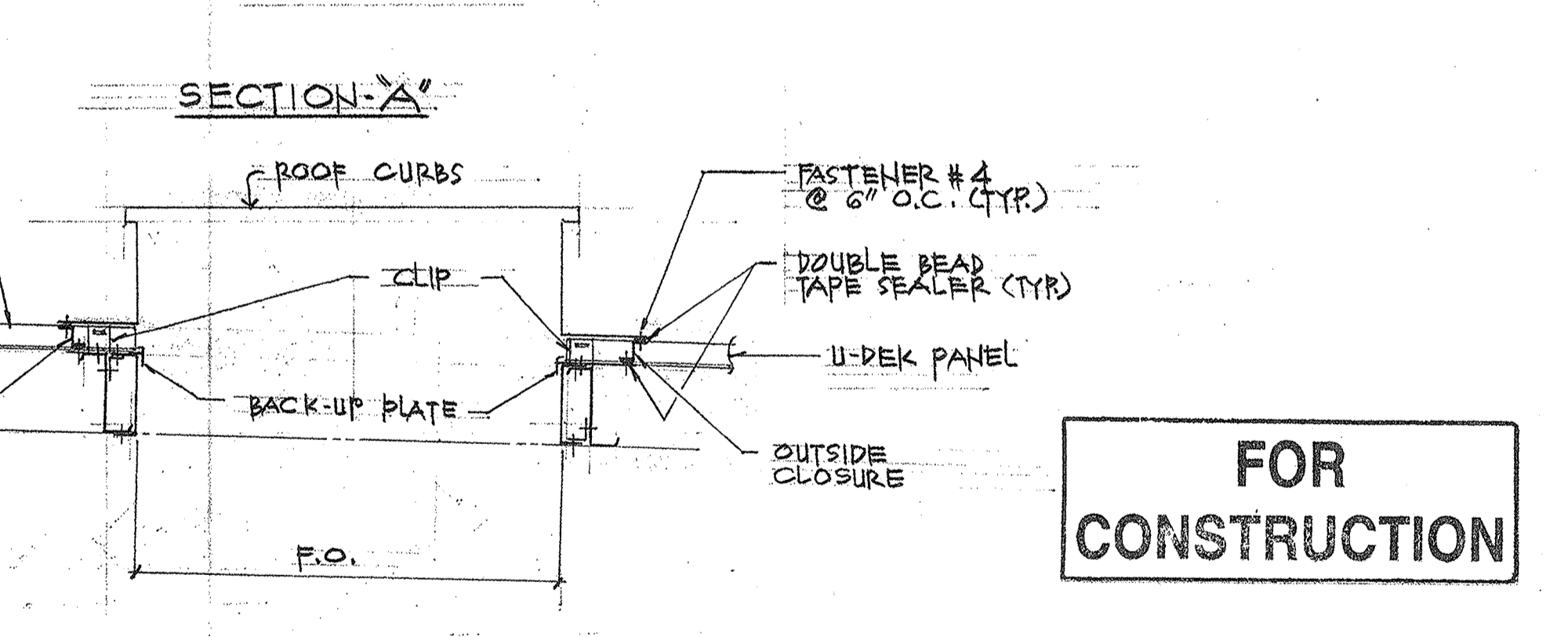
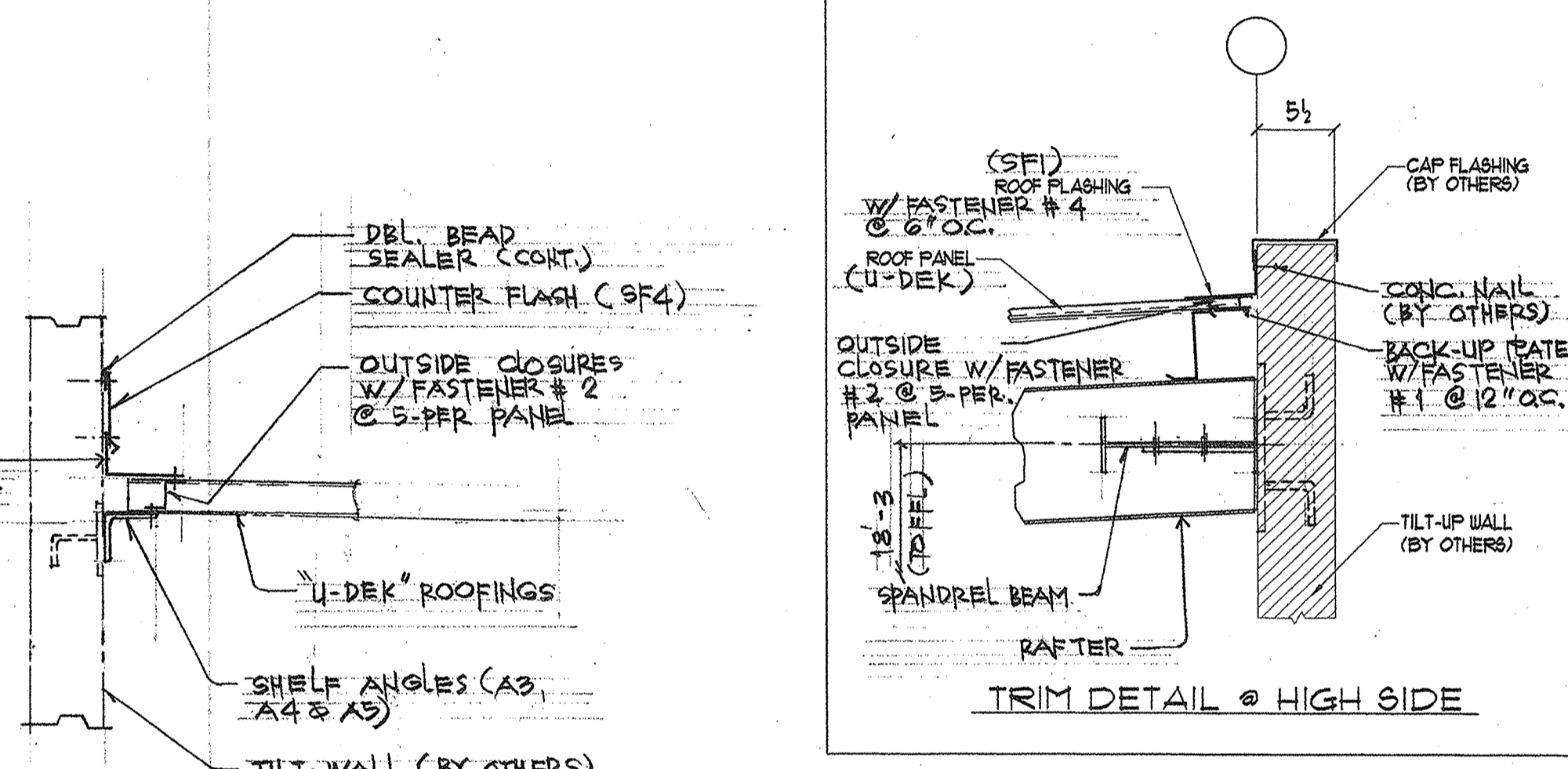
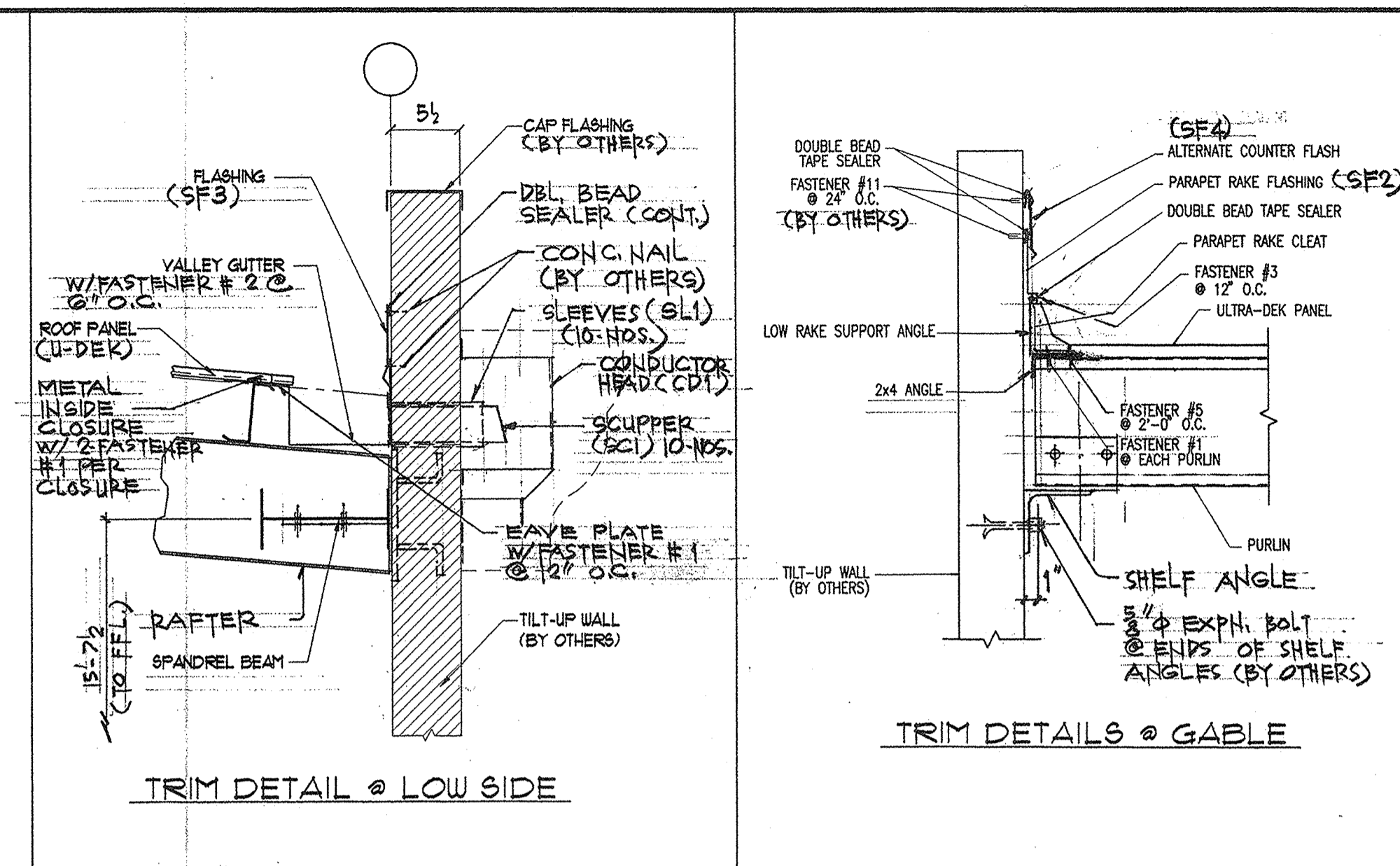
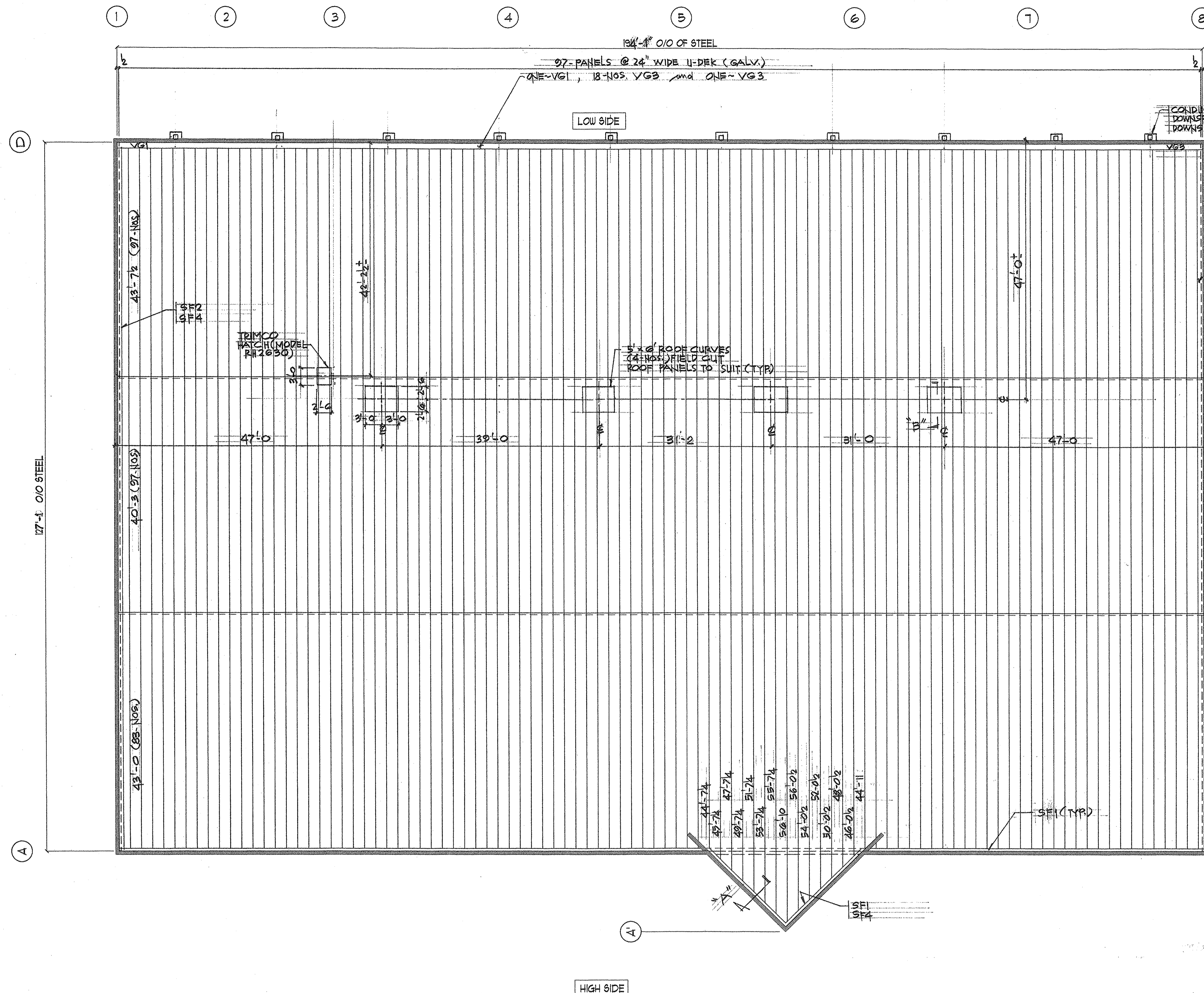
SEALING OF THIS DRAWING DOES NOT IMPLY OR CONSTITUTE THAT RIGID BUILDINGS ENGINEER IS THE ENGINEER OF RECORD OR THE DESIGN PROFESSIONAL FOR THIS PROJECT. ONLY THE DESIGN OF THE METAL BUILDING SYSTEM AS FURNISHED BY RIGID IS INCLUDED. FOUNDATION ANALYSIS, ELECTRICAL, AND MECHANICAL SYSTEMS, AND/OR OTHER PARTS SUPPLIED BY ANYONE OTHER THAN RIGID ARE SPECIFICALLY EXCLUDED. NO INSPECTION OR SUPERVISION IS IMPLIED.

ISSUE	REV. DESCRIPTION	DATE	BY	CHK'D
A	APPROVAL	12/21/98	FFF	
0	CONSTRUCTION	5-10-99	FFF	

RIGID BUILDING SYSTEMS
 18933 Aldine Westfield
 Houston, Tx. 77073
 Phone: (281) 443-9065
 Fax: (281) 443-9064

DESCRIPTION: **ROOF FRAMING PLAN**
 CUSTOMER: **SABER CONSTRUCTION**
 LOCATION: **HOUSTON, TX**
 "CONN'S APPLIANCES"
 DRAWING BY: **FFF** DATE: **12/21/98** CHECK BY: **XGD** DATE: **5/99**
 JOB #: **RS-1128** SCALE: **3/32" = 1'-0"** DRAWING #: **E1 OF 3** ISSUE: **0**

JAN 26 2000



ROOF SHEETING LAYOUT
 NOTES: 1. PANELS @ SKEWED AREAS BET. LINES A & A' & AT FOS ARE TO BE CUT TO SUIT.
 2. FOR ULTRA-DEK TECHNICAL/ERECTION INSTRUCTION REFER TO MBCI MANUAL.

FOR CONSTRUCTION

JAN 26 2000

SEALING OF THIS DRAWING DOES NOT IMPLY OR CONSTITUTE THAT RIGID BUILDINGS ENGINEER IS THE ENGINEER OF RECORD OR THE DESIGN PROFESSIONAL FOR THIS PROJECT. ONLY THE DESIGN OF THE METAL BUILDING SYSTEM AS FURNISHED BY RIGID IS INCLUDED. FOUNDATION ANALYSIS, ELECTRICAL, AND MECHANICAL SYSTEMS, AND/OR OTHER PARTS SUPPLIED BY ANYONE OTHER THAN RIGID ARE SPECIFICALLY EXCLUDED. NO INSPECTION OR SUPERVISION IS IMPLIED.

ISSUE	REV. DESCRIPTION	DATE	BY	CHK'D
A	APPROVAL	12/21/98	FFF	FFF
0	CONSTRUCTION	5-10	FFF	FFF

RIGID BUILDING SYSTEMS
 18933 Aldine Westfield
 Houston, Tx. 77073
 Phone : (281) 443-9065
 Fax : (281) 443-9064

DESCRIPTION:	ROOF SHEETING LAYOUT		
CUSTOMER:	SABER CONSTRUCTION		
LOCATION:	HOUSTON, TX		
"CONN'S APPLIANCES"			
DRAWING BY	DATE	CHECK BY	DATE
FFF	12/21/98	FFF	5-10
JOB #	SCALE	DRAWING #	ISSUE
RB-1128	3/32" = 1'-0"	E2 OF 3	0

APPENDIX C

Specifications



SECTION 01 10 00 – TASK ITEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General Conditions and Division 01 Specification sections, apply to work of this section.
- B. This section is for the convenience of the Contractor only and shall not be construed as a complete accounting of all work to be performed.
- C. The extent of the Task Items is indicated on the drawings and by the requirements of each section of the specifications.
- D. **Field Verification:** Information provided in the contract documents is for the contractor's general reference only and requires field verification. The contractor shall examine the site and shall be responsible for verifying all existing construction, conditions, and dimensions. No extra payment will be considered for work additional to that shown or noted, if such work would have been apparent in an inspection of the premises.
- E. **Coordination:** Coordinate the work throughout the duration of the project as to minimize disruption of facility operations.
 - a. As indicated in certain task items below which require Inspector or Engineer review of existing conditions, provide adequate notice to prevent delays to construction, as described in the General Conditions.

PART 2 - PRODUCTS (see EXECUTION section)

PART 3 - EXECUTION

3.1 TASK ITEM (T.I.) DESCRIPTION

T.I. 1.1 PROJECT MOBILIZATION

A. Scope of Work

- 1. Work consists of coordinating, scheduling, obtaining and assembling at construction site all equipment, materials, permits, supplies, manpower and other essentials and incidentals necessary to perform work.
- 2. Coordinate all aspects of work with Owner and all trades.
- 3. Provide protective measures in and around the building as directed by the Owner prior to beginning work. The contractor shall take measures as necessary to keep access to the building free and clear of all hazards.
- 4. **Contractor shall install certified temporary fall protection systems meeting all regulatory and governmental requirements prior to**

performing any work on the roof. Provide signed and sealed drawings of all temporary fall protection systems for the Owner's records. Contractor shall be responsible for performing an independent safety assessment prior to bidding the project and include allowances for all necessary institutional, regulatory, and governmental safety provisions in their Bid Submittal. All required safety systems must remain in place for the entire duration of the roofing construction and shall continuously be used in strict accordance with all institutional, regulatory, and governmental requirements.

5. Contractor is advised that this work is being performed at a *medical* facility and shall take all necessary precautions to limit noise, odor, and dust pollution from impacting the operations of the facility as directed by the Owner. Perform disruptive or noisy work during times indicated by Owner. Coordinate with Owner if weekend or evening hours are required.
6. Salvage existing material which has been indicated for reinstallation according to work items below. Store salvaged materials in clean, dry locations and protect from moisture, extreme temperatures, and direct sunlight.
7. Properly dispose of all debris and waste construction materials in accordance with all applicable laws and regulations.
8. Prepare project staging, phasing, building enclosure protection (water, dust, and odor), and demolition haul-off plans and submit to Owner for their review and approval. Provide signed and sealed engineered shop drawings if required for any trash shoot or demolition related structural building attachments to be used during demolition.

B. Repair Drawings and Specifications

1. Not Applicable.

T.I. 2.1 DEMOLITION AND SUBSTRATE PREPARATION

A. Scope of Work

1. Interior Protection: Contractor shall include in their bid all costs, materials, and equipment required to protect interior of building from water / dust / odor infiltration and debris that could enter the building during this work. This includes plastic drape dust protection and protection of all interior finishes and furniture. The contractor shall clean all areas affected by any interior operations. Where metal roof R-panel sections are to be removed to replaced wetted under-roof insulation (see T.I. 7.1), provide protection in the area below the work area and coordinate the work with the facilities management so that personnel in affected areas can be notified.

2. Odor Controls: Contractor shall include in their bid all costs, materials, and equipment required to mitigate odor infiltration during roofing installation including but not limited to low VOC adhesives, from infiltrating the interior of building during this work. This includes performing a pre-construction survey of potentially unsealed thru-deck penetrations, deck-to-wall transitions, mechanical ducts, etc. The contractor shall identify these locations prior to start of work, prepare an odor mitigation plan to be submitted to Owner for review and approval, and implement approved odor mitigation prevention procedures as necessary to prevent disruption of the interior operations of the facility. Where necessary, provide protection in the interior areas below the work area and coordinate the work with the facilities management so that personnel in affected areas can be notified.
 3. Existing Roofing system (top-down):
 - a. 2-foot wide metal roofing panels with standing seams attached to structural z-purlin roof framing; z-purlins are spaced at 5-feet on center.
 - b. Fibrous glass blanket faced insulation suspended across the structural steel z-purlin roof framing.
 4. Remove all debris from roof area and properly dispose of all materials off site.
 5. Remove all existing base flashings, counterflashings, pipe flashings, vents and associated components necessary for application of new recover membrane base flashing.
 6. Implement all necessary work procedures and protocols to ensure that the building is protected from environmental elements during ongoing construction operations. Only perform roofing demolition operations at roof area extents within each daily work period as can be temporarily made weathertight at the end of that day. Submit a building enclosure protection plan for Owner's review and records.
 7. At the end of each day, ensure that all gutters are in proper working order, that gutters are clear, downspouts are completely clear, and that the facility is left in a completely weathertight condition. Implement any required corrective measures before leaving the job site that day.
- B. Repair Drawings and Specifications
1. Refer to Drawing Sheets R1.0 for locations of work.
- T.I. 5.1 CLEAN AND COAT REPAIRS – METAL ROOF PANELS
- A. Scope of Work
1. Inspect existing metal roof panel surfaces to locate areas of corroded or deteriorated metal.

2. Clean, wire brush, and prime coat any surface-rusted metal panels in accordance with the protective coating manufacturer's recommendations prior to applying galvanizing repair coating; do not damage adjacent uncorroded metal roof R-panel surfaces. Metal Panel surfaces to be coated shall be cleaned in accordance with manufacturer's requirements, i.e., devoid of grease, oil, mill scale, oxidation, loosely adherent rust, paint, etc.
 3. Install galvanizing repair coating in accordance with manufacturer's recommendations. Galvanizing repair coating shall be "ZRC Galvalite" as manufactured by ZRC Chemical Products or a paint complying with SSPC-Paint 20, Level 1.
- B. Drawings and Specifications
1. Refer to Drawing Sheet R1.0 for locations of work.
 2. Refer to Detail 8/R3.0 for installation details.
- T.I. 6.1 ROUGH CARPENTRY
- A. Scope of Work
1. Work consists of installation of new lumber nailers, sleepers, curbs, and edging as required for installation of the recover roofing system and associated flashings. For bidding purposes, assume all existing lumber will require replacement.
 2. Install replacement nailers where deteriorated components were removed or new nailers as indicated by project details. Add nailers along roof edges to accommodate new recover roofing assembly and edge flashings.
 3. All Task Item 6.1 roofing attachments shall be installed to resist the wind uplift pressure ratings specified in the Drawings. Contractor shall submit engineered shop drawings for all new wood framing assemblies required for the overlay roofing system installation; the shop drawings shall be signed and sealed by a structural engineer in licensed in the State of Texas.
- B. Drawings and Specifications
1. Refer to Sheet R2.0 for locations of work.
 2. Refer to Sheet R3.0 for installation details.
 3. Refer to specification Section "Rough Carpentry" for work requirements, materials, and procedures.
- T.I. 7.1 UNDER-DECK ROOFING INSULATION REPLACEMENT
- A. A. Scope of Work

1. Work consists of removing wetted suspended fibrous glass blanket faced insulation under existing metal panels and replacing in-kind.
2. At wetted fibrous glass blanket faced insulation locations identified and shown on the Drawings, Contractor shall remove the existing metal panel sections as necessary to access, remove, and replace the wetted insulation. Carefully store the remove metal panel sections and fasteners to allow for reinstallation.
3. Follow all manufacturer's requirements during installation of the new hung insulation panels.
4. After replacement of the wetted insulation panels, reinstall the metal panels to their original construction and attachment.

B. Drawings and Specifications

1. Refer to Sheets R2.0 for locations of work.
2. Acceptable Replacement Insulation Material: EcoTouch Certified R Metal Building Insulation by Owens Corning (thickness and facer to match existing)

T.I. 7.2 SINGLE-PLY PVC MEMBRANE ROOFING RECOVER RETROFIT

A. Scope of Work

1. Work consists of installation of a recover roofing assembly over the existing metal panel roofing.
2. Recover roofing assembly shall generally consist of polyisocyanurate insulation infilled between the metal panel flutes, coverboard, single-ply roofing membrane, all membrane flashings, and other accessories.
3. Remove and replace wetted roof insulation as identified in Task Item 7.1.
4. Perform surface preparation of metal panel surfaces per manufacturer requirements. Ensure all roof penetrations are properly secured and prepared to receive new roofing materials.
5. Loose lay beveled polyisocyanurate flute filler insulation between the metal roof panel flutes. Tightly butt insulation boards together.
6. Install 0.5-inch thick cover board with long joints in a continuous straight line. Joints should be staggered between rows, abutting edges and ends per manufacturer's written instructions. Secure to deck using mechanical fasteners designed and sized for fastening specified cover board to deck type.

7. Install PVC single-ply roofing membrane using electromagnetic induction welding application methods in accordance with roofing system manufacturer's written instructions.
8. Install sheet flashings and preformed flashing accessories and adhere to substrates according to membrane roofing system manufacturer's written instructions.
9. Install all components of recover retrofit roofing assembly in accordance with manufacturer's written testing literature to resist wind uplift pressures at corners, perimeter, and field areas of roof as specified in the Drawings.

B. Drawings and Specifications

1. Refer to Sheet R0.2 for wind uplift pressure requirements.
2. Refer to Sheet R2.0 for locations of work at the roofing areas indicated.
3. Refer to Sheet R3.0 for installation details.
4. Refer to specification Section "Metal Roof Recover Retrofit" for work requirements, materials, and procedures.

T.I. 7.4 SHEET METAL FLASHING AND TRIM

A. Scope of Work

1. Work consists of installation of all sheet metal flashing and trim as indicated on project drawings and specifications.
2. Install new edge metal and flashing.
3. Install new counter-flashings.
4. Install new formed metal flashings at flues, pipes, etc.
5. Install new perimeter gutters, conductors, and downspouts.

B. Materials

1. Refer to Sheet R2.1 for locations of work at the roofing areas indicated.
2. Refer to Sheet R3.0 for installation details.
3. Refer to specification Section "Sheet Metal Flashing and Trim" for work requirements, materials, and procedures.

T.I. 7.5 ROOFING SYSTEM WARRANTY

A. Scope of Work

1. Work consists of providing a manufacturer and contractor warranties for new roofing system.
2. Provide a 20 Year “Roof System/Labor Guaranty” material and labor warranty for the new recover retrofit roofing PVC roofing system, including the membrane, insulation, overlay board, and other accessories.
3. Provide a 10 year “Waterproofing System/Labor Guaranty” material and labor warranty for the new fluid-applied roofing system.
4. Warranty shall be the shared responsibility of the Roofing Contractor and the Roofing Membrane Manufacturer for the first two (2) years. The contractor shall provide a standard NRCA warranty form.
5. The Contractor shall make all necessary notices for warranty purposes to the primary roofing manufacturer, to secure timely inspections and issuance of the warranty.

B. Drawings and Specifications

1. Refer to Sheet R2.0 for locations of work at the roofing areas indicated.
2. Refer to Sheet R3.0 for installation details.

T.I. 7.6 JOINT SEALANT REPLACEMENT/INSTALLATION

A. Scope of Work

1. Work consists of removal and replacement or installation of sealant joints.
2. Remove existing sealant from joints.
3. All joints shall be thoroughly cleaned by either abrasive methods or grinding to remove all laitance, unsound substrate, and curing compounds which may interfere with adhesion. Joint shall be air blasted to remove remaining debris.
4. Prime joint surfaces as needed.
5. Install backer rod or bond breaker in strict accordance with manufacturer’s instructions.
6. Install sealant with concave profile and overall dimensions to conform with manufacturer’s recommendations for best practice for sealant installation.

7. Do not allow sealant to ooze or sag.
 8. Where double sealant joints are indicated, allow the inner sealant joint to fully cure before installation of the outer sealant joint.
- B. Drawings and Specifications
1. Refer to Sheet R2.0 for locations of work at the roofing areas indicated.
 2. Refer to Sheet R3.0 for installation details.
 3. Refer to Specification Section "Joint Sealants" for work requirements, materials, and procedures.
- T.I. 10.1 CLEAN AND COAT CORRODED STEEL
- A. Scope of work
1. Work consists of furnishing all labor, materials, equipment, supervision, staging, shoring, bracing, and incidentals necessary to clean corroded plates and connections between precast concrete members. Provide surface preparation by abrasive blasting of steel plates or steel connection members and apply an epoxy coating. Refer to Sheet R2.0 for locations of work.
- B. Materials
1. Primer: Pre-Prime 167 by ICI Devoe coatings.
 2. Finish coat: Devran 224 HS by ICI Devoe coatings. Color to match existing surface.
- C. Execution
1. Prepare surfaces in strict accordance with manufacture's specifications. Steel surfaces to be coated shall be clean, i.e. Devoid of grease, oil, mill scale, oxidation, loosely adherent rust, paint, etc. Abrasive blast steel surfaces to SSPC-SP6.
 2. Apply epoxy coating system (primer and finish coat) in strict accordance with manufacturer's specifications.
- T.I. 22.1 PLUMBING WORK
- A. Scope of Work
1. Work consists of cleaning existing downspouts, installing new gutters at roof perimeter, and other drainage items.
 2. Clean and rod out all downspouts.

3. Install piping extensions as required to raise curbs, vents, stacks, and soil pipes to a minimum of 8-inches above the finished roof surface.
4. Install new pipe supports on top of new roofing membrane with sacrificial pad.
5. At locations the existing roof drains need to be replaced, install new retrofit roof drains, including but not limited to all plumbing extensions and accessories. Flash retrofit roof drains in accordance with roofing manufacturer's requirements.
6. All plumbing retrofit work shall be performed by a licensed and experienced plumber and shall be performed according to all applicable current codes and regulations.

B. Repair Drawings and Specifications

1. Plumbing piping, supports, fasteners, and other accessories, as needed.
2. Refer to Sheet R2.0 for locations of work at the roofing areas indicated.

T.I. 23.1 MECHANICAL WORK

A. Scope of Work

1. Work consists of raising equipment curbs, conduits, gas lines, ducts, and pipes to accommodate and protect new roofing system.
2. Temporarily remove mechanical ducts interfering with the installation of the new roofing membrane and sheet metal flashing. Mechanical to wall connections to be left in place.
3. Remove abandoned curbs and rooftop equipment as indicated in project drawings.
4. Raise all curbs and platforms to a minimum of 8 inches or as indicated in project details above the finished roof surface and flash over the tops of the curbs to install proper counter-flashing.
5. All mechanical equipment retrofit work shall be performed by a licensed contractor experienced in this type of work and shall be performed according to all applicable current codes and regulations.

B. Repair Drawings and Specifications

1. Pipe supports, fasteners, and other accessories, as needed.
2. Refer to Sheet R2.0 for locations of work at the roofing areas indicated.

T.I. 26.1 ELECTRICAL WORK

A. Scope of Work

1. Work consists of removing and reinstalling conduits, wiring, cameras, lights, and other electrical work during installation of new roofing system.
2. All electrical work shall be performed by a licensed and experienced electrician and shall be performed according to all applicable current codes and regulations.
3. Raise existing electrical conduit to a minimum of 8 inches above the finished roof surface. Provide extensions of services to allow for goosenecks to be installed.
4. Install new conduit supports on top of new roofing membrane with sacrificial pads of modified bitumen cap sheet.

B. Repair Drawings and Specifications

1. Conduit supports, fasteners, and other accessories, as needed.
2. Refer to Sheet R2.0 for locations of work at the roofing areas indicated.

T.I. 26.2 LIGHTNING PROTECTION SYSTEM

A. Scope of work

1. Work consists of temporarily removing and reinstalling the existing lightning protection system during installation of new roofing system. This work shall be performed at all roofing replacement construction areas whether shown on the drawings or not.

2. Removal and reinstallation of the existing lightning protection system shall be performed by a lightning protection institute certified master installer.
 3. Upon completion the contractor will deliver to the owner as as-built drawing and the appropriate system certification documents under the underwriter's laboratory and the lightning protection institute programs
 4. Provide sacrificial cap sheet ply under all conductor cables, attachments, rods, and connection points.
- B. Repair drawings and specifications
1. Refer to sheet R2.0 for locations of work.
 2. Refer to sheet R3.0 for installation details.

END OF SECTION 011000

SECTION 07 32 70 – METAL ROOF RECOVER RETROFIT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 RELATED SECTIONS

- A. Division 01 Specifications.
- B. Section 06 10 00 – Rough Carpentry: Roof blocking installation and requirements
- C. Section 07 62 00 – Sheet Metal Flashing and Trim: Roofing transitions and termination
- D. Section 07 92 00 – Joint Sealants: Joint sealant material and installation requirements.

1.3 REFERENCES

- A. Roofing Terminology: Refer to the following:
 - 1. ASTM D1079 and the glossary of the National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual for definitions of roofing terms related to this section.
 - 2. Glossary of NRCA's "The NRCA Roofing and Waterproofing Manual."
 - 3. Roof Consultants Institute "Glossary of Building Envelope Terms."
- B. Sheet Metal Terminology and Techniques: SMACNA "Architectural Sheet Metal Manual."

1.4 SCOPE

- A. To install a complete metal retrofit roofing system including membrane, flashings and other components.
- B. This work includes but is not limited to the installation of:
 - 1. Removal of Existing Roofing and Insulation
 - 2. Substrate Preparation
 - 3. Vapor Barrier
 - 4. Wood Blocking
 - 5. Insulation
 - 6. Separation Layers
 - 7. Roof Membrane

8. Fasteners
9. Adhesive for Flashings
10. Roof Membrane Flashings
11. Metal Flashings
12. Sealants

1.5 PERFORMANCE REQUIREMENTS

- A. General: Installed retrofit roofing membrane system shall remain watertight; and resist specified wind uplift pressures, thermally induced movement, and exposure to weather without failure.
- B. Material Compatibility: Roofing materials shall be compatible with one another under conditions of service and application required, as demonstrated by roofing system manufacturer based on testing and field experience.
- C. Installer shall comply with current code requirements based on authority having jurisdiction.
- D. Wind Uplift Performance: Roofing system shall be identical to systems that have been successfully tested by a qualified testing and inspecting agency to resist wind uplift pressure calculated in accordance with ASCE 7.
- E. Fire-Test-Response Characteristics: Provide roofing materials with the fire-test-response characteristics indicated as determined by testing identical products per test method below by UL, FMG, or another testing and inspecting agency acceptable to authorities having jurisdiction. Materials shall be identified with appropriate markings of applicable testing and inspecting agency.

1.6 SUBMITTALS

- A. Product Data: Submit manufacturer's technical data for each product required, including instructions for surface preparation and system application.
- B. Certifications by manufacturer of roofing and insulating materials that all materials supplied comply with all requirements of the identified ASTM and other industry standards or practices.
- C. Prior to beginning the work of this section, roofing sub-contractor shall provide a copy of the final System Assembly Letter issued by the manufacturer indicating that the products and system to be installed shall be eligible to receive the specified manufacturer's guarantee when installed by a certified contractor in accordance with our application requirements, inspected and approved by a manufacturer representative.
- D. Shop Drawings: Provide plan, section, elevation and perspective drawings as necessary to depict all flashing and project conditions on the project, including but not limited to the following:
 1. Roof system and base flashing configuration.

2. Penetration details.
 3. Termination details.
 4. Fastening patterns.
- E. Test Reports:
1. Roof deck fastener pullout test.
- F. Submit copies of proposed manufacturer's guarantee.
- G. Selection Samples: For each product specified, two samples representing manufacturer's full range of available colors and types.
- H. Verification Samples: For each finish product specified, two samples representing actual product, color, and finish.
- I. Installer Certificates: Signed by roofing system manufacturer certifying that Installer is approved, authorized, or licensed by manufacturer to install roofing system.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: All primary products specified in this section will be supplied by a single manufacturer with a minimum of ten (10) years experience.
- B. Installer Qualifications: All products listed in this section are to be installed by a single installer with a minimum of five (5) years demonstrated experience in installing products of the same type and scope as specified.
- C. A pre-installation conference will be held approximately two weeks prior to commencing Work specified in this section. Representatives of the owner, engineer/specifier, roofing contractor, sub-contractors, and manufacturer must be present.
1. Review installation procedures, materials to be used, submittals, schedules, and all related work required under this section. Finalize construction schedule and confirm availability of materials, equipment, contractor's personnel, and facilities needed to complete work as planned.
 2. Review forecasted weather conditions and procedures for coping with unfavorable conditions, and maintaining the water tightness of the roof system.
 3. Tour representative areas of roofing substrates, inspect and discuss condition of substrate, penetrations, and any work performed by other trades.
 4. Review structural loading limitations of deck and inspect deck for acceptability as roof substrate.
 5. Review inspection and quality control procedures to be used.
 6. The contractor shall record discussions of conference, including decisions and agreements reached. Furnish copy of record minutes to each party attending. If

disagreements exist at the conclusion of the conference, determine how disagreements will be resolved, and set a date for reconvening conference.

- D. The roofing systems manufacturer will provide qualified company personnel to attend pre-construction and in-progress meetings, and to perform minimum bi-weekly job site visits or as required by Engineer. The manufacturer will also provide non-sales related field auditors for the purpose of performing quality assurance inspections, both in-progress and final inspections. Provide copies of the manufacturer's field auditor inspection report to the contractor, engineer/specifier, and building owner.
- E. Project Acceptance: Submit a completed manufacturer's application for roof guarantee form along with shop drawings of the roofs showing all dimensions, penetrations, and details. The form shall contain all the technical information applicable to the project including deck types, roof slopes, base sheet and/or insulation assemblies (with method of attachment, and fastener type), and manufacturer's membrane assembly proposed for installation. The form shall also contain accurate and complete information requested including proper names, addresses, zip codes and telephone numbers. The project must receive approval, through this process, prior to shipment of materials to the project site.
- F. Single Source Responsibility for Roof Assembly Materials: Obtain materials from a single manufacturer for each different product required.
- G. Review manufacturer's requirement for quality assurance.

1.8 REGULATORY REQUIREMENTS

- A. Perform work in accordance with all federal, state and local codes.
- B. Windstorm Classification: Provide a roofing system which will achieve the required uplift resistance as calculated in accordance with the most current revision of ASCE 7 or as shown in the Drawings.
- C. Energy Star – Roof system shall meet or exceed the initial and aged reflectivity required by the U.S. Federal Government's Energy Star Program.
- D. "Cool Roofing" – The roof system shall meet or exceed the reflectivity and emissivity criteria to qualify for local "cool" roofing requirements.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials in the manufacturer's original sealed and labeled containers and in quantities required to allow continuity of application.
- B. Storage: Store materials out of direct exposure to the elements. Store roll goods on a clean, flat and dry surface. All material stored on the roof overnight shall be stored on pallets. Do not double stack. Rolls of roofing must be stored on ends. Store materials on the roof in a manner so as to preclude overloading of deck and building structure. Store pail materials such as solvents, adhesives and asphalt cutback products in their original undamaged containers in clean dry protected locations away from open flames, sparks or excessive heat and within their specified temperature range. Cover all material using a

breathable cover such as a canvas. Polyethylene or other non-breathable plastic coverings are not acceptable.

- C. Handling: Handle all materials in such a manner as to preclude damage and contamination with moisture or foreign matter. Handle rolled goods to prevent damage to edges or ends.
- D. Damaged Material: Any materials that are found to be damaged or stored in any manner other than stated above will be automatically rejected, removed and replaced at the Contractor's expense.

1.10 PROJECT CONDITIONS

A. Requirements Prior to Job Start

- 1. Notification: Give a minimum of seven (7) days notice to the Owner and manufacturer prior to commencing any work and notify both parties on a daily basis of any change in work schedule.
- 2. Safety: Familiarize every member of the application crew with all fire and safety regulations recommended by OSHA, NRCA and other industry or local governmental groups.
- 3. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

B. Environmental Requirements

- 1. Precipitation: Do not apply roofing materials during precipitation or in the event there is a probability of precipitation during application. Take adequate precautions to ensure that the materials, applied roofing, and building interiors are protected from possible moisture damage or contamination.
- 2. Temperature Restrictions - cold adhesive: At low temperatures, the specified cold adhesive becomes more viscous, making even distribution more difficult. The optimal temperature of the adhesive at point of application is 70°F (21°C). To facilitate application when ambient temperatures are below 50°F (10°C), store the adhesive and roll goods in a warm place immediately prior to use. Roll or broom the sheets to ensure contact with the underlying adhesive. Suspend application in situations where the adhesive cannot be kept at temperatures allowing for even distribution.
- 3. Only as much of the new roofing as can be made weathertight each day, including all flashing and detail work, shall be installed. All seams shall be cleaned and heat welded before leaving the job site that day.
- 4. All work shall be scheduled and executed without exposing the interior building areas to the effects of inclement weather. The existing building and its contents shall be protected against all risks.

5. All surfaces to receive new insulation, membrane or flashings shall be dry. Should surface moisture occur, the Applicator shall provide the necessary equipment to dry the surface prior to application.
- C. Protection Requirements
1. Membrane Protection: Provide protection against staining and mechanical damage for newly applied roofing and adjacent surfaces throughout this project.
 2. Uninterrupted waterstops shall be installed at the end of each day's work and shall be completely removed before proceeding with the next day's work. Waterstops shall not emit dangerous or unsafe fumes and shall not remain in contact with the finished roof as the installation progresses. Contaminated membrane shall be replaced at no cost to the Owner.
 3. Debris Removal: Remove all debris daily from the project site and take to a legal dumping area authorized to receive such materials.
 4. Site Condition: Complete, to the owner's satisfaction, all job site clean-up including building interior, exterior and landscaping where affected by the construction.
- D. All new and temporary construction, including equipment and accessories, shall be secured in such a manner as to preclude wind blow-off and subsequent roof or equipment damage.
- E. All roofing, insulation, flashings and metal work removed during construction shall be immediately taken off site to a legal dumping area authorized to receive such materials. Hazardous materials, such as materials containing asbestos, are to be removed and disposed of in strict accordance with applicable City, State and Federal requirements.
- F. All new roofing waste material (i.e., scrap roof membrane, empty cans of adhesive) shall be immediately removed from the site by the Applicator and properly transported to a legal dumping area authorized to receive such material.
- G. The Applicator shall take precautions that storage and application of materials and equipment does not overload the roof deck or building structure.
- H. Flammable adhesives and deck primers shall not be stored and not be used in the vicinity of open flames, sparks and excessive heat.
- I. The Applicator shall verify that all roof drain lines are functioning correctly (not clogged or blocked) before starting work. Applicator shall report any such blockages in writing to the Owner, Engineer, and manufacturer prior to the installation of the retrofit roof system.
- J. Applicator shall immediately stop work if any unusual or concealed condition is discovered and shall immediately notify Owner and Engineer of such condition in writing for supplement instructions.
- K. Site cleanup, including both interior and exterior building areas that have been affected by construction, shall be completed to the Owner's satisfaction.

- L. All landscaped areas damaged by construction activities shall be repaired at no cost to the Owner.
- M. The Applicator shall conduct fastener pullout tests in accordance with the latest version of the SPRI/ANSI Fastener Pullout Standard to verify condition of the deck/substrate and to confirm expected pullout values.
- N. The PVC roofing membrane shall not be installed under the following conditions without consulting the manufacturer for additional requirements:
 - 1. The roof assembly permits interior air to pressurize the membrane underside.
 - 2. The wall/deck intersection permits air entry into the wall flashing area.
- O. Precautions shall be taken when using adhesives at or near rooftop vents or air intakes. Adhesive odors could enter the building. Coordinate the operation of vents and air intakes in such a manner as to avoid the intake of adhesive odor while ventilating the building. Keep lids on unused cans at all times.
- P. Protective wear shall be worn when using solvents or adhesives or as required by job conditions.
- Q. PVC membranes are slippery when wet or covered with snow, frost, or ice. Working on surfaces under these conditions is hazardous. Appropriate safety measures must be implemented prior to working on such surfaces. Always follow OSHA and other relevant fall protection standards when working on roofs.

1.11 WARRANTY

- A. Roof Membrane Manufacturer Warranty: Upon successful completion of the project, and after all post installation procedures have been completed, furnish the Owner with the manufacturer's 20 year labor and materials membrane warranty, including insulations, adhesives, fasteners and specialty penetration flashings. The warranty shall be a term type, without deductibles or limitations (NDL) on coverage amount, and shall be issued at no additional cost to the Owner. This warranty shall not exclude random areas of ponding from coverage.
 - 1. Duration: Twenty (20) years from the date of completion
- B. Contractor's Warranty: Submit roofing Installer's guarantee, including all components of roofing system for the following guarantee period:
 - 1. Guarantee Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design:
 - 1. Sika Sarnafil S327 Rhinobond System Metal Retrofit

a. PVC Membrane Thickness: 80 mils

2. Approved equal based on roofing membrane performance requirements specified herein. Requests to use equivalent products of other manufacturers shall be submitted minimum seven (7) working days prior to the bid due date for review and approval/rejection by Engineer and Owner and shall include a detailed itemization of performance equivalency from the proposed substitution roofing manufacturer. Requests for substitutions will be considered in accordance with provisions of Division 01 Section, 'Product Substitution Procedures.' Approval of proposed roofing manufacturer substitution and/or products/systems shall be at the sole discretion of the Owner and Engineer. Requests for substitution of the approved roofing system manufacturer after Award of Contract will not be allowed.

2.2 SCOPE/APPLICATION

- A. Where located on the Contract Drawings, remove and properly dispose of the existing base flashings, roof insulation, and sheet metal flashing and trim.

2.3 INSULATION AND SUBSTRATE MATERIALS

A. ***Coverboard: Dens-Deck Prime gypsum cover board with a primed glass fiber facer. Thickness: 1/2 inch (6mm).***

1. ***48 inch by 96 inch (1219mm x 2438mm) for mechanically fastened boards.***
2. ***Alternate Manufacturer: Securock***

B. Insulation Flute Filler: Preformed roof insulation boards that comply with requirements and referenced standards, selected from manufacturer's standard sizes and of thicknesses indicated.

1. Dimensions: As required on Drawings for mechanically fastened boards. Provide beveled metal roof flute filler insulation package with thickness to fill flutes the height of the standing seam.
2. Available Products: Sika Sarnatherm EPS (flat)

2.4 MEMBRANE

A. PVC Membrane: ASTM D 4434, Type II/III, reinforced.

1. Sarnafil S327 thermoplastic membrane with polyester reinforcement and lacquer coating.
 - a. Thickness: Sarnafil S327-20, 80 mil (2.0 mm)
 - b. Color: EnergySmart White, initial solar reflectance of 0.83, emittance of 0.90, and solar reflective index (SRI) of 104 (ENERGY STAR listed).

2.5 SHEET METAL AND FLASHINGS

A. See Section "Sheet Metal Flashing and Trim"

2.6 ACCESSORIES

- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with membrane roofing.
 - 1. Liquid-type auxiliary materials shall meet VOC limits of authorities having jurisdiction.
- B. Metal Termination Bars
 - 1. Manufacturer's standard predrilled stainless-steel or aluminum bars, with anchors.
- C. Membrane fasteners:
 - 1. Sarnadisc RhinoBond
- D. Insulation fasteners:
 - 1. Sarnafastener #12, Sarnaplate
- E. Bonding Adhesive: Manufacturer's standard solvent-based bonding adhesive for base flashings.
- F. Induction Welding Plate: A round specially coated Galvalume plate with a recessed center and raised flat bonding surface specifically designed for induction welding application.
- G. Liquid Flashing:
 - 1. Sika Liquid Flashing SW
- H. *Fluid-Applied Waterproofing***
 - 1. *Sikalastic RoofPro with manufacturer's primer and accessories.*
- I. Miscellaneous Accessories: Provide manufacturer approved pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, cover strips, sealants, and other accessories.
- J. Installation tools
 - 1. Contact manufacturer for system installation requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Engineer of unsatisfactory preparation before proceeding.

3.2 SCOPE/ APPLICATION

- A. Work consists of installation of a recover roofing assembly over the existing metal panel roofing.
- B. Recover roofing assembly shall generally consist of *EPS* board insulation infilled between the metal panel flutes, coverboard, single-ply roofing membrane, all membrane flashings, and other accessories.
- C. Remove and replace wetted under-deck roof insulation as identified in Task Item 7.1.
- D. Perform surface preparation of roof metal panel surfaces per manufacturer requirements. Ensure all roof penetrations are properly secured and prepared to receive new roofing materials.
- E. Loose lay beveled *EPS* flute filler insulation between the metal roof panel flutes. Tightly butt insulation boards together.
- F. Install 0.5-inch thick cover board with long joints in a continuous straight line. Joints should be staggered between rows, abutting edges and ends per manufacturer's written instructions. Secure to deck using mechanical fasteners designed and sized for fastening specified cover board to deck type.
- G. Install PVC single-ply roofing membrane using induction welding application methods in accordance with roofing system manufacturer's written instructions.
- H. Install sheet flashings and preformed flashing accessories and adhere to substrates according to membrane roofing system manufacturer's written instructions.
- I. Install all components of recover retrofit roofing assembly in accordance with manufacturer's written testing literature to resist wind uplift pressures at corners, perimeter, and field areas of roof as specified in the Drawings.

3.3 PREPARATION

- A. General: Sweep or vacuum all surfaces, removing all loose material and foreign substances prior to commencement of roofing.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Clean and remove from substrate sharp projections, dust, debris, moisture, and other substances detrimental to roofing installation in accordance with roofing system manufacturer's written instructions.
- D. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.4 FLUTE FILLER INSULATION INSTALLATION

- A. Coordinate installation of roof system components so insulation is not exposed to precipitation or left exposed at the end of the workday.
- B. Comply with roofing system manufacturer's written instructions for installing roof insulation.
- C. Loose lay flute filler insulation between the metal roof standing seams. Tightly butt insulation boards together.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.5 COVER BOARD INSTALLATION

- A. Coordinate installing membrane roofing system components so cover board is not exposed to precipitation or left exposed at the end of the workday.
- B. Comply with membrane roofing system manufacturer's written instructions for installing roof cover board.
- C. Install cover board with long joints in a continuous straight line. Joints should be staggered between rows, abutting edges and ends per manufacturer's written instructions. Fill gaps exceeding 1/4 inch (6 mm) with cover board.
 - 1. Cut and fit cover board within 1/4 inch (6 mm) of nailers, projections, and penetrations.
- D. Mechanically Fasten Cover Board: Install cover board and secure to purlins and deck using mechanical fasteners designed and sized for fastening specified cover board to deck type and purloin type.
 - 1. Provide fastener coverage as required by the manufacturer to resist the specified wind uplift pressures at corners, perimeter, and field areas of roof.
 - 2. Fasteners are to be installed consistently in accordance with fastener manufacturer's recommendations. Fasteners are to have minimum penetration of 1 inch (25 mm) through the structural deck.
 - 3. Use fastener tools with a depth locator and torque-limiting attachment as recommended or supplied by fastener manufacturer to ensure proper installation.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.6 ROOFING MEMBRANE INSTALLATION (GENERAL)

- A. Install roofing membrane in accordance with roofing system manufacturer's written instructions, applicable recommendations of the roofing manufacturer and requirements in this Section.
- B. Cooperate with testing and inspecting agencies engaged or required to perform services for installing roofing system.

- C. Coordinate installing roofing system so insulation and other components of the roofing membrane system not permanently exposed are not subjected to precipitation or left uncovered at the end of the workday or when rain is imminent.
 - 1. Provide tie-offs at end of each day's work to cover exposed roofing membrane sheets and insulation.
 - 2. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system.
 - 3. Remove and discard temporary seals before beginning work on adjoining roofing.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.7 INDUCTION WELDED ROOFING MEMBRANE INSTALLATION

- A. Install roofing membrane over area to receive roofing according to roofing system manufacturer's written instructions. Unroll roofing membrane and allow to relax before installing.
- B. Accurately align roofing membranes and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.
- C. Always install membrane laps perpendicular to the steel deck flutes. "Picture Frame" installation method is not permitted.
- D. Apply roofing membrane with side laps shingled with roof slope, where possible.
- E. Seams: Clean seam areas, overlap roofing membrane, and hot-air weld side and end laps of roofing membrane per manufacturer's written instructions to ensure a watertight seam installation.
 - 1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of roofing membrane.
 - 2. Verify field strength of seams a minimum of twice daily and repair seam sample areas.
 - a. Remove and repair any unsatisfactory sections before proceeding with Work.
 - 3. Repair tears, voids, and lapped seams in roofing membrane that do not meet requirements.
- F. Spread sealant or mastic bed over deck drain flange at deck drains and securely seal roofing membrane in place with clamping ring.
- G. Induction Welding Installation:
 - 1. Perform calibration and set-up as detailed by the Induction Welder Owner's Manual

2. Center the Induction Welder over the first plate in pattern and activate the weld.
 - a. Induction Welder shall be centered over the plate to create a 100% bond.
 - b. If an error occurs during activation, refer to the induction welder owner's manual for corrective action.
 3. Prior to every use, clean face of Heat Sink Magnet.
 4. Place Heat Sink Magnet over the welded plate.
 - a. Keep Heat Sink Magnet in place at least 45 seconds while the assembly cools.
 5. Repeat process for each plate.
- H. Proceed with installation only after unsatisfactory conditions have been corrected.

3.8 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 solvent-based bonding adhesive at required rate and allow to partially dry. Do not apply bonding adhesive to seam area of flashing.
- C. Flash penetrations and field-formed inside and outside corners per manufacturer's installation instructions.
- D. Clean seam areas and overlap and firmly roll sheet flashings into the adhesive. Weld side and end laps to ensure a watertight seam installation.
- E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.
- F. Proceed with installation only after unsatisfactory conditions have been corrected.

3.9 FIELD QUALITY CONTROL AND INSPECTIONS

- A. Site Condition: Leave all areas around job site free of debris, roofing materials, equipment and related items after completion of job.
- B. Notification of Completion: Notify the manufacturer by means of manufacturer's printed Notification of Completion form of job completion in order to schedule a final inspection date.
- C. Repair or remove and replace components of roofing system where test results or inspections indicate that they do not comply with specified requirements.
- D. Final Inspection/Post-Installation Meeting: Hold a meeting at the completion of the project, attended by all parties that were present at the pre-job conference. A punch list of items required for completion shall be compiled by the Contractor and the manufacturer's

representative. Complete, sign, and mail the punch list form to the manufacturer's headquarters.

- E. Issuance of the Warranty: Complete all post installation procedures and meet the manufacturer's final endorsement for issuance of the specified guarantee.

3.10 PROTECTION AND CLEANING

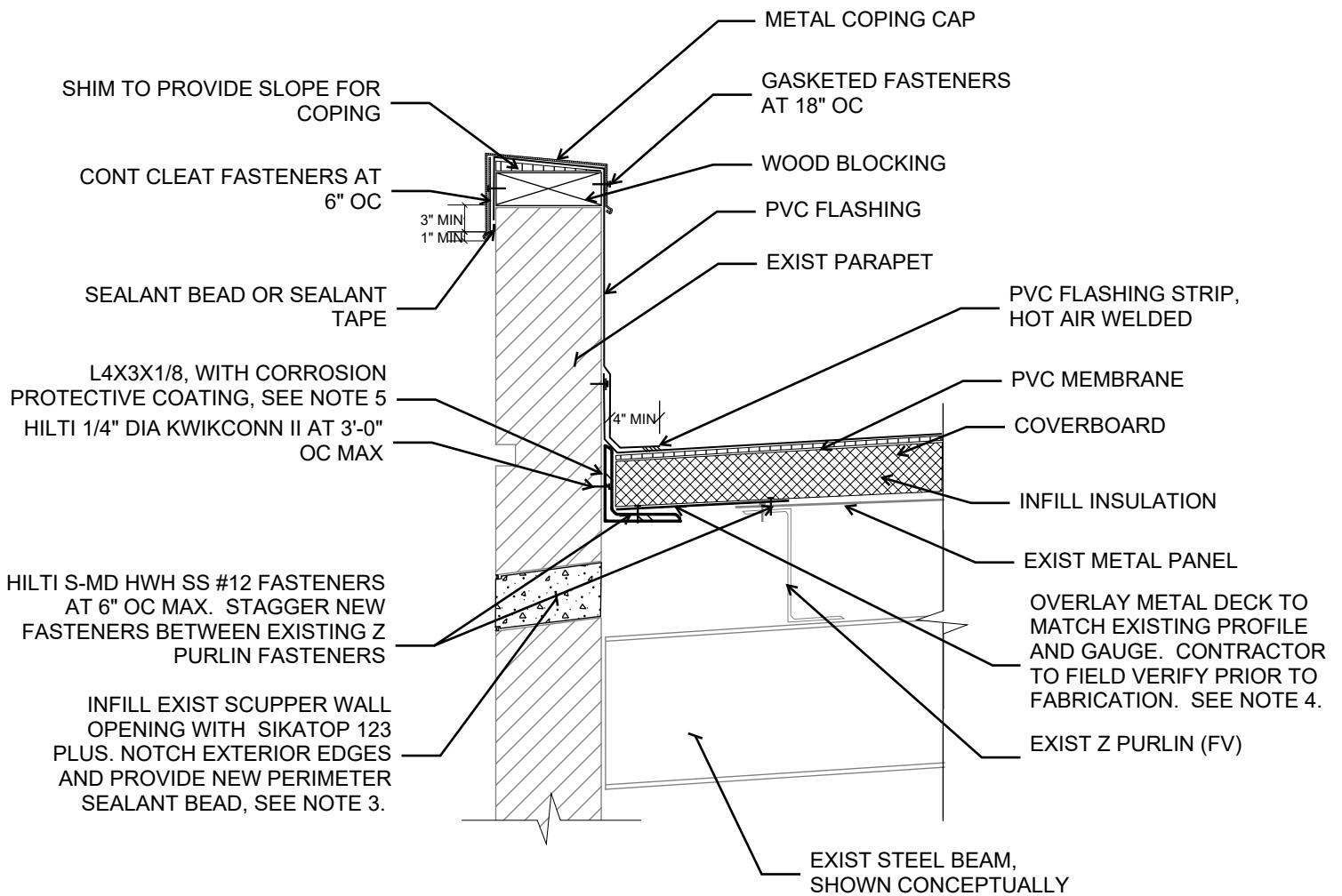
- A. Protect new roof system during remainder of construction period. Plan work so traffic over new roof system is kept to a minimum. Where traffic must continue over new roof system, provide protection for the finished roof.
- B. Provide protection for other building surfaces against damage of staining from roofing operations. Any surfaces damaged or stained as a result of roofing operations shall be cleaned, repaired or replaced as necessary by the roofing contractor.
- C. Job site shall be maintained in a clean, orderly fashion, and free of debris. Store materials and equipment so operations of building are not interrupted.
- D. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

END OF SECTION 07 32 70

APPENDIX D

Supplementary Details






NOTES:

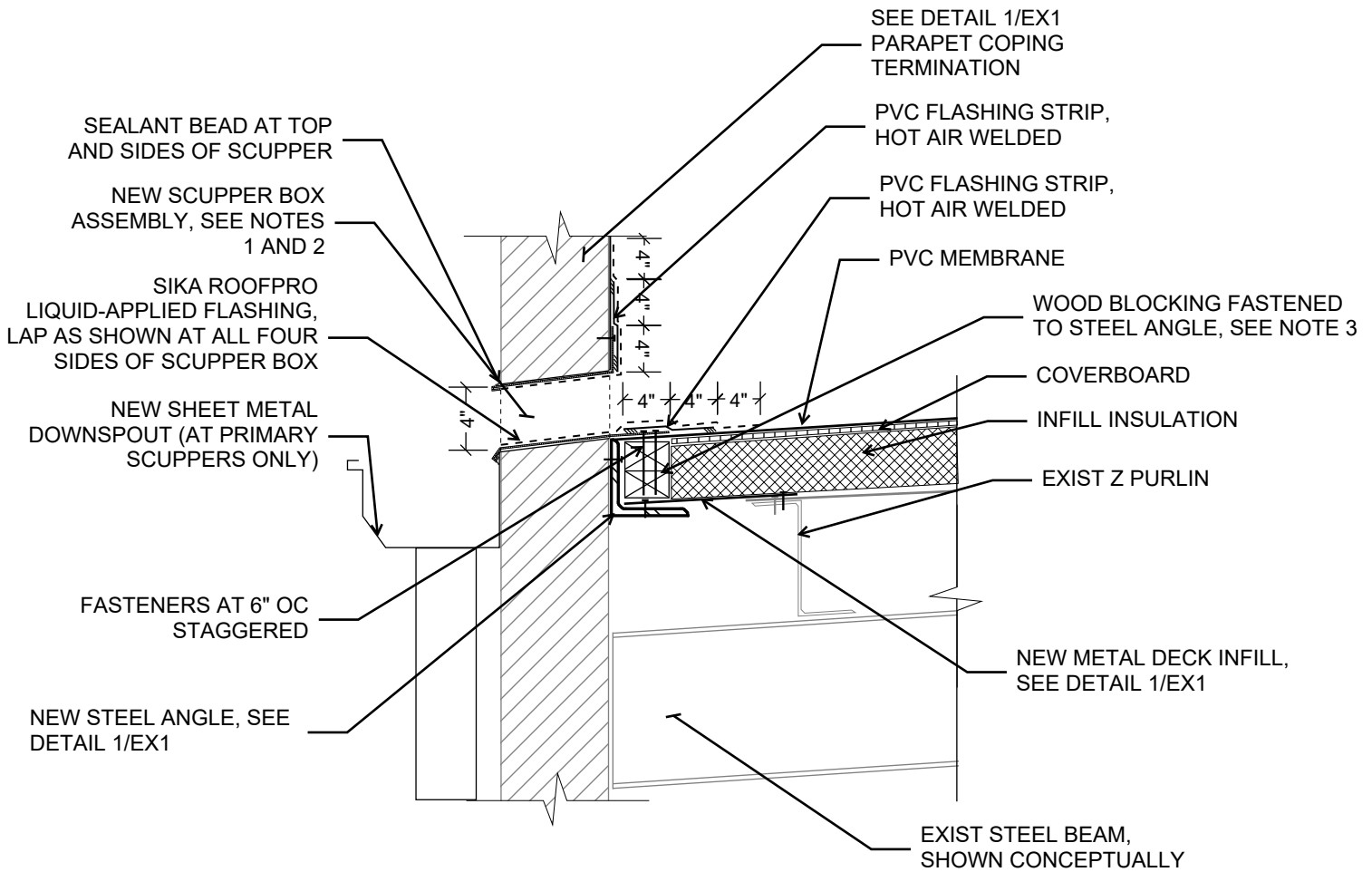
1. REMOVE AND DISCARD EXISTING SHEET METAL FLASHING INTERNAL GUTTER, EXISTING SCUPPERING FLASHING, AND EXISTING DOWNSPOUTS.
2. SEE GENERAL NOTES FOR DEFERRING DESIGN REQUIREMENTS FOR ATTACHMENT OF SUPPLEMENTAL WOOD BLOCKING.
3. PAINT CONCRETE INFILL TO MATCH EXISTING EXTERIOR WALL COLOR.
4. OVERLAP OVERLAY METAL DECK 6" ONTO EXISTING METAL DECK.
5. ALL HOT ROLLED STEEL MEMBERS SHALL BE NEW STEEL CONFORMING TO ASTM SPECIFICATION A6. GRADE OF STRUCTURAL STEEL ANGLES SHALL BE ASTM A36. USE THE FOLLOWING PROTECTIVE COATING:
 SHERWIN WILLIAMS, WWW.SHERWIN-WILLIAMS.COM
 - A. PRIMER COAT: MACROPOXY 920 PRE-PRIME
 - B. INTERMEDIATE COAT: MACROPOXY HS HIGH SOLIDS EPOXY
 - C. FINISH COAT: ACROLON 218 HS ACRYLIC POLYURETHANE

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EXIST THRU-WALL SCUPPER & GUTTER

NO SCALE

Sheet: EX1	Date: 01/16/2019	Project Name: HCC WLS ROOF RECOVER RETROFIT	
	Content: THRU-WALL SCUPPERS		
	Eng: KGA Drafter: MB	Client: HCCS	
	Proj. No. D03.18171.00		
			1301 MCKINNEY, SUITE 1100 HOUSTON, TEXAS 77010 MAIN: 713.630.7300



NOTES:


1. CONTRACTOR SHALL CUT 10 (TEN) NEW THRU-WALL SCUPPER IN PRE-CAST CONCRETE WALL TO SERVE AS PRIMARY DRAINAGE. THRU-WALL SCUPPERS SHALL BE 8 INCHES WIDE AND 4 INCHES TALL, EQUALLY SPACED ALONG EAST WALL.
2. CONTRACTOR SHALL CUT 10 (TEN) NEW THRU-WALL SCUPPER IN PRE-CAST CONCRETE WALL TO SERVE AS SECONDARY DRAINAGE. THRU-WALL SCUPPERS SHALL BE 8 INCHES WIDE AND 4 INCHES TALL, OFFSET 2 INCHES FROM THE TOP OF THE ROOF MEMBRANE. SECONDARY SCUPPERS SHALL BE 24 INCHES TO THE LEFT OF THE PRIMARY DRAINAGE SCUPPERS IN NOTE 1. DO NOT PROVIDE DOWNSPOUTS AT SECONDARY SCUPPERS.
3. SEE GENERAL NOTES FOR DEFERRING DESIGN REQUIREMENTS FOR ATTACHMENT OF SUPPLEMENTAL WOOD BLOCKING.

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NEW THRU-WALL SCUPPER

NO SCALE

Sheet: EX2	Date: 01/16/2019	Project Name: HCC WLS ROOF RECOVER RETROFIT
	Content: THRU-WALL SCUPPERS	
	Eng: KGA	Drafter: MB
	Proj. No. D03.18171.00	



**walter
p moore**

1301 MCKINNEY, SUITE 1100
HOUSTON, TEXAS 77010

MAIN: 713.630.7300