OXNARD UNION HIGH SCHOOL DISTRICT

ADDENDUM #3

BID: 629

New HVAC Modernization
For
Adolfo Camarillo High School

Bid Deadline: September 28, 2020 at 2:00PM

Electronic Acknowledgement Required:

Oxnard Union High School District
309 South K Street, Building G
Purchasing Department
Oxnard, CA 93030
Attention: Deanna Rantz
(Deanna.rantz@oxnardunion.org)

Item #1 of Addendum #3: ***Question: Sunbelt Controls RFI #1:*** **Project Specifications section 23 09 23 lists the following acceptable controls product manufacturers: Alerton, Automated Logic, Schneider Electric, Trane, Carrier or equal. Other schools, specifically Bids #622 and #627 state that Carrier Open BACnet Controls as the only acceptable manufacturer. No Substitutions will be accepted. Please confirm that the listed product manufacturers are in fact approved for use at this District.**

Answer: Please refer to Addendum #2 that was posted 8/12 on District's website for a response regarding control product manufacturers (https://www.oxnardunion.org/news/rfp/bid-629-new-hvac-modernization-for-adolfo-camarillo-high-school/). See Attachment A

Item #2 of Addendum #3: ***Question: Pinner Construction RFI #6: The Master Schedule has a pre-bid RFI deadline of 8/19/2020. We respectfully request an extension of this deadline so that we may have more time to review the bid documents and submit clarifications as discovered over the next few weeks.***

Answer: Pre-bid RFI deadline extension request is acceptable, and is now moved to August 31st, 2020. Please refer to the District Master Schedule as shown in Attachment B.

Item #3 of Addendum #3: ***Question: Viola Constructors RFI #1:***

a) **Detail 2/E-113 shows receptacle/disconnects mounted independently on rooftops and several disconnects may be required on each 20 bldgs. Is it acceptable to mount disconnects directly onto equipment with Unistrut to reduce costs?**
b) **Architectural sheets show new lighting installed in all buildings, yet Electrical sheets do not show new lights in bldgs. F, O, P, Q, U, V, W, X, Y, or the Aquatics Center. Can you please clarify which buildings get new light fixtures?**

Answer: See Response by Electrical Engineer in Attachment C.

Item #4 of Addendum #3: ***Question: Viola Constructors RFI #2:***

a) **Existing FA system is an FCI 7200 series and the devices listed on the drawings will work for this system, however, MCS-COF3 IV detectors on B200 sounder bases will not be capable of providing temporal 4 tone. This requirement would necessitate the existing FACP to be upgraded to a Gamewell FCI E3, Can you please confirm the course of action?**
b) **265 detection type devices are being added to the existing system, please confirm if there is space available on existing FACP to handle additional devices? Note: FCI 7200 FACP's use all ALU cards for landing two separate SLC lines, each line is only capable 99 detectors and 99 modules. If there are not enough ALU cards currently on the panel, it will need to be upgraded as ALU cards are no longer available.**
c) **If a new FACP is required, will new wiring and conduit be needed?**

Answer: See Response by Architect in Attachment D

Item #5 of Addendum #3: ***Question: Pinner Construction RFI #1*****: Architectural Roof Plans state to patch and repair roof as required at areas demolished. There is no roof specification provided. Please indicate the type of existing roof system to be patched/repaired and provide specification section.**

Answer: See Response by Architect in Attachment E

Item #6 of Addendum #3: ***Question: Pinner Construction RFI #2:*** **Sheet A9.05 Roof Details is listed on the TOC T0.02. Sheet A9.05 is not included with the drawing set. Please clarify.**

Answer: See Response by Architect in Attachment F

Item #7 of Addendum #3: ***Question: Pinner Construction RFI #3:*** **New gas, condensation and water are shown on the new HVAC units and hose bibbs located on the roof in the Plumbing Drawings. There is no roof penetration detail. Please provide a roof penetration detail for piping.**

Answer: See Response by Architect in Attachment G

Item #8 of Addendum #3: ***Question: Pinner Construction RFI #4:*** **Door Schedules indicate that doors, frames, and hardware are existing to remain. The notes on the Door Schedule Sheet indicate that panic hardware shall be amounted at 34" to 44" above finish floor surface. Please confirm that panic hardware is existing, and no adjustments are needed to any doors, hardware, or frames.**

Answer: See Response by Architect in Attachment H

Item #9 of Addendum #3: ***Question: Pinner Construction RFI #5:*** **Door Schedules indicate to provide a kick plate at all doors. A door hardware specification was not included in the documents. Please indicate type of kick plate to provide and install on existing doors.**

Answer: Kick plates are existing. Delete note to provide kick plates from Door Schedules, Typical. See Response by Architect in Attachment I

Item #10 of Addendum #3: ***Question: Telacu RFI #1:***

a) Detail 2 Sheet E113 shows how all roof top disconnects, and GFI's are to be independently supported.
- **Key Note #1 on Electrical Roof Plans state disconnects to be independently supported**
- **Key Note #4 does not mention independent support**
- **Key Note #3 does not mention independent support**

Please confirm if this detail 2/E113 is to be used, in lieu of mounting directly to the mechanical equipment.

b) The Architectural drawings show new lighting installed in very building, but the Electrical drawings don't show new lighting in building F, O, Q, P, U, V, W, X, Y, and the Aquatic Center. Please clarify which buildings need new light fixtures.

Answer: See Response by Architect in Attachment J

*Item #11 of Addendum #3****: Question: Telacu RFI #2:***

a) The specifications include Section 085113 Aluminum Windows. No others exist. These windows are sliders. The majority of the project consists of fixed windows resembling storefront type system. They are continuous and run for many feet. The window schedule Sheet A9.03 shows individual windows but that is not what the exterior elevations indicate.

b) Should a storefront system be added to the project for most of the fenestration shown? Such as Kawneer TriFab 45IT thermally broken system? See Attached product data. Should the sliding windows Section 085113 be inserted into the storefront openings where shown on the exterior elevations?

c) Building K does not indicate new Type D windows on the south elevation. Is this correct?

Answer: See Response by Architect in Attachment K

Item #12 of Addendum #3: ***Please refer to Attachment L for a revised Bid Form for Bid 629 New HVAC Modernization for Adolfo Camarillo High School.***

Item #13 of Addendum #3: ***Please refer to Attachment M for Flewelling & Moody Addendum #1***

Contractor Acknowledgement

Your signature on this document acknowledges you received this disclosure and that you had the opportunity to review your scope of work with the project manager or designee.

While OUHSD retains the right to periodically review the work of any service provider, its supervisors, or its subcontractors, OUHSD does not assume responsibility for any issues identified outside of contract compliance.

[Service Provider Name]

_____

[Street Address]

_____

[City, State Zip]

_____

The above service provider certifies that they, any and all of its subcontractor's, or its supervisors, prior to commencing any work on an OUHSD site, have reviewed and understand the contents of this Document.

[Name]

_____

[Title]_____

_____

Employer Representative Signature Date

Addendum #3
Attachment "A"

Attachment A

REQUEST FOR INFORMATION

August 10, 2020

Project: Oxnard Union High School District
Bid #629 – New HVAC Modernization for Adolfo Camarillo High School

Subject: RFI #01 – DDC System for HVAC Mfr Confirmation

Information Requested: **Potential Cost Impact**: $ 0 .00

Project Specification section 23 09 23 lists the following acceptable controls product manufactures: Alerton, Automated Logic, Schneider Electric, Trane, Carrier or equal.

Other school projects, specifically Bids #622 & #627, state that Carrier Open BACnet Controls as the only acceptable manufacturer. No substitutions will be accepted.

Proposed Solution:

Please confirm that the listed product manufacturers are in fact approved for use at this District.

Response:

Please refer to Addendum #2 that will be posted 8/12 on District's website (https://www.oxnardunion.org/news/rfp/bid-629-new-hvac-modernization-for-adolfo-camarillo-high-school/) for a response regarding control product manufacturers.

Karl Aldridge / Bernards / 8.11.2020

PROPOSED SOLUTION ACCEPTED*-The above proposed solution(s) is/are satisfactory and are hereby accepted. Any potential cost impacts are also herby accepted. All work is to be performed under the same terms and conditions as specified in the original agreement unless otherwise specified herein.*

Submitted By:	**Customer:**
Sunbelt Controls	**Accepted and Approved**
Authorized Signature	Authorized Signature / Print Name
Jess Lamas	Company:
August 10, 2020	
Date	Date

735 N. Todd Avenue • Azusa • CA 91702 • Phone: 877-786-2332 • Fax: 626-610-2350 • License #800423 • sunbeltcontrols.com

Addendum #3
Attachment "B"

DOCUMENT 00 01 20

MASTER SCHEDULE

for

Adolfo Camarillo High School

	DATE	TIME
Advertisement #1	07/14/2020	N/A
Advertisement #2	07/21/2020	N/A
Mandatory Site Visit/Conference	08/05/2020	09:00AM
Bidder Clarification Request Deadline	08/31/2020	4:00PM
Deadline for Final Addendum	09/10/2020	4:00PM or Earlier
Bids Due	09/28/2020	2:00PM
Bid Review	09/29/2020	N/A
Notice of Intent	10/01/2020	1:00PM
Board Award	10/14/2020	N/A
Notice of Award	10/16/2020	N/A
PLA Meeting		TBD
Pre-Construction Meeting		TBD
*Work to Commence	November 16th, 2020	N/A
Work Completion and Closeout	May 6, 2022	N/A

*Work may commence only when the executed contract, forms and bonds are received by the District (within 10 calendar days of Notice of Award) and a Notice to Proceed is issued by the District. No work in the field may commence before the three week PLA grace period has been completed.

REQUEST FOR INFORMATION

DSA Appl. No. *(if applicable)* **:** 03-120038

RFI Title: Pre-Bid RFI Deadline | **RFI Number:** PRE-BID 006

Project Name: Camarillo High School Alteration Project | Date: 8/13/2020

School Name: Camarillo High School | Project No.: 2840.0100

Issued To: (Architect) Flewelling & Moody | Contract No.:

Master Schedule | 00 01 20 | Page
Drawing Number Detail | Specification Section

Request:

The Master Schedule has a Pre-Bid RFI deadline of 8/19/20. We respectfully request an extension of this deadline so that we may have more time to review the bid documents and submit clarifications as discovered over the new few weeks.

Request Issued by: Mike Soucek *(Contractor's Signature)* | Mike Soucek *(Name (Printed))* | August 13, 2020 *(Date)*

Response:

RFI Number #6 RFI extension request is acceptable to move to August 31st, 2020.The district master schedule will as noted. • Bid Clarification Deadline Last RFI - 8/31/2020
• Deadline for last Addendum - 9/10/2020
• Bid Due Date - 9/28/2020
• Bid Review - 9/29/2020
• Notice of Intent to Board - 10/1/2020
• Board Award - 10/14/2020
• Work to Commence - 11/16/2020
• Work Completion and Closeout - 5/6/2022

The undersigned recommends the following document requirements:

	Required	Not Required
FLS, SSS, ACS, Review	☐	☑
Sketch	☐	☑
FCD	☐	☑

Response Review by: *(Architect's Signature)* | IRVINE CARRILLO *(Name (Printed))* | 2020.08.14 *(Date)*

Response Issued by: Karl Aldridge *(Owner Authorized Representative)* | Karl Aldridge /Sr PM *(Name (Printed))* | August 13, 2020 *(Date)*

This Form Cannot Modify Contract Amount or Milestones and/or Contract Time.

Addendum #3
Attachment "C"

Attachment C

VIOLA inc 1946
CONSTRUCTORS
70 Years of Success
CSL 193390

RFI BID CLARIFICATION REQUEST

RFI # 001

REQUESTED BY: Tim Viola **DATE:** 8/12/2020

PROJECT NAME: Bid 629 New HVAC Modernization for Adolfo Camarillo High **Spec #:** 26 05 00

SUBMITTED TO: Oxnard Union High School District **PGS:** 1

ATTENTION: Brittany Villasenor & Karl Aldridge **EMAIL:** bvillasenor@bernards.com, kaldridge@bernards.com **FAX:**

YOUR RESPONSE TO THE FOLLOWING BID CLARIFICATION REQUEST IS REQUESTED ASAP

Re: Rooftop disconnects and new lighting,

A) Detail 2/E-113 shows receptacle/disconnects mounted independently on rooftops and several disconnects may be required on each of the 20 bldgs. Is it acceptable to mount disconnects directly onto equipment with Unistrut to reduce costs?

B) Architectural sheets show new lighting installed in all buildings, yet Electrical sheets do not show new lights in bldgs. F, O, P, Q, U, V, W, X, Y, or the Aquatic Ctr. Can you please clarify which buildings get new light fixtures?

Check here if additional pages attached ☐

PROPOSED SOLUTION

Allow equipment mounted disconnects where possible. Clarify new fixture locations.

Check here if additional pages attached ☐

The following information is provided in response to your bid clarification request above. This is not a change order or an approval for extra work

A) - PLEASE PROVIDE INDEPENDENTLY MOUNTED DISCONNECTS AND RECEPTACLES PER PLANS. LIQUID TIGHT FLEX METALLIX CONDUIT CAN BE USED FOR THE WIRING BETWEEN ROOF TOP UNIT AND DISCONNECT SWITCH.
B) - PLEASE FOLLOW ELECTRICAL DRAWINGS FOR LIGHTING INSTALLATION. FOR CLARIFICATION NEW LIGHTING WILL BE INSTALLED IN BUILDINGS 'A,B'C,D,G,H,I,J,K,L,M,N'. ALSO THERE IS A MINOR LIGHTING RELOCATION WORK IN BUILDING X AND Y PLEASE CONSIDER THAT. ITS ALREADY PROVIDED ON PLANS EX-201 & EY-201

By: BUDLONG & ASSOCIATES Check here if additional pages attached ☐

Name: MANAN CHRISTIAN **Title:** ELECTRICAL ENGINEER **Date:** 2020-08-13

P.O. Box 5624 / 1144 Commercial Ave., Oxnard, CA 93031 / 93030
Ph: (805) 487-3871 / Fax: (805) 487-3870

Addendum #3
Attachment "D"

Attachment D

VIOLA inc 1946
CONSTRUCTORS
70 Years of Success
CSL 193390

RFI BID CLARIFICATION REQUEST

RFI # 002

REQUESTED BY: Tim Viola **DATE:** 8/12/2020

PROJECT NAME: Bid 629 New HVAC Modernization for Adolfo Camarillo High **Spec #:** 28 31 00

SUBMITTED TO: Oxnard Union High School District **PGS:** 1

ATTENTION: Brittany Villasenor & Karl Aldridge **EMAIL:** bvillasenor@bernards.com, kaldridge@bernards.com **FAX:**

YOUR RESPONSE TO THE FOLLOWING BID CLARIFICATION REQUEST IS REQUESTED ASAP

Re: Fire Detection and Alarm,

A) Existing FA system is an FCI 7200 series and the devices listed on drawings will work with this system, however MCS-COF3-IV detectors on B200 sounder bases will not be capable of providing temporal 4 tone. This is requirement would necessitate the existing FACP to be upgraded to a Gamewell FCI E3. Can you please confirm the course of action?

B) 265 detection type devices are being added to the existing system, please confirm if there is space available on existing FACP to handle additional devices? Note: FCI 7200 FACP's use ALU cards for landing two separate SLC lines, each line is only capable 99 detectors and 99 modules. If there are not enough ALU cards currently on the panel, it will need to be upgraded as ALU cards are no longer available.

C) If a new FACP panel is required, will new wiring and conduit be needed?

Check here if additional pages attached ☐

PROPOSED SOLUTION

None currently.

Check here if additional pages attached ☐

The following information is provided in response to your bid clarification request above. This is not a change order or an approval for extra work

Due to the existing fire alarm control panel (FCI 7200) being obsolete, a new Gamewell FCI E3 panel will be installed under DSA #03-.120049. New conduit & wiring may be required from new FACP to (E) FATC for connection.
- Jose A. Hurtado, Budlong & Associates, 8/13/2020.

By: _____ Check here if additional pages attached ☐

Name: _____ **Title:** _____ **Date:** _____

P.O. Box 5624 / 1144 Commercial Ave., Oxnard, CA 93031 / 93030
Ph: (805) 487-3871 / Fax: (805) 487-3870

Addendum #3
Attachment "E"

REQUEST FOR INFORMATION

DSA Appl. No. *(if applicable)* **:** 03-120038

RFI Title: Patching of Roofs — **RFI Number:** PRE-BID 001

Project Name: Camarillo High School Alteration Project — Date: 8/13/2020

School Name: Camarillo High School — Project No.: 2840.0100

Issued To: (Architect) Flewelling & Moody — Contract No.:

Drawing Number Detail	Specification Section	Page
Architectural Roof Plans		

Request:

Architectural Roof Plans state to patch and repair roof as required at areas demolished. There is no roofing specification provided. Please indicate the type of existing roof system to be patched/repaired and provide a specification section.

Request Issued by:	Mike Soucek	Mike Soucek	August 13, 2020
	Contractor's Signature	***Name (Printed)***	***Date***

Response:

REFER TO ARCHITECTURAL ADDENDUM

The undersigned recommends the following document requirements:

	Required	**Not Required**
FLS, SSS, ACS, Review	☐	☒
Sketch	☐	☒
FCD	☐	☒

Response Review by:		IRVINE CARRILLO	2020.08.14
	Architect's Signature	***Name (Printed)***	***Date***
Response Issued by:			
	Owner Authorized Representative	***Name (Printed)***	***Date***

This Form Cannot Modify Contract Amount or Milestones and/or Contract Time.

Addendum #3
Attachment "F"

REQUEST FOR INFORMATION

DSA Appl. No. *(if applicable)* **:** 03-120038

RFI Title: Roof Details | **RFI Number:** PRE-BID 002

Project Name: Camarillo High School Alteration Project | Date: 8/13/2020

School Name: Camarillo High School | Project No.: 2840.0100

Issued To: (Architect) Flewelling & Moody | Contract No.:

A9.05 | | |
Drawing Number Detail | Specification Section | Page

Request:

Sheet A9.05 Roof Details is listed on the TOC T0.02. Sheet A9.05 is not included with the drawing set. Please clarify.

Request Issued by:	Mike Soucek	Mike Soucek	August 13, 2020
	Contractor's Signature	***Name (Printed)***	***Date***

Response:

REFER TO ARCHITECTURAL ADDENDUM

The undersigned recommends the following document requirements:

	Required	**Not Required**
FLS, SSS, ACS, Review	X	
Sketch		X
FCD		X

Response Review by:		IRVINE CARRILLO	2020.08.14
	Architect's Signature	***Name (Printed)***	***Date***
Response Issued by:			
	Owner Authorized Representative	***Name (Printed)***	***Date***

This Form Cannot Modify Contract Amount or Milestones and/or Contract Time.

Addendum #3
Attachment "G"

REQUEST FOR INFORMATION

DSA Appl. No. *(if applicable)* **:** 03-120038

RFI Title: Roof Penetration Detail — **RFI Number:** PRE-BID 003

Project Name: Camarillo High School Alteration Project — Date: 8/13/2020

School Name: Camarillo High School — Project No.: 2840.0100

Issued To: (Architect) Flewelling & Moody — Contract No.:

Drawing Number Detail | Specification Section | Page

Request:

New gas, condensate, & water are shown to the new HVAC units & Hose Bibbs located on the roof in the Plumbing Drawings. There is no roof penetration detail. Please provide a roof penetration detail for piping.

Request Issued by:	Mike Soucek	Mike Soucek	August 13, 2020
	Contractor's Signature	***Name (Printed)***	***Date***

Response:

REFER TO ARCHITECTURAL ADDENDUM, DETAILS TO BE AS PER MANUFACTURERS BEST PRACTICE. SEE ALSO DETAILS ON MEP DRAWINGS.

The undersigned recommends the following document requirements:

	Required	**Not Required**
FLS, SSS, ACS, Review	☐	☒
Sketch	☐	☒
FCD	☐	☒

Response Review by:		IRVINE CARRILLO	2020.08.14
	Architect's Signature	***Name (Printed)***	***Date***
Response Issued by:			
	Owner Authorized Representative	***Name (Printed)***	***Date***

This Form Cannot Modify Contract Amount or Milestones and/or Contract Time.

Addendum #3
Attachment "H"

REQUEST FOR INFORMATION

DSA Appl. No. *(if applicable)* **:** 03-120038

RFI Title: Panic Hardware on Existing — **RFI Number:** PRE-BID 004

Project Name: Camarillo High School Alteration Project — Date: 8/13/2020

School Name: Camarillo High School — Project No.: 2840.0100

Issued To: (Architect) Flewelling & Moody — Contract No.:

Door Schedules | Drawing Number Detail | Specification Section | Page

Request:

Door Schedules indicate that doors, frames, and hardware are existing to remain. The notes on the Door Schedule Sheets indicate that panic hardware shall be amounted at 34" to 44" above finish floor surface. Please confirm that panic hardware is existing, and no adjustments are needed to any doors, hardware, or frames.

Request Issued by:	Mike Soucek	Mike Soucek	August 13, 2020
	Contractor's Signature	***Name (Printed)***	***Date***

Response:

REFER TO GENERAL NOTE #2 ON DOOR SCHEDULE SHEETS. NO SCOPE AT DOORS, HARDWARE, OR FRAMES

The undersigned recommends the following document requirements:

	Required	**Not Required**
FLS, SSS, ACS, Review	☐	☒
Sketch	☐	☒
FCD	☐	☒

Response Review by:		IRVINE CARRILLO	2020.08.14
	Architect's Signature	***Name (Printed)***	***Date***
Response Issued by:			
	Owner Authorized Representative	***Name (Printed)***	***Date***

This Form Cannot Modify Contract Amount or Milestones and/or Contract Time.

Addendum #3
Attachment "I"

REQUEST FOR INFORMATION

DSA Appl. No. *(if applicable)* **:** 03-120038

RFI Title: Kick Plate | **RFI Number:** PRE-BID 005

Project Name: Camarillo High School Alteration Project | Date: 8/13/2020

School Name: Camarillo High School | Project No.: 2840.0100

Issued To: (Architect) Flewelling & Moody | Contract No.:

Door Schedules | | |
Drawing Number Detail | Specification Section | Page

Request:

Door Schedules indicate to provide a kick plate at all doors. A door hardware specification was not included in the documents. Please indicate type of kick plate to provide and install on existing doors.

Request Issued by:	Mike Soucek	Mike Soucek	August 13, 2020
	Contractor's Signature	***Name (Printed)***	***Date***

Response:

KICKPLATES ARE EXISTING. DELETE NOTE TO PROVIDE KICKPLATES FROM DOOR SCHEDULES, TYPICAL.

The undersigned recommends the following document requirements:

	Required	**Not Required**
FLS, SSS, ACS, Review	☐	☒
Sketch	☐	☒
FCD	☐	☒

Response Review by:		IRVINE CARRILLO	2020.08.14
	Architect's Signature	***Name (Printed)***	***Date***
Response Issued by:			
	Owner Authorized Representative	***Name (Printed)***	***Date***

This Form Cannot Modify Contract Amount or Milestones and/or Contract Time.

Addendum #3
Attachment "J"

TELACU Construction Management
604 N. Eckhoff Street
Orange, CA 92868
Ph: 714.541.2390
Fax: 714.541.9411

NEW HVAC FOR ADOLFO CAMARILLO HIGH SCHOOL
BID: 629

Pre-Bid RFI # 01

From: Kelly Coultrup, Chief Estimator
Office (714) 541-2390
Fax (714) 541-9411
Cell (714) 623-8983
kcoultrup@TELACU.com

Date: 8/11/2020

Submitted: Via e-mail to bvillasenor@Bernards.com

1. Electrical Roof-Top Disconnect Switches and GFI Receptacles

Detail 2 Sheet E113 shows how all roof top disconnects, and GFI's are to be independently supported.
Key Note #1 on Electrical Roof Plans states disconnects to be independently supported.
Key Note #4 does not mention independent support.
Key Note #3 does not mention independent support.

Please confirm if this detail 2/E113 is to be used, in lieu of mounting directly to the mechanical equipment.
Mount the Disconnects and receptacles independently. Use 2/E113 for mounting, currently the plans are being reviewed by DSA and there might be a minor change to the detail depending on any structural comments from DSA. Contractor may use the liquid tight flex metallic conduit for the wiring between disconnect and roof top unit.

2. Electrical Clarify New Lighting

The architectural drawings show new lighting installed in every building. But the electrical drawing don't show new lights in buildings F, O, Q, P, U, V, W, X, Y, and the Aquatic center. Please clarify which buildings need new light fixtures.
Install lighting per Electrical drawings. For clarification new lighting will be installed in building 'A,B,C,D,G,H,I,J,K,L,M,N'. Also there is a minor lighting relocation work in building X and Y please consider that. Its already provided on plans Ex-201 and EY-201

Responsed by : Budlong & Associates , Manan Christian EE, 2020-08-12
End of Pre-Bid RFI # 01

Addendum #3
Attachment "K"

Attachment K

TELACU Construction Management
604 N. Eckhoff Street
Orange, CA 92868
Ph: 714.541.2390
Fax: 714.541.9411

NEW HVAC FOR ADOLFO CAMARILLO HIGH SCHOOL
BID: 629

Pre-Bid RFI # 02

From: Kelly Coultrup, Chief Estimator
Office (714) 541-2390
Fax (714) 541-9411
Cell (714) 623-8983
kcoultrup@TELACU.com

Date: 8/17/2020

Submitted: Via e-mail to bvillasenor@Bernards.com

1. Window system clarifications and scope

Please see attached:

Pre-Bid RFI from Santa Barbara Glass Company
Product Data Sheet

End of Pre-Bid RFI # 02

Pre-Bid (RFI)

ISSUED BY SANTA BARBARA GLASS COMPANY

DATE: 8-17-20 **RFI NO.:** 1

PROJECT: Camarillo HS HVAC Replacement **PROJECT NO.:**

CONTRACTOR: Santa Barbara Glass Company

CONTACT PERSON: Ed Dickson **PHONE:** 805-962-7648 **FAX:** 805-966-6673

E-MAIL ADDRESS: ed@sbglassmen.com

RFI ISSUED TO:

RFI SUBJECT: **Window system clarifications and scope**

SPEC SECTION REF:

RFI REFERENCES:

INFORMATION REQUESTED:

1. The specifications include Section 085113 Aluminum Windows no others exist. These windows are sliders.

   The majority of the project consists of fixed windows resembling storefront type system.

   They are continuous and run for many feet. The window schedule sheet A9.03 shows individual windows but that is not what the exterior elevations indicate.

   Should a storefront system be added to the project for most of the fenestration shown? Such as Kawneer TriFab 451T thermally broken system? See attached.

   Should the Sliding Windows section 085113 be inserted into the storefront openings where shown on the exterior elevations?

2. Building K does not indicate new Type D windows on the south elevation. Is this correct?

WRITTEN BY: _____ **RESPONSE REQUIRED BY:** _____

INITIATED BY: _____

RESPONSE: 1a. Windows are individual ± 3'-9" wide sections mounted in between existing wood post supports. Refer to mullion details.

1b. Windows are not storefronts. Provide ULT 500 as per spec, per Arcadia Rep James at 714.244.9024, window can be configured to meet fixed & sliding configurations.

2. Provide Type D windows on Building K south elevation, full building width.

RESPONDED BY: Irvine Carrillo **DATE RESPONDED:** 08.18.2020

COST IMPACT? _____ **SCHEDULE IMPACT?** No

ATTACHMENTS? **YES**

Attachment K

TRIFAB™ VG (VERSAGLAZE™)
TRIFAB™ VG 450, 451 & 451T (THERMAL) FRAMING SYSTEMS &
TRIFAB™ 451UT (ULTRA THERMAL) FRAMING SYSTEM

Design + Performance Versatility with Unmatched Fabrication Flexibility

Trifab™ VersaGlaze™ is built on the proven and successful Trifab™ platform – with all the versatility its name implies. There are enough framing system choices, fabrication methods, design options and performance levels to please the most discerning building owner, architect and installer. The Trifab™ VersaGlaze™ family's newest addition, the Trifab™ 451UT (Ultra Thermal) Framing System, is designed for the most demanding thermal performance and employs a dual Isolock™ thermal break.

AESTHETICS

Trifab™ VersaGlaze™ Framing Systems offer designers a choice of front-, center-, back- or multi-plane glass applications. Structural silicone glazing (SSG) and weatherseal glazing options further expand designers' choices, allowing for a greater range of design possibilities for specific project requirements and architectural styles. All systems have a 4-1/2" frame depth; Trifab™ VersaGlaze™ 450 has 1-3/4" sightlines, while Trifab™ VersaGlaze™ 451/451T and Trifab™ 451UT have 2" sightlines.

With seamless incorporation of Kawneer entrances or windows, including GLASSvent™ visually frameless ventilators, Trifab™ VersaGlaze™ can be used on almost any project. These framing systems can also be packaged with Kawneer curtain walls and overhead glazing, thereby providing a full range of proven, and tested, quality products for the owner, architect and installer from a single-source supplier.

ECONOMY

Trifab™ VersaGlaze™ 450/451/451T Framing Systems offer four fabrication choices to suit your project (Trifab™ 451UT is available as screw spline fabrication only):

- Screw Spline – for economical continuous runs utilizing two-piece vertical members that provide the option to pre-assemble units with controlled shop labor costs and smaller field crews for handling and installation.
- Shear Block – for punched openings or continuous runs using tubular moldings with shear block clips that provide tight joints for transporting large pre-assembled multi-lite units.
- Stick – for fast, easy field fabrication. Field measurements and material cuts can be done when metal is on the jobsite.
- Type B – Same fabrication benefits as shear block except the head and sill run through.

Brighton Landing
Cambridge, Massachusetts
ARCHITECT
ADD Inc., Cambridge, Massachusetts
GLAZING CONTRACTOR
Ipswich Bay Glass Company,Inc., Rowley, Massachusetts
PHOTOGRAPHER
© Gordon Schenck, Jr.

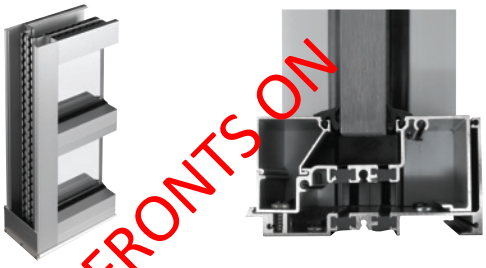
All systems can be flush glazed from either the inside or outside. The weatherseal option provides an alternative to SSG vertical mullions for Trifab™ VersaGlaze™ 450/451/451T. This ABS/ASA rigid polymer extrusion allows complete inside glazing and creates a flush glass appearance on the building exterior without the added labor of scaffolding or swing stages. Additionally, high-performance flashing options are engineered to eliminate perimeter sill fasteners and associated blind seals.

FOR THE FINISHING TOUCH

Architectural Class I anodized aluminum and painted finishes in fluoropolymer (AAMA 2605) and solvent-free powder coatings (AAMA 2604) offer a variety of color choices.

PERFORMANCE

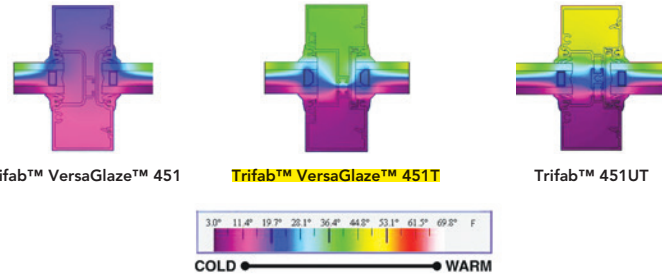
Kawneer's Isolock™ thermal break technology creates a composite section, prevents dry shrinkage and is available on Trifab™ VersaGlaze™ 451T. For even greater thermal performance, a dual Isolock™ thermal break is used on Trifab™ 451UT.



Trifab™ 451UT uses a dual Isolock™ thermal break (right) and features a new high-performance sill design, which incorporates a screw-applied end dam (left), ensuring positive engagement and tight joints between the sill flashing and end dam.

U-factor, CRF values and STC ratings for Trifab™ VersaGlaze™ vary depending upon the glass plane application. Project-specific U-factors can be determined for each individual project. (See the Kawneer Architectural Manual or Kawneer.com for additional information.)

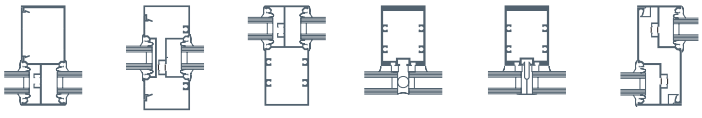
Thermal simulations showing temperature variations from exterior/cold side to interior/warm side.



Trifab™ VersaGlaze™ 451 | **Trifab™ VersaGlaze™ 451T** | **Trifab™ 451UT**

PERFORMANCE TEST STANDARDS

Air Infiltration	ASTM E283
Water	AAMA 501, ASTM E331
Structural	ASTM E330
Thermal	AAMA 1503
Thermal Break	AAMA 505, AAMA TIR-A8
Acoustical	AAMA 1801, ASTM E1425



Front | **Center** | **Back** | **SSG** | **Weatherseal** | **Multi-Plane**

Kawneer Company, Inc.
Technology Park / Atlanta
555 Guthridge Court
Norcross, GA 30092
770.449.5555
kawneer.com

KAWNEER

ARCHITECTURAL SYSTEMS | ENTRANCES + FRAMING | CURTAIN WALLS | WINDOWS

Addendum #3
Attachment "L"

DOCUMENT 00 41 13

REVISED BID FORM AND PROPOSAL

To: Governing Board of the Oxnard Union High School District ("District" or "Owner")

From: _____
(Proper Name of Bidder)

The undersigned declares that Bidder has read and understands the Contract Documents, including, without limitation, the Notice to Bidders and the Instructions to Bidders, and agrees and proposes to furnish all necessary labor, materials, and equipment to perform and furnish all work in accordance with the terms and conditions of the Contract Documents, including, without limitation, the Drawings and Specifications of

Bid No. _____for the following project known as:

New HVAC Modernization for Adolfo Camarillo High School

("Project" or "Contract") and will accept in full payment for that Work the following total lump sum amount, all taxes included:

_____**Dollars $**_____
Base Bid Value

_____ **Dollars $** _____
Base Bid Including Allowance Values

Bidder acknowledges and agrees that the Base Bid accounts for any and all costs.

Bidder acknowledges and agrees that the exact Allowance values are to be added to contractor base bid value, each submission of this bid form shall incorporate the noted values of allowance #1 & #2. Contractor is not in any way to facture these costs as a portion of OH&P. The District may in fact elect not to use these allowance if final budget prohibits, Contractor would then credit back full value of allowances from final contract value without any markups. The final scope and value for each of the allowance will be negotiated prior to issuance of contract.

Successful Bidder will be allowed an additional 30 days to overall schedule to be use at contractor's discretion if allowances are exercised.

Allowance #1: Demo, Prep, Provide and Install all New VCT Flooring throughout classroom and other buildings noted (A,B,C,D,F,G,H,J,K,L,M,N,O,Q) Exclusions: Gym, Locker Rooms, Cafeteria Food Prep & Kitchen areas. $377,000.00

Allowance Alternate #2: Clean, Prep, Primer and Install New Interior Painting including Doors, Windows and Frames throughout classroom and other buildings noted (A,B,C,D,F,G,H,J,K,L,M,N,O,Q) Exclusions: Gym, Locker Rooms, Cafeteria Food Prep & Kitchen areas. $435,000.00

Example: Contractors Base Bid Value $ + $377,000.00 + $435,000.00 = $ Base Bid + Allowance Values

A. The undersigned has reviewed the Work outlined in the Contract Documents and fully understands the scope of Work required in this Proposal, understands the

construction and project management function(s) is described in the Contract Documents, and that each Bidder who is awarded a contract shall be in fact a prime contractor, not a subcontractor, to the District, and agrees that its Proposal, if accepted by the District, will be the basis for the Bidder to enter into a contract with the District in accordance with the intent of the Contract Documents.

B. The undersigned has notified the District in writing of any discrepancies or omissions or of any doubt, questions, or ambiguities about the meaning of any of the Contract Documents, and has contacted the Construction Manager before bid date to verify the issuance of any clarifying Addenda.

C. The undersigned agrees to commence work under this Contract on the date established in the Contract Documents and to complete all work within the time specified in the Contract Documents.

D. The liquidated damages clause of the General Conditions and Agreement is hereby acknowledged.

E. It is understood that the District reserves the right to reject this bid and that the bid shall remain open to acceptance and is irrevocable for a period of ninety (90) days.

F. The following documents are attached hereto:

- Bid Bond on the District's form or other security
- Designated Subcontractors List
- Site Visit Certification
- Non-Collusion Declaration
- Iran Contracting Act Certification

G. Receipt and acceptance of the following Addenda is hereby acknowledged:

No. _____, Dated _____	No. _____, Dated _____
No. _____, Dated _____	No. _____, Dated _____
No. _____, Dated _____	No. _____, Dated _____

Addendum #3
Attachment "M"

Adolfo Camarillo High School
OXNARD UNION HIGH SCHOOL DISTRICT
FM2840.0100

1035 Lancaster Blvd
Lancaster, CA 93534
661. 949 . 0771
flewelling-moody.com

FLEWELLING & MOODY
architecture • planning • interiors

August 17, 2020

The following changes and/or clarifications shall be made to the drawings and specifications and all other conditions shall remain the same. All changes and/or clarifications provided shall be included in the scope of contracted work. Pursuant to PR13-01 all work that requires approval by the DSA shall not begin until said approvals are obtained.

SPECIFICATIONS

1. **ADD** Specification Section 07 51 13.13 Shingle Roofing (Patch and Repair) and Section 07 51 13.13 Cold Applied Bituminous Roofing (Patch and Repair). Additional standard manufacturer roof details are included on Sheet A9.05. See attachment 5.

DRAWINGS

1. **Sheet T0.01**
    a. **Add** note: “The G.C. shall be responsible for providing all necessary demolition and new construction at restrooms & drinking fountains, including utility layout, sizing, and verification. Refer to corresponding architectural building sheets “A(Bldg Letter)-501” for required parameters and areas of scope. Include in bid amount both the cost of preparing shop drawings complying with all applicable codes for improvements shown and the cost of performing the work for each building. All new toilet partitions shall be HDPE, see specification.”
    b. **Add** note: “In addition to the extents of demolition & replacement shown on the architectural plans. G.C. shall remove all existing finishes required for installation of all duct hangers, blocking, and new structural members. All removed finishes shall be replaced, patched, repaired, and painted to match the existing adjacent finishes. Refer to structural drawings for member locations and Finish Schedules for finishes to match. Typical of all buildings”

   c. **Add** note: “Basis of design for all areas receiving 12x12 glued on tile shall be ‘Armstrong 12x12 Straight Drilled Tile, Adhered’ as manufactured by Classic Acoustical Tel No. 760-775-7745 Contact: Jacob.”
2. **Sheet A1.01**
   a. **Add** note: “G.C. shall Patch & Repair existing built up roof membranes & existing roof shingles affected by project scope. Refer to Roof Type Table for roof type at each building. Provide a separate square foot unit cost for cover board, insulation board, and sheathing replacement.” See attachment 1B.
   b. **Add** note: “Where site utility distribution requires trenching at existing pavers, monuments, plaques, and similarly unique conditions, G.C. shall photo document existing condition, salvage and reinstall in place to like new condition.”
3. **Sheet AB-201D**
   a. **Add** note: “Remove existing 2x4 suspended ceiling system, acoustical tile, lights, hangers, struts, supports, in their entirety throughout building.”
4. **Sheet AB-201**
   a. **Add** note: “Provide 2x4 suspended ceiling system and acoustical tile at areas removed. See sheet A9.06 for typical details. See specification section 09 51 13.” This work may not commenced until approved by the DSA.
5. **Sheet AC-201D**
   a. **Add** note: “Remove existing 2x4 suspended ceiling system acoustical tile, lights, hangers, struts, supports, in their entirety throughout building.”
6. **Sheet AC-201**
   a. **Add** note: “Provide 2x4 suspended ceiling system and acoustical tile at areas removed. See sheet A9.06 for typical details. See specification section 09 51 13.” This work may not commenced until approved by the DSA.
7. **Sheet AC-501**
   a. **Delete** duplicate note at detail 1: “Demo (e) CMU walls, stall door and toilets, cap all lines and repair (e) finished as req’d”
   b. **Add** note at detail 1: “ Demo existing northern most water closet and partition door, cap all remaining unused lines above in wall or below slab.”
   c. **Add** note at detail 3: “ Demo (e) CMU partition walls, stall doors, and water closets, cap all remaining unused lines in wall or below slab, patch and repair floor and wall finishes as required”
8. **Sheet AD-201D**
   a. **Add** note: “Remove existing 2x4 suspended ceiling system acoustical tile, lights, hangers, struts, supports, in their entirety throughout building.”
9. **Sheet AD-201**
   a. **Add** note: “Provide 2x4 suspended ceiling system and acoustical tile at areas removed. See sheet A9.06 for typical details. See specification section 09 51 13.” This work may not commenced until approved by the DSA.
10. **Sheet AF-701**
    a. **Revise** Door Schedule Door #02 Signage References to:
       i. Door Signage: 2/A9.01
       ii. Wall Signage Push: --
       iii. Wall Signage Pull: 3/A9.01

11. **Sheet AX-202**
    a. **Revise** note to read: “Guardrail, See detail 1/9.05”
12. **Sheet AY-202**
    a. **Revise** note to read: “Guardrail, See detail 1/9.05”
13. **Sheet A9.01**
    a. **Add** typical details 13/-, 14/-, and 15/-. See attachment 2 and 3. Details shall be considered typical and shall be used throughout project whether specifically referenced or not.
14. **Sheet A9.02**
    a. **Revise** detail 9/- Typ. Platform Section to read “ 8” min” instead of “ 6” min.”
    b. **Add** details 13/- and 14/-. See attachment 4. Details shall be considered typical and shall be used throughout project whether specifically referenced or not.
15. **Sheet A9.03**
    a. **Revise** General Window Notes #6 to read: “All Glazing in doors and in windows shall be laminated safety glass, panes below 7’-6” AFF shall be tinted and provided on exterior face with anti-scratch film SolarGard 6 mil Graffitigard or approved eq. Where a portion of window pane is below 7’-6” AFF the entire pane shall be tinted and receive anti-scratch film.”
16. **Sheet A9.05**
    a. **Add** Sheet A9.05 Typical Roof Details. See attachment 5.
17. **Sheet A9.06**
    a. **Add** Sheet A9.06 Ceiling Details to plan set. See attachment 6.

Flewelling & Moody,

Irvine Carrillo

ATTACHMENT 1A

SECTION 07 51 13.13
COLD APPLIED BITUMINOUS ROOFING (PATCH AND REPAIR)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:

1. Patch-repair, patch-back or tie-in work on existing cold applied built-up roof membrane.
2. Roofing insulation.
3. Aggregate ballast.

B. Related Sections include the following:

1. Division 6 Section "Rough Carpentry" for wood blocking, curbs, cants, and nailers; and wood-based, structural-use roof deck panels.
2. Division 7 Section "Joint Sealants."

C. Unit Prices: Refer to Division 1 Section "Unit Prices" for description of Work in this Section that is affected by unit prices.

1.3 DEFINITIONS

A. Roofing Terminology: Refer to ASTM D 1079 for definitions of terms related to roofing work not otherwise defined in this Section.

B. Cold Applied Built Up Roofing – An asbestos free formulation of asphalt, solvent, thixotrope, mineral stabilizer and reinforcing fibers used as an interply adhesive and surface coat.

1.4 PERFORMANCE REQUIREMENTS

A. General: Install a watertight, built-up roofing and base flashing roofing system with compatible components that will not permit the passage of liquid water and will withstand wind loads, thermally induced movement, and exposure to weather without failure.

B. FM Listing: Although the School is not FM Insured, they choose to follow FM criteria where applicable. To that end, provide built-up roofing, base flashings, and component materials that comply with requirements of FM 4450 and FM 4470 and FM 1-49 Loss Prevention Data Sheet as part of a roofing system and that are listed in FM's "Approval Guide" for Class 1 or noncombustible construction, as applicable. Identify materials with FM markings.

1. Roofing system shall comply with the following:
   a. Fire/Windstorm Classification: FM Class 1A-90.
   b. FM 1-49 Loss Prevention Data Sheet - Perimeter Flashing
   c. FM 1-28 Loss Prevention Data Sheet - Wind Loads to Roof Systems and Decks

d. FM 1-29 Loss Prevention Data Sheet - Above Deck Components
e. ASCE 7 – Section 6: Wind Forces on Buildings and other Structures

1.5 SUBMITTALS

A. Product Data: For each type of roofing product specified. Include data substantiating that materials comply with requirements.

B. Shop Drawings: Include plans, sections, details, and attachments to other work, for the following:

1. Base flashings, cants, and membrane terminations.
2. Tapered insulation, including slopes.
3. Crickets, saddles, and tapered edge strips, including slopes.

C. Samples for Verification: Of the following products, if requested by Owner:

1. 12-by-12-inch square of roofing insulation.
2. 3 lb of aggregate surfacing material.
3. 6 insulation fasteners of each type, length, and finish.

D. Installer Certificates: Signed by roofing system manufacturer certifying that Installer is approved, authorized, or licensed by manufacturer to install specified roofing system and is eligible to conduct the repairs or modifications in accordance with and to preserve the roofing manufacturer's warranty currently in place.

E. Inspection Report: Copy of roofing system manufacturer's inspection report of completed roofing installation.

1.6 QUALITY ASSURANCE

A. 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; who is approved, authorized, or licensed by the roofing system manufacturer to install manufacturer's product; and who is eligible to receive the standard roofing manufacturer's warranty.

B. Manufacturers Technical Services: Contractor shall provide the Roofing System Manufacturers Technical Services Inspections. The job site inspections are to be performed by the Manufacturers full time employees. Inspections shall be documented in writing. Provide a minimum of three (3) job site inspection per school site.

C. Fire-Test-Response Characteristics: Provide roofing materials with the fire-test-response characteristics indicated as determined by testing identical products per test method indicated below by UL, FM, or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.

1. Exterior Fire-Test Exposure: Class A; complying with ASTM E 108/UL 790, for application and slopes indicated.

D. Preliminary Roofing Conference: Before starting roof deck construction, conduct conference at Project site. Meet with the same participants and review the same items listed for the preinstallation conference. In addition, review status of submittals and coordination of work related to roof construction. Notify participants at least 5 working days before conference.

E. Pre-installation Conference: Before installing roofing system, conduct conference at Project site to comply with requirements of Division 1 Section "Project Meetings." Notify participants at least 5 working days before conference.

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. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and attachment to structural members.
4. Review loading limitations of deck during and after roofing.
5. Review flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing.
6. Review governing regulations and requirements for insurance, certifications, and inspection and testing, if applicable.
7. Review temporary protection requirements for roofing system during and after installation.
8. Review roof observation and repair procedures after roofing installation.
9. Document proceedings, including corrective measures or actions required, and furnish copy of record to each participant.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store roofing materials in a dry, warm, well-ventilated, weathertight location according to roofing system manufacturer's written instructions. Store rolls of felt and other sheet materials on end on pallets or other raised surfaces. Do not double-stack rolls.

1. Handle and store roofing materials and place equipment in a manner to avoid significant or permanent damage to deck or structural supporting members.

B. Do not leave unused felts and other sheet materials on the roof overnight or when roofing work is not in progress unless protected from weather and moisture and unless maintained at a temperature exceeding 50 deg F.

C. Deliver and store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer.

D. Protect roofing insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturers written instructions for handling, storing, and protecting during installation.

1.8 PROJECT CONDITIONS

A. Weather Limitations: Proceed with roofing work only when existing and forecasted weather conditions permit roofing to be installed according to manufacturers' written instructions and warranty requirements.

1.9 WARRANTY

ATTACHMENT 1A

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.

1. Warranty Period: Continuance of Existing Tremco Warranty.

2. Letter sign by Manufacture that work repair work or patch work was completed per Manufactures long-term warranty guidelines.

B. Contractors Warranty

1. Contractors Warranty shall cover all labor and materials required to install the specified assemblies. Warranty period shall be 2 years from Substantial Completion

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Materials are to be compatible with the existing materials and capable of inclusion into the long-term warranty. Subject to compliance with requirements, provide products by the following: The Existing Roofing systems are Tremco.

1. Built-up Asphalt Roofing Products and systems:
   a. BURmastic 100 system by Tremco, Inc.

2. Polyisocyanurate Board Insulation & Taper Panels *(Where required):*
   a. **Tremco or Approved Generic by Manufacture**.

3. Wood-Fiber-Board Insulation:

   a. Tremco Structo-Deck, ½" thick by largest panel size available.

2.2 BASE-SHEET MATERIALS

A. Sheathing Paper: Red-rosin type, minimum 3 lb/100 sq. ft.

B. Base Sheet: Unperforated, asphalt-impregnated and -coated, glass-fiber reinforced sheet, dusted with fine mineral surfacing on both sides, complying with ASTM D 4601, Type II.
1. BURmastic Composite Ply HT.

2.3 ROOF MEMBRANE PLIES

A. Ply Felt: Asphalt-coated, glass-fiber reinforced felt, complying with ASTM D 4601, Type II. 33 Pounds per square
1. BURmastic Glass Ply.

2.4 FLASHING MATERIALS

ATTACHMENT 1A

A. Backer Sheet: Asphalt- coated glass-fiber and polyester bilaminate reinforced felt, dusted with fine mineral surfacing on both sides, complying with ASTM D 4601, Type II.
   1. BURmastic Composite Ply HT

B. Flashing Sheet: White thermoplastic single ply membrane, comprised of an elastomeric Tri-Polymer alloy based blended with CPE and PVC, white on one side and gray on the opposite side, complying with ASTM D 4434.
   1. TPA 60mil; base flashings
   2. TPA 55mil un-reinforced; misc. pipe and flashing details

C. Glass-Fiber Fabric: Woven glass reinforcement treated with organic resin complying with ASTM D 1668, Type III.
   1. BURmesh

D. Base Flashing Strip in adhesive used at 3 and 5 coursing with glass-fiber fabric:
   1. Rock-it Adhesive

2.5 ASPHALT MATERIALS

A. Asphalt Primer Water-based asphalt primer: **TremPrime WB**

B. Cold-Applied Adhesive: Roofing system manufacturer's standard asphalt-based, 1-part asbestos-free, cold-applied adhesive specially formulated for compatibility and use with built-up roofing membranes and flashings. Each container labeled with UL and FM logos indicating material was manufactured under the specified UL and FM quality assurance programs.
   1. **BURmastic Adhesive** . For use in large roof replacement areas as indicated
   2. **BURmastic SF Adhesive**. For use at patch and repair roof areas limited to immediate area around individual mechanical equipment or penetrations outside of large roof replacement areas.

2.6 AUXILIARY MEMBRANE MATERIALS

A. General: Furnish auxiliary materials recommended by roofing system manufacturer for intended use and compatible with built-up roofing.

   1. Furnish liquid-type auxiliary materials that meet VOC limits of authorities having jurisdiction.

B. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required by roofing system manufacturer for application
   1. ELS Mastic

C. Elastomeric Flashing Adhesive Butyl rubber based, trowel grade
   1. Sheeting Bond.

D. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions of FM 4470; designed for fastening base sheets and base flashings and for backnailing ply felts to substrate; tested by manufacturer for required pullout strength; and acceptable to roofing system manufacturer.
   1. Type and kind as required for the deck area in the area of work.

E. Wood Nailer Strips: Furnish wood nailer strips complying with requirements of Division 6 Section "Rough Carpentry.

F. Cants: Cellulosic-fiber board, complying with ASTM C 208, Type 2.

G. Walkway Pads: Mineral-surfaced asphaltic composition panels, factory formed, nonporous, with a slip-resisting surface texture, manufactured specifically for adhering to built-up roofing as a protection course for foot traffic, of the following thickness:

1. TremTred

2. Thickness: 1/2 inch

H. Aggregate Surfacing: Clean, dry, double washed, water-worn gravel, complying with ASTM D 1863. Color and size to match existing.

I. Miscellaneous Accessories: Provide miscellaneous accessories recommended by roofing system manufacturer for intended use.

2.7 INSULATION MATERIALS

A. Polyisocyanurate Board Insulation: Rigid, cellular polyisocyanurate thermal insulation with core formed by using HCFCs as blowing agents complying with ASTM C 1289, classified by facer type as follows:

1. Facer Type: Type IV, cellulosic-fiber insulating board, complying with ASTM C 208, Type II, Grade 2

B. Cellulosic-Fiber-Board Insulation: Fibrous-felted, rigid insulation boards of wood fiber or other cellulosic-fiber and water-resistant binders, asphalt impregnated, chemically treated for deterioration, complying with ASTM C 208, Type II, Grade 2. **Structo-Dek**

2.8 INSULATION ACCESSORIES

A. General: Furnish roofing insulation accessories recommended by insulation manufacturer for intended use and compatible with sheet roofing material.

B. Insulation Adhesive: Solvent free, bituminous urethane adhesive

1. **Low Rise Insulation Adhesive by Tremco**.

C. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions of FM 4470, designed for fastening roofing insulation to substrate, tested by manufacturer for required pullout strength, and acceptable to roofing system manufacturer.

D. Tapered Edge Strips: Rigid, cellulosic-fiber insulation board, complying with ASTM C 208, Type 2.

E. Tapered Edge Strips: Rigid, glass-fiber insulation board, complying with ASTM C 726.

F. Substrate Joint Tape: 6 or 8 inches wide, coated, glass-fiber joint tape.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions under which roofing will be applied, with Installer present, for compliance with requirements.

B. Verify that roof openings and penetrations are in place and set and braced and that roof drains are properly clamped into position.

C. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at roof penetrations and terminations and match the thicknesses of insulation required.

1. Verify that wood nailer strips are located perpendicular to roof slope and spaced according to requirements of roofing system manufacturer.

D. Do not proceed with installation until after the minimum concrete curing period recommended by roofing system manufacturer.

E. Verify that flatness and fastening of metal roof decks comply with installation tolerances specified in Division 5 Section "Steel Deck."

F. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean around area where new penetration has occurred. Remove aggregate surfacing and all materials that will prevent proper adhesion of new materials.

B. Roofing Contractor shall cut existing membrane in manner to provide clean even edges. Take necessary precautions to prevent tearing and lifting of membrane to remain in place. General Contractor shall be responsible for maintaining openings in a weather tight condition.

C. The existing Manufacturers Warranty shall be placed in suspension until all roofing work has been completed and accepted by the Manufacturer. Upon acceptable completion, the Warranty shall be re-instated as applicable.

D. Clean substrate of dust, debris, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.

E. 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.

3.3 GENERAL INSTALLATION REQUIREMENTS

A. Install built-up roofing membrane system according to roofing system manufacturer's written instructions and applicable recommendations of ARMA/NRCA's "Quality Control Guidelines for the Application of Built-Up Roofing."

1. Install roofing system according to applicable specification plates of NRCA's "The NRCA Roofing and Waterproofing Manual."

B. Start installation of built-up roofing membrane in presence of roofing system manufacturer's technical personnel.

C. Cants: Install and secure preformed 45-degree wood cants at junctures of built-up roofing membrane system with vertical surfaces or angle changes greater than 45 degrees.

D. Cooperate with inspecting and testing agencies engaged or required to perform services for installing built-up roofing membrane system.

E. Coordinate installing roofing system components so insulation and roofing plies are not exposed to precipitation or left exposed at the end of the workday or when rain is forecast.

1. Provide cutoffs at end of each day's work to cover exposed ply sheets and insulation with a course of coated felt with joints and edges sealed.
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.

F. Cold process adhesive heating:

1. An in-line heat exchange unit may be used to facilitate application
   a. Maximum adhesive temperature: 100° F. Do not exceed the flash point of the adhesive.
2. Heat exchange unit: Filled with heat transfer oil approved by equipment manufacturer.
3. Follow operation procedures as recommended by equipment manufacturer.

G. Surfacing Adhesive

1. Aggregate Surfacing: Limit temperature of cold adhesive surface coat to the minimum required for proper embedment of aggregate and the maximum that will permit retention of required coating weight based on slope of surface.
2. Substrate-Joint Penetrations: Prevent roofing adhesive from penetrating substrate joints, entering building, or damaging roofing system components or adjacent building construction. If it is applied directly to substrate, tape substrate joints.

3.4 INSULATION INSTALLATION (Where Occurs)

A. Coordinate installing roofing 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 roofing insulation.

C. Install tapered insulation under area of roofing to conform to slopes indicated and to Shop Drawings.

D. Install tapered edge strips at perimeter edges of roof that do not terminate at vertical surfaces.

E. Install one or more layers of insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2 inches or greater, install required thickness in 2 or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches in each direction.

F. Trim surface of insulation where necessary at roof drains so completed surface is flush with ring of drain.

G. Install insulation with long joints of insulation in continuous straight lines 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.

H. Attached Insulation: Over nailable decks, secure first layer of insulation to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roofing insulation to deck type indicated. Over non-nailable decks, prime and install panels using maximum 4' x 4' panel size for first layer. Over LWC, mechanically install a base sheet and then adhere insulation using 4' x 4' maximum panel size for first layer. Install subsequent layers of insulation in a ribbon coverage of solvent free insulation adhesive at a rate of 1-½ gallons per 100 sq. ft. Immediately after placement, walk insulation boards into adhesive to achieve solid contact.

1. Fasten insulation according to requirements of FM's "Approval Guide" for specified Windstorm Resistance Classification and the insulation and roofing system manufacturers' written instructions.
2. Fasten insulation according to the insulation and roofing system manufacturers' written instructions.

I. Adhered Insulation: Prime surface of concrete deck with primer at a rate of 150 – 250 sq. ft. per gallon, unless a greater weight is required by roofing system manufacturer, and allow primer to dry. Set each layer of insulation in a ribbon coverage of insulation adhesive at a rate of 1-½ gallons per 100 sq. ft. Immediately after placement, walk insulation boards into adhesive to achieve solid contact.

3.5 BASE-SHEET INSTALLATION

A. Install one lapped course of base sheet according to roofing system manufacturer's written instructions, extending sheet over and terminating beyond cants. Attach base sheet as follows:

1. Non-Insulated Decks: Mechanically fasten to substrate.
2. Over insulation, adhere to substrate in a uniform coating of cold adhesive. Where occurs.

3.6 ROOF MEMBRANE INSTALLATION

A. Install ply felts according to roofing system manufacturer's written instructions, starting at low point of roofing system. Cut roofing ply sheets in 18 – 20 ft. lengths and allow to relax 30 to 60 minutes. Stack lengths. Do not re-roll. Shingle side laps of ply felts uniformly to achieve required number of membrane plies throughout. Shingle in direction to shed water. Extend ply felts over and terminate beyond cants.

1. Install 3 ply felts.
2. Application: Adhere each ply felt in 2.5 gallons per 100 sq of cold adhesive, applied within temperature range and at rate required by roofing system manufacturer, to form a uniform membrane without ply felts touching each other.

B. Surfacing Application:
1. Prior to application of surface coat, contractor shall inspect roof with manufacturer's technical representative and repair any deficiencies.
2. Over entire roof surface of new work, apply uniform and continuous surface coat of surfacing adhesive at a rate of 5 gallons per 100 sq. ft.

C. Aggregate Surfacing: Immediately broadcast minimum of 400 lbs /100 sq. ft. of new, clean roofing gravel. Cover surface coat material completely.

3.7 FLASHING AND STRIPPING INSTALLATION

A. Elastomeric Flashing

a. Adhere elastomeric sheeting completely to flashing surface, cant and roofing with flashing adhesive; allow adhesive to remain open for approx. 15 minutes to flash off solvent prior to setting elastomeric sheeting into flashing adhesive.
b. Apply consistent pressure to entire surface of elastomeric sheeting using a steel hand roller to achieve full adhesion of the sheeting to the flashing substrate. Ensure complete bond and continuity without wrinkles or voids. Lap sheeting ends 4 inches. Adhere laps with flashing adhesive.
c. Elastomeric sheeting width: Sufficient to extend at least 6 inches beyond toe of cant onto new roof.
d. Seal vertical and horizontal edges of sheeting with reinforcing membrane embedded in a base course of flashing adhesive and a top course of modified asphalt mastic.

B. Two Ply stripping for metal flanges:

1. Set flange in asphalt mastic. Seal flange with 2 stripping plies embedded between alternate applications of stripping adhesive/bitumen. Extend first ply 8 inches beyond flange; second ply 6 inches beyond first ply.

3.8 TIE-IN TO EXISTING MEMBRANE

A. Follow Tremco Roofing standards for the Tie-In detail. Surfacing at existing membrane adjacent to new penetration, shall be removed to expose existing felts

B. Prime existing felts and allow to flash.

C. Install one 18-inch wide Composite Ply felt evenly across joint line of new and existing.

D. Install two ply strip-in using ply felts that extend past the edge of the previous felt a minimum of 6 inches

E. Surface coat and apply surfacing aggregate of same size and color as existing.

F. Install surfacing sheet in color to match existing where applicable. Butt edge of new surfacing sheet against edge of next higher surfacing sheet as required to prevent the blockage of water flowing across roof. At gravel surfaces match existing as specified elsewhere.

3.9 LONG TERM WARRANTY EXTENSION

A. Contractor shall review the existing roof conditions of all low slope roofing areas with the Manufacturer of Record, Tremco Roofing (Dan Gilday – dgilday@tremcoinc.com) prior to starting work.

3.10 FIELD QUALITY CONTROL

A. Owner will engage, at their option, an independent testing and inspecting agency to perform field inspections and quality-assurance tests.

1. The Manufacturer and the Testing Agency shall agree in writing to acknowledge and accept the comments of the other agency.

B. Correct deficiencies in or remove and replace roof membrane that inspections and test reports indicate does not comply with specified requirements or are capable of being incorporated into the existing warranty.

ATTACHMENT 1A

1. Repair roof membrane that does not comply with specified requirements by re-adhering test specimens back in place and by applying additional plies, equal to the original number of plies specified, over test specimens according to roofing system manufacturer's written instructions.

C. Test Cuts: Before surface coating and surfacing built-up roofing membrane, test specimens will be removed to evaluate problems observed during quality-assurance inspections of roof membrane as follows:

1. Test specimens will be examined for interply voids according to ASTM D 3617 and to comply with the criteria established in Appendix 3 of ARMA/NRCA'S "Quality Control Guidelines for the Application of Built-up Roofing."

D. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion and submit report to Architect.

1. Notify Architect and Owner, General Contractor and Roof System Representative, 48 hours in advance of the date and time of inspection.

3.11 PROTECTING AND CLEANING

A. Protect built-up roofing membrane 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 built-up roofing that does not comply with requirements, repair substrates, reinstall roofing, and repair base flashings to a condition free of damage and deterioration at the 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

ATTACHMENT 1A

SECTION 07 51 13.13
SHINGLE ROOFING (PATCH AND REPAIR)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:

1. Cold Applied built-up roof membrane.
2. Base sheet.
3. Roofing insulation.
4. Aggregate ballast.

B. Related Sections include the following:

1. Division 6 Section "Rough Carpentry" for wood blocking, curbs, cants, and nailers; and wood-based, structural-use roof deck panels.
2. Division 7 Section "Joint Sealants."

C. Unit Prices: Refer to Division 1 Section "Unit Prices" for description of Work in this Section that is affected by unit prices.

1.3 DEFINITIONS

A. Roofing Terminology: Refer to ASTM D 1079 for definitions of terms related to roofing work not otherwise defined in this Section.

B. Cold Applied Built Up Roofing – An asbestos free formulation of asphalt, solvent, thixotrope, mineral stabilizer and reinforcing fibers used as an interply adhesive and surface coat.

1.4 PERFORMANCE REQUIREMENTS

A. General: Install a watertight, built-up roofing and base flashing roofing system with compatible components that will not permit the passage of liquid water and will withstand wind loads, thermally induced movement, and exposure to weather without failure.

B. FM Listing: Although the School is not FM Insured, they choose to follow FM criteria where applicable. To that end, provide built-up roofing, base flashings, and component materials that comply with requirements of FM 4450 and FM 4470 and FM 1-49 Loss Prevention Data Sheet as part of a roofing system and that are listed in FM's "Approval Guide" for Class 1 or noncombustible construction, as applicable. Identify materials with FM markings.

1. Roofing system shall comply with the following:

   a. Fire/Windstorm Classification: FM Class 1A-90.
   b. FM 1-49 Loss Prevention Data Sheet - Perimeter Flashing
   c. FM 1-28 Loss Prevention Data Sheet - Wind Loads to Roof Systems and Decks
   d. FM 1-29 Loss Prevention Data Sheet - Above Deck Components
   e. ASCE 7 – Section 6: Wind Forces on Buildings and other Structures

1.5 SUBMITTALS

A. Product Data: For each type of roofing product specified. Include data substantiating that materials comply with requirements.

B. Shop Drawings: Include plans, sections, details, and attachments to other work, for the following:

   1. Base flashings, cants, and membrane terminations.
   2. Tapered insulation, including slopes.
   3. Crickets, saddles, and tapered edge strips, including slopes.

C. Samples for Verification: Of the following products:

   1. 12-by-12-inch (300-by-300-mm) square of roofing insulation.
   2. 3 lb (1.5 kg) of aggregate surfacing material.
   3. 6 insulation fasteners of each type, length, and finish.

D. Installer Certificates: Signed by roofing system manufacturer certifying that Installer is approved, authorized, or licensed by manufacturer to install specified roofing system and is eligible to conduct the repairs or modifications in accordance with and to preserve the roofing manufacturer's warranty currently in place.

E. Inspection Report: Copy of roofing system manufacturer's inspection report of completed roofing installation.

1.6 QUALITY ASSURANCE

A. 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; who is approved, authorized, or licensed by the roofing system manufacturer to install manufacturer's product; and who is eligible to receive the standard roofing manufacturer's warranty.

B. Manufacturers Technical Services: Contractor shall provide the Roofing System Manufacturers Technical Services Inspections. The job site inspections are to be performed by the Manufacturers full time employees. Inspections shall be documented in writing. Provide a minimum of three (3) days of job site inspection.

C. Fire-Test-Response Characteristics: Provide roofing materials with the fire-test-response characteristics indicated as determined by testing identical products per test method indicated below by UL, FM, or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.

   1. Exterior Fire-Test Exposure: Class A; complying with ASTM E 108/UL 790, for application and slopes indicated.

D. Preliminary Roofing Conference: Before starting roof deck construction, conduct conference at Project site. Meet with the same participants and review the same items listed for the pre-installation conference. In addition, review status of submittals and coordination of work related to roof construction. Notify participants at least 5 working days before conference.

E. Pre-installation Conference: Before installing roofing system, conduct conference at Project site to comply with requirements of Division 1 Section "Project Meetings." Notify participants at least 5 working days before conference.

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. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and attachment to structural members.
4. Review loading limitations of deck during and after roofing.
5. Review flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing.
6. Review governing regulations and requirements for insurance, certifications, and inspection and testing, if applicable.
7. Review temporary protection requirements for roofing system during and after installation.
8. Review roof observation and repair procedures after roofing installation.
9. Document proceedings, including corrective measures or actions required, and furnish copy of record to each participant.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store roofing materials in a dry, warm, well-ventilated, weathertight location according to roofing system manufacturer's written instructions. Store rolls of felt and other sheet materials on end on pallets or other raised surfaces. Do not double-stack rolls.

1. Handle and store roofing materials and place equipment in a manner to avoid significant or permanent damage to deck or structural supporting members.

B. Do not leave unused felts and other sheet materials on the roof overnight or when roofing work is not in progress unless protected from weather and moisture and unless maintained at a temperature exceeding 50 deg F (10 deg C).

C. Deliver and store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer.

D. Protect roofing insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturers written instructions for handling, storing, and protecting during installation.

1.8 PROJECT CONDITIONS

ATTACHMENT 1A

A. Weather Limitations: Proceed with roofing work only when existing and forecasted weather conditions permit roofing to be installed according to manufacturers' 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.

1. Warranty Period: Continuance of Existing Tremco Warranty.

B. Issuance of Long Term Warranty Extension. Owner requires that the existing Long Term Warranty be extended for an additional 10 years. Extension to begin at end of existing Long Term Warranty.

C. Contractors Warranty

1. Contractors Warranty shall cover all labor and materials required to install the specified assemblies. Warranty period shall be 2 years from Substantial Completion

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Materials are to be compatible with the existing materials and capable of inclusion into the long term warranty. Subject to compliance with requirements, provide products by the following: The Existing Roofing systems are Tremco.

1. Built-up Asphalt Roofing:
   a. Tremco, Inc.

2. Polyisocyanurate Board Insulation: (Where required)
   a. Celotex Corp. (The).
   b. Firestone Building Products
   c. Rmax, Inc.
   d. NRG Barriers, Inc.

3. Wood-Fiber-Board Insulation:
   a. Tremco Structo-Dek, ½" thick by largest panel size available.

4. Walk Pads:
   a. Tremco.

2.2 BASE-SHEET MATERIALS

A. Sheathing Paper: Red-rosin type, minimum 3 lb/100 sq. ft. (0.16 kg/sq. m).

B. Base Sheet: Unperforated, asphalt-impregnated and -coated, glass-fiber reinforced sheet, dusted with fine mineral surfacing on both sides, complying with ASTM D 4601, Type II.

ATTACHMENT 1A

1. BURmastic Composite Ply HT by Tremco.

2.3 ROOF MEMBRANE PLIES

A. Ply Felt: Asphalt-coated, glass-fiber reinforced felt, complying with ASTM D 4601, Type II. 33 Pounds per square

1. BURmastic Glass Ply by Tremco.

2.4 FLASHING MATERIALS

A. Backer Sheet: Asphalt- coated glass-fiber and polyester bilaminate reinforced felt, dusted with fine mineral surfacing on both sides, complying with ASTM D 4601, Type II.

1. BURmastic Composite Ply HT by Tremco

B. Flashing Sheet: White thermoplastic single ply membrane, comprised of an elastomeric Tri-Polymer alloy based blended with CPE and PVC, white on one side and gray on the opposite side, complying with ASTM D 4434.

C. Glass-Fiber Fabric: Woven glass reinforcement treated with organic resin complying with ASTM D 1668, Type III.

1. BURmesh by Tremco.

2.5 ASPHALT MATERIALS

A. Asphalt Primer Water-based asphalt primer

B. Cold-Applied Adhesive: Roofing system manufacturer's standard asphalt-based, 1-part asbestos-free, cold-applied adhesive specially formulated for compatibility and use with built-up roofing membranes and flashings. Each container labeled with UL and FM logos indicating material was manufactured under the specified UL and FM quality assurance programs.

1. BURmastic LV Adhesive by Tremco. For use in large roof replacement areas as indicated.
2. BURmastic SF Adhesive by Tremco. For use at patch and repair roof areas limited to immediate area around individual mechanical equipment or penetrations outside of large roof replacement areas

2.6 AUXILIARY MEMBRANE MATERIALS

A. General: Furnish auxiliary materials recommended by roofing system manufacturer for intended use and compatible with built-up roofing.

1. Furnish liquid-type auxiliary materials that meet VOC limits of authorities having jurisdiction.

B. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required by roofing system manufacturer for application
1. ELS by Tremco

ATTACHMENT 1A

C. Elastomeric Flashing Adhesive Butyl rubber based, trowel grade.

1. Sheeting Bond by Tremco.

D. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions of FM 4470; designed for fastening base sheets and base flashings and for backnailing ply felts to substrate; tested by manufacturer for required pullout strength; and acceptable to roofing system manufacturer.

E. Type and kind as required for the deck area in the area of work.

F. Wood Nailer Strips: Furnish wood nailer strips complying with requirements of Division 6 Section "Rough Carpentry.

G. Cants: Cellulosic-fiber board, complying with ASTM C 208, Type 2.

H. Walkway Pads: Mineral-surfaced asphaltic composition panels, factory formed, nonporous, with a slip-resisting surface texture, manufactured specifically for adhering to built-up roofing as a protection course for foot traffic, of the following thickness:

1. TremTred by Tremco.

2. Thickness: 1/2 inch (12 mm).

I. Aggregate Surfacing: Clean, dry, double washed, water-worn gravel, complying with ASTM D 1863. Color and size to match existing.

J. Miscellaneous Accessories: Provide miscellaneous accessories recommended by roofing system manufacturer for intended use.

2.7 INSULATION MATERIALS

A. Polyisocyanurate Board Insulation: Rigid, cellular polyisocyanurate thermal insulation with core formed by using HCFCs as blowing agents complying with ASTM C 1289, classified by facer type as follows:

1. Facer Type: Type II, black, non-asphaltic fiber reinforced felt on both major surfaces.
2. Facer Type: Type IV, cellulosic-fiber insulating board, complying with ASTM C 208, Type II, Grade 2, 1/2 inch (12.7 mm) thick on 1 major surface and a black, non-asphaltic fiber reinforced felt on the other.

B. Cellulosic-Fiber-Board Insulation: Fibrous-felted, rigid insulation boards of wood fiber or other cellulosic-fiber and water-resistant binders, asphalt impregnated, chemically treated for deterioration, complying with ASTM C 208, Type II, Grade 2. Structo-Dek by Tremco

2.8 INSULATION ACCESSORIES

A. General: Furnish roofing insulation accessories recommended by insulation manufacturer for intended use and compatible with sheet roofing material.

B. Insulation Adhesive: Solvent free, bituminous urethane adhesive

1. Low Rise Insulation Adhesive by Tremco.

ATTACHMENT 1A

C. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions of FM 4470, designed for fastening roofing insulation to substrate, tested by manufacturer for required pullout strength, and acceptable to roofing system manufacturer.

D. Tapered Edge Strips: Rigid, cellulosic-fiber insulation board, complying with ASTM C 208, Type 2.

E. Tapered Edge Strips: Rigid, glass-fiber insulation board, complying with ASTM C 726.

F. Substrate Joint Tape: 6 or 8 inches (150 or 200 mm) wide, coated, glass-fiber joint tape.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions under which roofing will be applied, with Installer present, for compliance with requirements.

B. Verify that roof openings and penetrations are in place and set and braced and that roof drains are properly clamped into position.

C. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at roof penetrations and terminations and match the thicknesses of insulation required.

1. Verify that wood nailer strips are located perpendicular to roof slope and spaced according to requirements of roofing system manufacturer.

D. Do not proceed with installation until after the minimum concrete curing period recommended by roofing system manufacturer.

1. Test concrete substrate for excessive moisture by pouring 1 pint (0.5 L) of roofing asphalt at equiviscous temperature on deck at start of each day's work and at start of each roof area or plane. Do not proceed with roofing work if test sample foams or can be easily and cleanly stripped after cooling.

E. Verify that flatness and fastening of metal roof decks comply with installation tolerances specified in Division 5 Section "Steel Deck."

F. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean around area where new penetration has occurred. Remove aggregate surfacing and all materials that will prevent proper adhesion of new materials.

B. Roofing Contractor shall cut existing membrane in manner to provide clean even edges. Take necessary precautions to prevent tearing and lifting of membrane to remain in place. General Contractor shall be responsible for maintaining openings in a weather tight condition. The existing Manufacturers Warranty shall be placed in suspension until all roofing work has been completed and accepted by the Manufacturer. Upon acceptable completion, the Warranty shall be re-instated as applicable.

C. Clean substrate of dust, debris, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.

D. 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.

3.3 GENERAL INSTALLATION REQUIREMENTS

A. Install built-up roofing membrane system according to roofing system manufacturer's written instructions and applicable recommendations of ARMA/NRCA's "Quality Control Guidelines for the Application of Built-Up Roofing."

1. Install roofing system according to applicable specification plates of NRCA's "The NRCA Roofing and Waterproofing Manual."

B. Start installation of built-up roofing membrane in presence of roofing system manufacturer's technical personnel.

C. Cants: Install and secure preformed 45-degree wood cants at junctures of built-up roofing membrane system with vertical surfaces or angle changes greater than 45 degrees.

D. Cooperate with inspecting and testing agencies engaged or required to perform services for installing built-up roofing membrane system.

E. Coordinate installing roofing system components so insulation and roofing plies are not exposed to precipitation or left exposed at the end of the workday or when rain is forecast.

1. Provide cutoffs at end of each day's work to cover exposed ply sheets and insulation with a course of coated felt with joints and edges sealed.
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.

F. Cold process adhesive heating:

1. An in-line heat exchange unit may be used to facilitate application
   a. Maximum adhesive temperature: 100° F. Do not exceed the flash point of the adhesive.
2. Heat exchange unit: Filled with heat transfer oil approved by equipment manufacturer.
3. Follow operation procedures as recommended by equipment manufacturer.

G. Surfacing Adhesive

1. Aggregate Surfacing: Limit temperature of cold adhesive surface coat to the minimum required for proper embedment of aggregate and the maximum that will permit retention of required coating weight based on slope of surface.
2. Substrate-Joint Penetrations: Prevent roofing adhesive from penetrating substrate joints, entering building, or damaging roofing system components or adjacent building construction. If it is applied directly to substrate, tape substrate joints.

3.4 INSULATION INSTALLATION (Where Occurs)

ATTACHMENT 1A

A. Coordinate installing roofing 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 roofing insulation.

C. Install tapered insulation under area of roofing to conform to slopes indicated and to Shop Drawings.

D. Install tapered edge strips at perimeter edges of roof that do not terminate at vertical surfaces.

E. Install one or more layers of insulation under area of roofing to achieve required thickness. Provide an average of R19 thermal value. Where overall insulation thickness is 2 inches (50 mm) or greater, install required thickness in 2 or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches (150 mm) in each direction.

F. Trim surface of insulation where necessary at roof drains so completed surface is flush with ring of drain.

G. Install insulation with long joints of insulation in continuous straight lines with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch (6 mm) with insulation.

1. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.

H. Attached Insulation: Over nailable decks, secure first layer of insulation to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roofing insulation to deck type indicated. Over non-nailable decks, prime and install panels using maximum 4’ x 4’ panel size for first layer. Over LWC, mechanically install a base sheet and then adhere insulation using 4’ x 4’ maximum panel size for first layer. Install subsequent layers of insulation in a ribbon coverage of solvent free insulation adhesive at a rate of 1-½ gallons per 100 sq. ft. Immediately after placement, walk insulation boards into adhesive to achieve solid contact.

1. Fasten insulation according to requirements of FM's "Approval Guide" for specified Windstorm Resistance Classification and the insulation and roofing system manufacturers' written instructions.
2. Fasten insulation according to the insulation and roofing system manufacturers' written instructions.

I. Adhered Insulation: Prime surface of concrete deck with water based primer at a rate of 150 – 250 sq. ft. per gallon, unless a greater weight is required by roofing system manufacturer, and allow primer to dry. Set each layer of insulation in a ribbon coverage of solvent free insulation adhesive at a rate of 1-½ gallons per 100 sq. ft. Immediately after placement, walk insulation boards into adhesive to achieve solid contact.

3.5 BASE-SHEET INSTALLATION

A. Install one lapped course of base sheet according to roofing system manufacturer's written instructions, extending sheet over and terminating beyond cants. Attach base sheet as follows:

1. Mechanically fasten to substrate.
2. Over insulation, adhere to substrate in a uniform coating of cold adhesive. Where occurs.

3.6 ROOF MEMBRANE INSTALLATION

ATTACHMENT 1A

A. Install ply felts according to roofing system manufacturer's written instructions, starting at low point of roofing system. Cut roofing ply sheets in 18 – 20 ft. lengths and allow to relax 30 to 60 minutes. Stack lengths. Do not re-roll. Shingle side laps of ply felts uniformly to achieve required number of membrane plies throughout. Shingle in direction to shed water. Extend ply felts over and terminate beyond cants.

1. Install 3 ply felts.
2. Application: Adhere each ply felt in cold adhesive, applied within temperature range and at rate required by roofing system manufacturer, to form a uniform membrane without ply felts touching each other.

B. Surfacing Application:

1. Prior to application of surface coat, contractor shall inspect roof with manufacturer's technical representative and repair any deficiencies.
2. Over entire roof surface of new work, apply uniform and continuous surface coat of surfacing adhesive at a rate of 5 gallons per 100 sq. ft.

C. Aggregate Surfacing: Immediately broadcast minimum of 400 lbs /100 sq. ft. of new, clean roofing gravel. Cover surface coat material completely.

D. Aggregate Weight: 400 lb/100 sq. ft. (20 kg/sq. m), average.

3.7 FLASHING AND STRIPPING INSTALLATION

A. Elastomeric Flashing
   a. Adhere elastomeric sheeting completely to flashing surface, cant and roofing with flashing adhesive; allow adhesive to remain open for 15 minutes to flash off solvent prior to setting elastomeric sheeting into flashing adhesive.
   b. Apply consistent pressure to entire surface of elastomeric sheeting using a steel hand roller to achieve full adhesion of the sheeting to the flashing substrate. Ensure complete bond and continuity without wrinkles or voids. Lap sheeting ends 4 inches. Adhere laps with Hypalon flashing adhesive.
   c. Elastomeric sheeting width: Sufficient to extend at least 6 inches beyond toe of cant onto new roof.
   d. Seal vertical and horizontal edges of sheeting with reinforcing membrane embedded in a base course of flashing adhesive and a top course of modified asphalt mastic.

B. Two Ply stripping for metal flanges:

1. Set flange in asphalt mastic. Seal flange with 2 stripping plies embedded between alternate applications of stripping adhesive/bitumen. Extend first ply 8 inches beyond flange; second ply 6 inches beyond first ply.

3.8 TIE-IN TO EXISTING MEMBRANE

A. Follow Tremco Roofing standards for the Tie-In detail. Surfacing at existing membrane adjacent to new penetration, shall be removed to expose existing felts

B. Prime existing felts and allow to flash.

C. Install one 18-inch wide Composite Ply felt evenly across joint line of new and existing.

D. Install two ply strip-in using ply felts that extend past the edge of the previous felt a minimum of 6 inches

E. Surface coat and apply surfacing aggregate of same size and color as existing.

F. Install surfacing sheet in color to match existing where applicable. Butt edge of new surfacing sheet against edge of next higher surfacing sheet as required to prevent the blockage of water flowing across roof. At gravel surfaces match existing as specified elsewhere.

G. Coat new surfacing to match existing surface coating.

3.9 LONG TERM WARRANTY EXTENSION

A. Contractor shall review the existing roof conditions of all low slope roofing areas with the Manufacturer of Record (Tremco Roofing – Jim Gilday - 805-492-5222) prior to submitting bid.

B. Contactor shall perform necessary maintenance and repairs as needed to enable Manufacturer to issue Long Term Warranty Extension.

3.10 FIELD QUALITY CONTROL

A. Owner will engage, at their option, an independent testing and inspecting agency to perform field inspections and quality-assurance tests.

1. Testing agency will prepare reports stating whether inspected and tested Work complies with or deviates from requirements.

2. Testing agency personnel shall be versed and have minimum of 5 years experience in the type of roofing being inspected.

3. The Manufacturer and the Testing Agency shall agree in writing to acknowledge and accept the comments of the other agency.

B. Correct deficiencies in or remove and replace roof membrane that inspections and test reports indicate does not comply with specified requirements or are capable of being incorporated into the existing warranty.

1. Repair roof membrane that does not comply with specified requirements by re-adhering test specimens back in place and by applying additional plies, equal to the original number of plies specified, over test specimens according to roofing system manufacturer's written instructions.

C. Test Cuts: Before surface coating and surfacing built-up roofing membrane, test specimens will be removed to evaluate problems observed during quality-assurance inspections of roof membrane as follows:

1. Test specimens will be examined for interply voids according to ASTM D 3617 and to comply with the criteria established in Appendix 3 of ARMA/NRCA'S "Quality Control Guidelines for the Application of Built-up Roofing."

D. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion and submit report to Architect.

1. Notify Architect and Owner, General Contractor and Roof System Representative, 48 hours in advance of the date and time of inspection.

3.11 PROTECTING AND CLEANING

A. Protect built-up roofing membrane 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 built-up roofing that does not comply with requirements, repair substrates, reinstall roofing, and repair base flashings to a condition free of damage and deterioration at the 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.

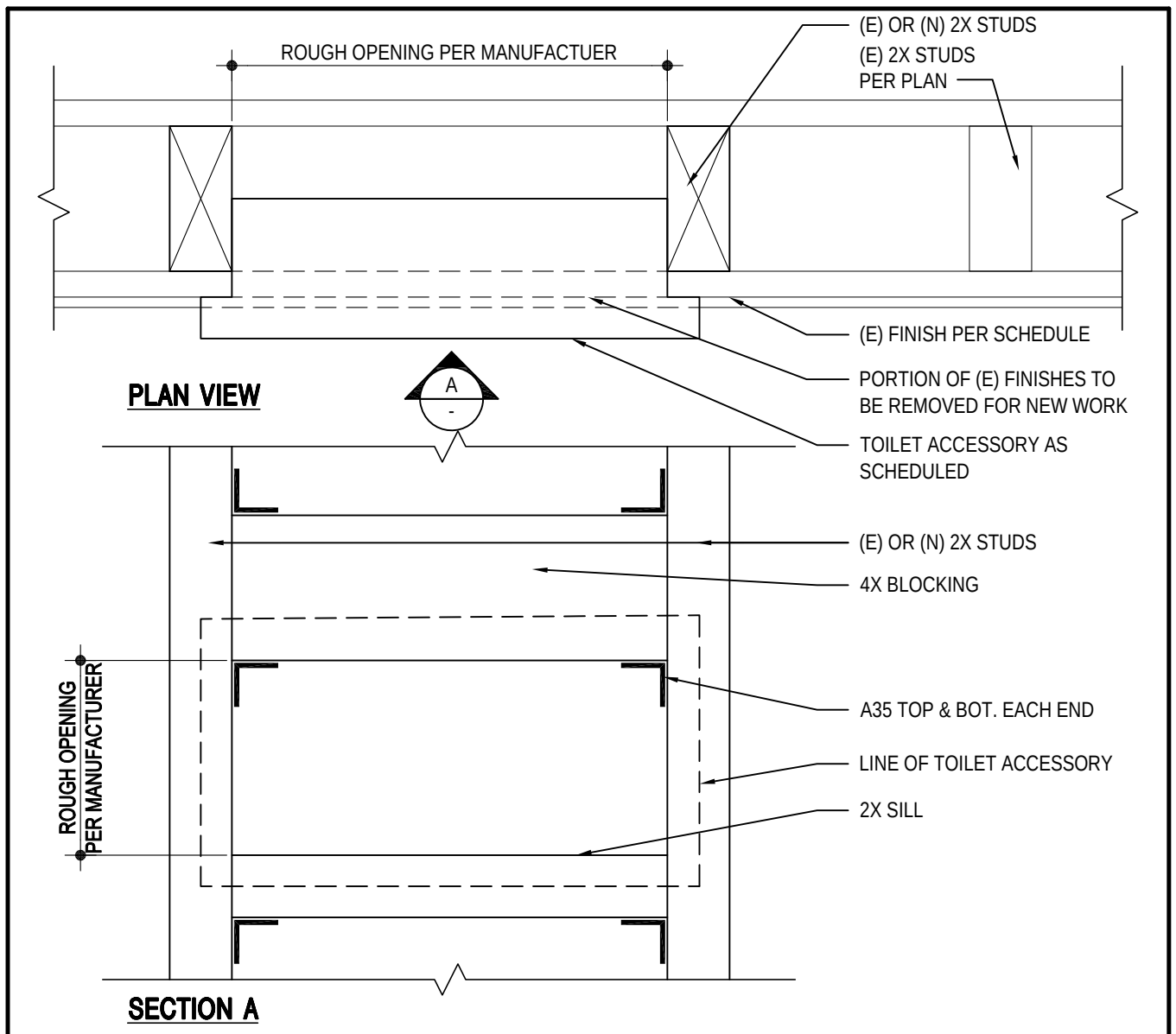
END OF SECTION

Attachment M

ATTACHMENT 1B
ADDED TO A1.01

(E) ROOFING TYPES	
BUILDING	ROOFING TYPE
AQUATICS	BUILT-UP
A	BUILT-UP
B	BUILT-UP
C	SHINGLE
D	BUILT-UP
F	BUILT-UP
G	SHINGLE
H	SHINGLE
I	BUILT-UP
J	SHINGLE
K	SHINGLE
L	BUILT-UP
M	SHINGLE
N	SHINGLE
O	BUILT-UP
Q	BUILT-UP
U	BUILT-UP
V	BUILT-UP
W	BUILT-UP
X	BUILT-UP
Y	BUILT-UP
COVERED WALKWAY	BUILT-UP

ATTACHMENT 2
ADDED DETAILS SHEET A9.01

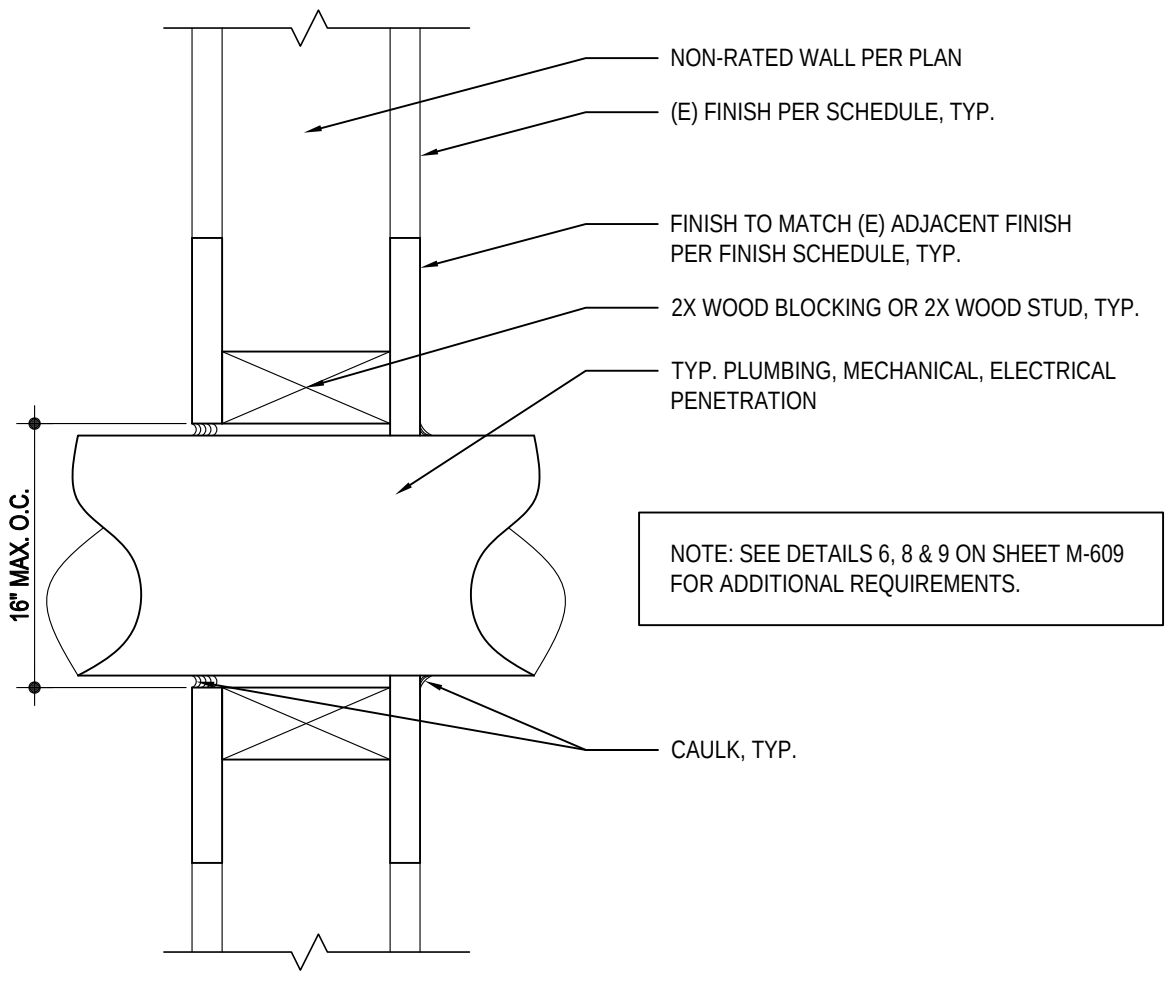


TYP. RECESSED TOILET ACCESSORY FRAMING

13 / -

SCALE : 3" = 1'-0"

PROJECT NUMBER =
DETAIL IDEN. =
SHEET REFERENCE =



NOTE: SEE DETAILS 6, 8 & 9 ON SHEET M-609 FOR ADDITIONAL REQUIREMENTS.

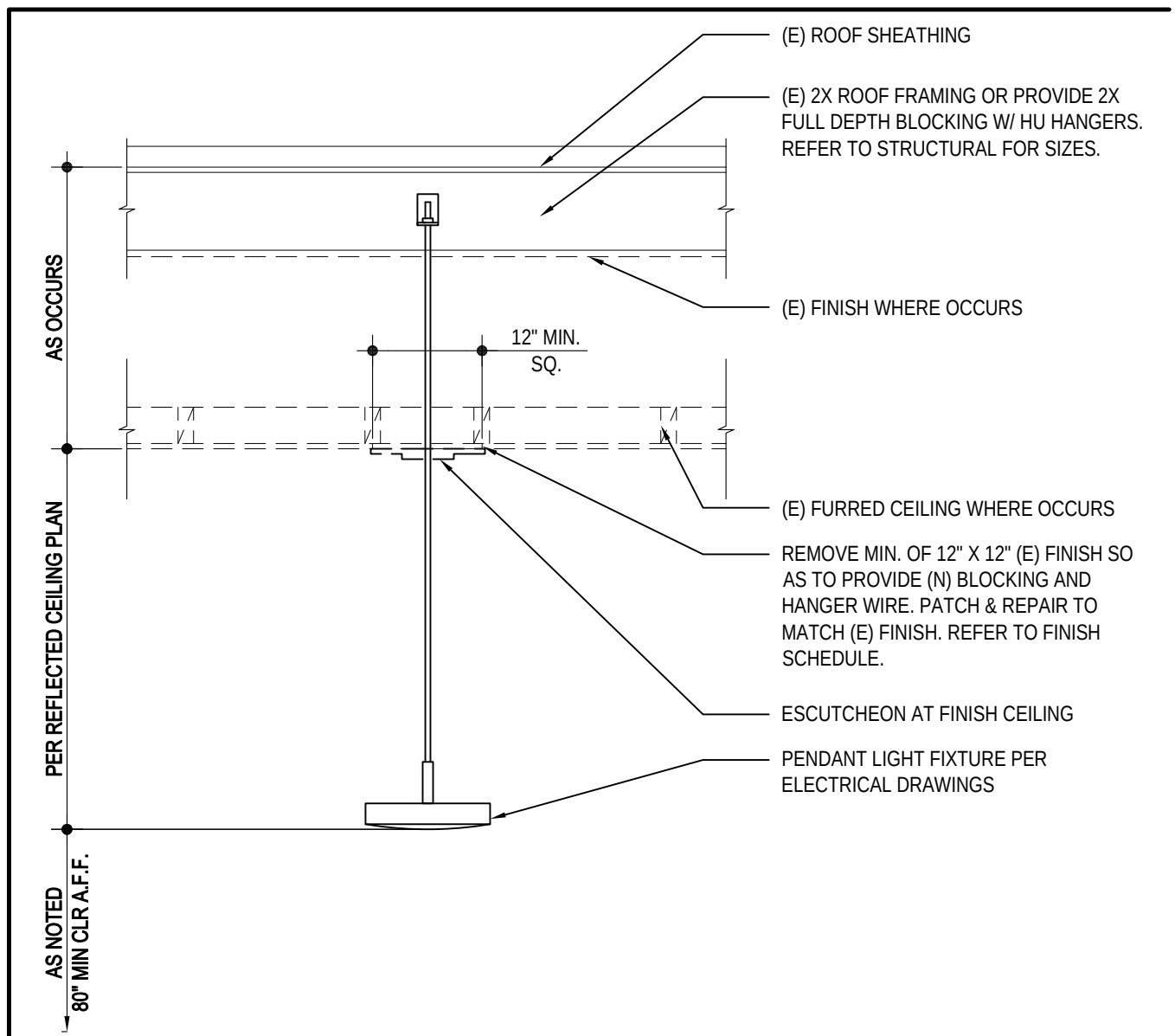
TYP. PENETRATION AT (E) WALL

14 / -

SCALE : 3" = 1'-0"

PROJECT NUMBER =
DETAIL IDEN. =
SHEET REFERENCE =

ATTACHMENT 3
ADDED DETAILS SHEET A9.01



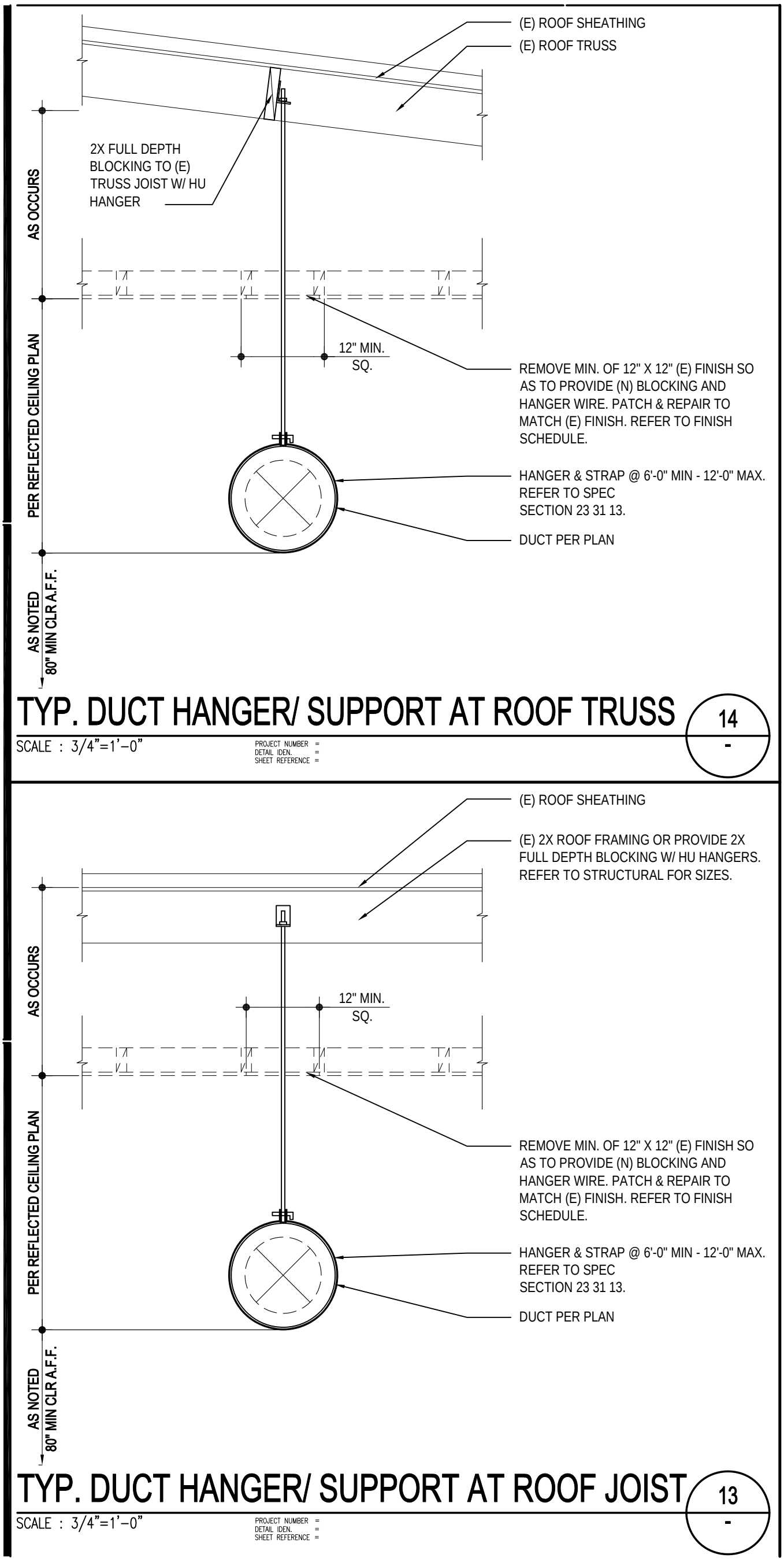
TYP. PENDANT LIGHT FIXTURE MOUNTING

15
-

SCALE : 3/4"=1'-0"

PROJECT NUMBER =
DETAIL IDEN. =
SHEET REFERENCE =

ATTACHMENT 4
ADDED DETAILS SHEET A9.02



TYP. DUCT HANGER/ SUPPORT AT ROOF TRUSS

14 / -

SCALE : 3/4"=1'-0"

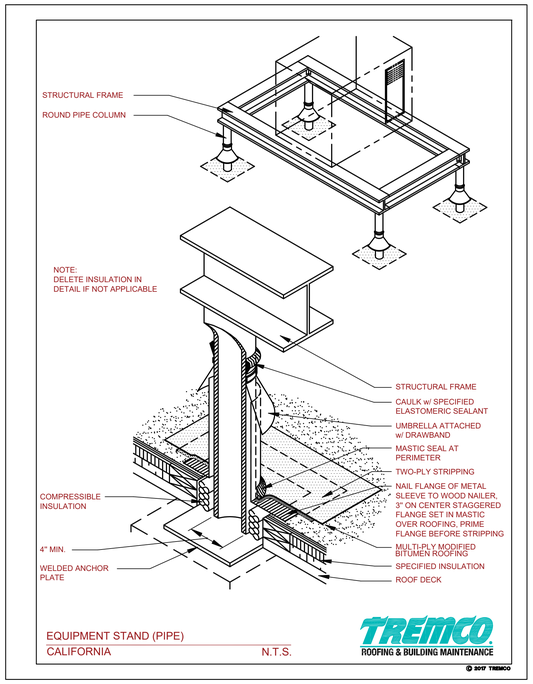
PROJECT NUMBER =
DETAIL IDEN. =
SHEET REFERENCE =

TYP. DUCT HANGER/ SUPPORT AT ROOF JOIST

13 / -

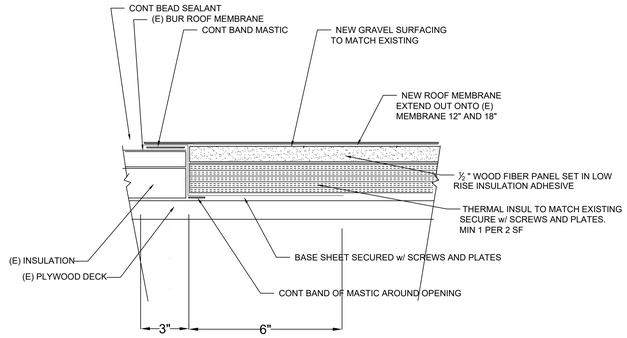
SCALE : 3/4"=1'-0"

PROJECT NUMBER =
DETAIL IDEN. =
SHEET REFERENCE =

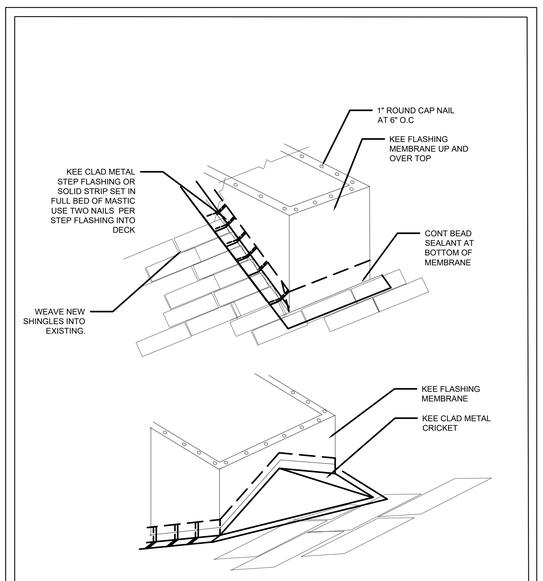


EQUIPMENT STAND (PIPE)
CALIFORNIA N.T.S.

TREMCO ROOFING & BUILDING MAINTENANCE

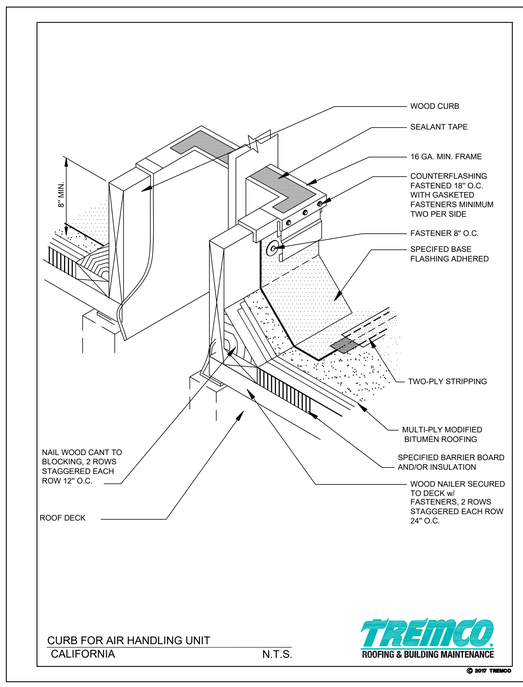


TREMCO ROOFING & BUILDING MAINTENANCE	HVAC UPGRADES - OUHSD VARIOUS CAMPUSES	DATE: 1 FEB 2020
	SECTION @ ROOF TIE-IN DETAIL	SKETCH # SK-1



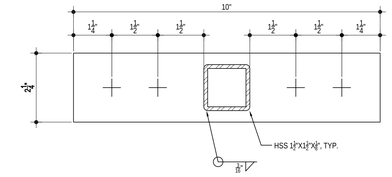
SHINGLE FLASHING AT CURB
DWG NO. XXX N.T.S.

TREMCO ROOFING & BUILDING MAINTENANCE



CURB FOR AIR HANDLING UNIT
CALIFORNIA N.T.S.

TREMCO ROOFING & BUILDING MAINTENANCE



DIAGONAL BASE CONNECTION B

SCALE : HALF SIZE

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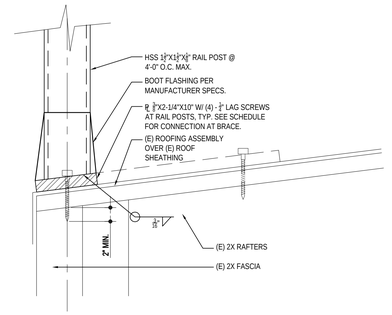
DETAIL REFN. =
SHEET REFERENCE =

5
-



TYPICAL BASE CONNECTION

SCALE : HALF SIZE

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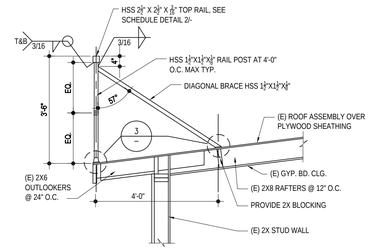
DETAIL REFN. =
SHEET REFERENCE =

3
-



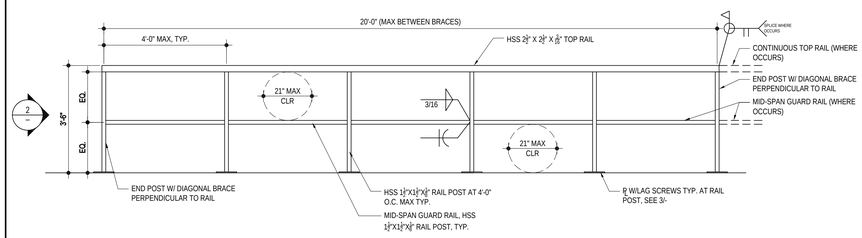
ROOF GUARDRAIL ELEVATION

SCALE : 1/2"=1'-0"

PROJECT NUMBER =
DETAIL REFN. =
SHEET REFERENCE =

2
-

NOTES:
1. MAKE ALL ROOF PENETRATIONS WATER TIGHT.
2. GRIND ALL WELDS SMOOTH
3. ALL STEEL SHALL BE PRIMED AND PAINTED, COLOR TO BE SELECTED BY AOR.
4. ALL DIAGONAL BRACE & POSTS MUST BE LOCATED OVER (E) JOISTS. VERIFY IN FIELD.



ROOFTOP GUARDRAIL ELEVATION

SCALE : 1/2"=1'-0"

PROJECT NUMBER =
DETAIL REFN. =
SHEET REFERENCE =

1
-

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An Employee Owned Corporation

ARCHITECT

CONSULTANT

Drawn by -
Checked by -

Revisions

No.	Date	Description
-	-	

OXNARD UNION HIGH SCHOOL DISTRICT

RIO MESA HIGH SCHOOL
ALTERATION PROJECT

545 CENTRAL AVE
OXNARD, CA 93036

TYPICAL ROOF DETAILS

Job No.
2847.0200

Date
2020.07.13

A9.05

ATTACHMENT 5
ADDED SHEET A9.05

CONTINUED METAL SUSPENSION SYSTEMS FOR LAY-IN PANEL CEILINGS: 2016 CBC AS PER DSA (IR 25-2.13)

INTERPRETATION OF REGULATIONS
(REF. TITLE 24, CCR, CBC PART 2 1616A.1.20, 1616.10.16

1. GENERAL REQUIREMENTS: CBC SECTION 1616A.1.20 (1616.10.16*) REQUIRES THE DESIGN AND INSTALLATION TO BE IN COMPLIANCE WITH ASTM C635, C636, AND E580, SECTION 5, AS AMENDED BY 2016 CBC SECTION 1616A.1.20 (1616.10.16*).
NOTE: AMENDMENTS IN CBC SECTION 1616A.1.20 (16161.10.16*) REPLACE ASCE 7, SECTION 13.5.6.
THE REQUIREMENTS IN THIS IR APPLY TO FLAT AND LEVEL CEILING SYSTEMS WHOSE TOTAL WEIGHT, INCLUDING CEILING MOUNTED AIR TERMINALS, SERVICES AND LIGHT FIXTURES, DOES NOT EXCEED FOUR (4) PSF. HEAVIER SYSTEMS, SYSTEMS THAT ARE NOT FLAT AND LEVEL, AND THOSE SUPPORTING LATERAL LOADS FROM PARTITIONS ARE BEYOND THE SCOPE OF THIS IR AND WILL REQUIRE SPECIAL DESIGN AND DETAILS.

2. SUSPENSION SYSTEM COMPONENTS: SHALL COMPLY WITH ASTM C635 AND SECTION 5.1 OF ASTM E580.
2.1 THE CEILING GRID SYSTEM MUST BE RATED HEAVY DUTY AS DEFINED BY ASTM C635.
2.2 CEILING WIRE SHALL BE CLASS 1 ZINC COATED (GALVANIZED) CARBON STEEL CONFORMING TO ASTM A641. WIRE SHALL BE #12 GAGE (0.106" DIAMETER) WITH SOFT TEMPER AND MINIMUM TENSILE STRENGTH = 70 KSI.
2.3 MAIN RUNNERS, CROSS RUNNERS, SPLICES, EXPANSION DEVICES, AND INTERSECTION CONNECTORS SHALL BE DESIGNED TO CARRY A MEAN ULTIMATE TEST LOAD OF NOT LESS THAN 180 LBS. IN COMPRESSION AND TENSION PER ASTM E580 SECTION 5.1.2.

3. SUSPENSION SYSTEM INSTALLATION: SHALL COMPLY WITH ASTM C636 AND SECTION 5.2 OF ASTM E580.
3.1 #12 GAGE HANGER WIRES MAY BE USED FOR UP TO AND INCLUDING A 4 FOOT BY 4 FOOT GRID SPACING AND SHALL BE ATTACHED TO MAIN RUNNERS.
3.2 PROVIDE #12 GAGE HANGER WIRES AT THE ENDS OF ALL MAIN AND CROSS RUNNERS WITHIN EIGHT (8) INCHES OF THE SUPPORT OR WITHIN ONE-FOURTH (1/4) OF THE LENGTH OF THE END TEE, WHICHEVER IS LEAST, FOR THE PERIMETER OF THE CEILING AREA . PERIMETER WIRES ARE NOT REQUIRED WHEN THE LENGTH OF THE END TEE IS EIGHT (8) INCHES OR LESS.
3.3 CEILING GRID MEMBERS SHALL BE ATTACHED TO TWO (2) ADJACENT WALLS PER ASTM E580, SECTION 5.2.3. CEILING GRID MEMBERS SHALL BE AT LEAST 3/4 INCH CLEAR OF OTHER WALLS. IF WALLS RUN DIAGONALLY TO CEILING GRID SYSTEM RUNNERS, ONE END OF MAIN AND CROSS RUNNERS SHOULD BE FREE, AND A MINIMUM OF 3/4 INCH CLEAR OF WALL.
3.4 THE WIDTH OF THE PERIMETER SUPPORTING CLOSURE ANGLE SHALL BE NOT LESS THAN TWO INCHES. GRID SYSTEMS WITH SPECIALTY OR PROPRIETARY ANGLES AND SUPPORT CLIPS MAY BE ACCEPTABLE IN ACCORDANCE WITH SECTION 11 BELOW.
3.5 AT THE PERIMETER OF THE CEILING AREA, WHERE MAIN OR CROSS RUNNERS ARE NOT CONNECTED TO THE ADJACENT WALL, PROVIDE INTERCONNECTION BETWEEN THE RUNNERS AT THE FREE END TO PREVENT LATERAL SPREADING. A METAL SPREADER STRUT OR A #16 GAGE WIRE WITH A POSITIVE MECHANICAL CONNECTION TO THE RUNNER MAY BE USED AND PLACED WITHIN EIGHT (8) INCHES OF THE WALL. WHERE THE PERPENDICULAR DISTANCE FROM THE WALL TO THE FIRST PARALLEL RUNNER IS EIGHT (8) INCHES OR LESS, THIS INTERLOCK IS NOT REQUIRED.

4. EXPANSION JOINTS, SEISMIC SEPARATION JOINTS, AND PENETRATIONS:
4.1 EXPANSION JOINTS SHALL BE PROVIDED IN THE CEILING AT INTERSECTIONS OF CORRIDORS AND AT JUNCTIONS OF CORRIDORS AND LOBBIES OR OTHER SIMILAR AREAS .
4.2 FOR CEILING AREAS EXCEEDING 2,500 SQUARE FEET, A SEISMIC SEPARATION JOINT SHALL BE PROVIDED IN ACCORDANCE WITH, TO DIVIDE THE CEILING INTO AREAS NOT EXCEEDING 2,500 SQUARE FEET. ALTERNATIVELY, COMPLY WITH ASTM E580, SECTION 5.2.9.
4.3 PENETRATIONS THROUGH THE CEILING FOR SPRINKLER HEADS AND OTHER SIMILAR DEVICES THAT ARE NOT INTEGRALLY TIED TO THE CEILING SYSTEM IN THE LATERAL DIRECTION SHALL HAVE A TWO (2) INCH OVERSIZED RING, SLEEVE OR ADAPTER THROUGH THE CEILING TILE TO ALLOW FREE MOVEMENT OF ONE (1) INCH IN ALL HORIZONTAL DIRECTIONS. ALTERNATIVELY, PER ASTM E580, SECTION 5.2.8.5, A FLEXIBLE SPRINKLER HOSE FITTING THAT CAN ACCOMMODATE ONE (1) INCH OF CEILING MOVEMENT SHALL BE PERMITTED TO BE USED IN LIEU OF THE OVERSIZED RING, SLEEVE, OR ADAPTER.

5. LATERAL FORCE BRACING: LATERAL FORCE BRACING IS REQUIRED PER THIS SECTION FOR ALL CEILING AREAS. THE SPACING OF THE BRACING ASSEMBLIES MUST BE SHOWN ON THE CONSTRUCTION DOCUMENTS.
EXCEPTION: LATERAL FORCE BRACING MAY BE OMITTED FOR SUSPENDED ACOUSTICAL CEILING SYSTEMS WITH A CEILING AREA OF 144 SQUARE FEET OR LESS, WHEN PERIMETER SUPPORT, IN ACCORDANCE WITH SECTION 3.3 OF THIS IR OR WITH ASTM E580 SECTIONS 5.2.2 AND 5.2.3, ARE PROVIDED AND PERIMETER WALLS ARE DESIGNED TO CARRY THE CEILING LATERAL FORCES.
5.1 PROVIDE LATERAL FORCE BRACING ASSEMBLIES CONSISTING OF A COMPRESSION STRUT AND FOUR (4) #12 GAGE SPLAYED BRACING WIRES ORIENTED 90 DEGREES FROM EACH OTHER.
5.2 LATERAL FORCE BRACING ASSEMBLIES SHALL BE SPACED PER TABLE 1 FOR ALL VALUES OF THE COMPONENT IMPORTANCE FACTOR (IP) OF THE CEILING.

TABLE 1 LATERAL FORCE BRACE ASSEMBLY SPACING	
Design Spectral Acceleration Parameter SDS	Brace Assembly Spacing
Less than or equal to 1.15	12'x12' Full building Height
Greater than 1.15 and less than or equal to 1.73	8'x12' for z/h greater than 0.5 12'x12' for z/h less than or equal to 0.5
Greater than 1.73	8'x8' for z/h greater than 0.5 8'x12' for z/h less than or equal to 0.5

WHERE, AS DEFINED IN ASCE 7-10, SECTION 13.3.1:
Z = HEIGHT IN STRUCTURE OF POINT OF ATTACHMENT OF CEILING WITH RESPECT TO THE BASE.
H = AVERAGE ROOF HEIGHT OF THE STRUCTURE WITH RESPECT TO THE BASE.
WHERE DIFFERENT BRACE SPACING IS SPECIFIED AT VARIOUS STORIES, THE RESPECTIVE CEILING PLAN SHALL CLEARLY INDICATE THE BRACE SPACING.
THERE SHALL BE A BRACE ASSEMBLY A DISTANCE OF NOT MORE THAN ONE HALF OF THE ABOVE SPACING FROM EACH SURROUNDING WALL, EXPANSION JOINT AND AT THE EDGES OF ANY CEILING VERTICAL OFFSET. FOR EXAMPLE, WHERE THE BRACE SPACING IS 8'X12', THE DISTANCE SHALL BE 4 FEET IN THE DIRECTION OF THE 8 FOOT SPACING AND 6 FEET IN THE DIRECTION OF THE 12 FOOT SPACING.
5.3 THE SLOPE OF BRACING WIRES SHALL NOT EXCEED 45 DEGREES FROM THE PLANE OF THE CEILING AND WIRES SHALL BE TAUT. SPLICES IN WIRES ARE NOT PERMITTED WITHOUT DSA APPROVAL.
5.4 COMPRESSION STRUTS SHALL BE ADEQUATE TO RESIST THE VERTICAL COMPONENT INDUCED BY THE BRACING WIRES, AND SHALL NOT BE MORE THAN ONE (HORIZONTAL) IN SIX (VERTICAL) OUT OF PLUMB.

6. ATTACHMENT OF HANGER AND BRACING WIRES:
6.1 FASTEN HANGER WIRES WITH NOT LESS THAN THREE (3) TIGHT TURNS IN THREE (3) INCHES. HANGER WIRE LOOPS SHALL BE TIGHTLY WRAPPED AND SHARPLY BENT TO PREVENT ANY VERTICAL MOVEMENT OR ROTATION OF THE MEMBER WITHIN THE LOOPS (SEE ASTM E580, SECTION 5.2.7.2).
6.2 FASTEN BRACING WIRES WITH FOUR (4) TIGHT TURNS. MAKE ALL TIGHT TURNS WITHIN A DISTANCE OF ONE AND ONE-HALF (1-1/2) INCHES.
6.3 HANGER OR BRACING WIRE ANCHORED TO THE STRUCTURE SHOULD BE INSTALLED IN SUCH A MANNER THAT THE DIRECTION OF THE ANCHOR ALIGNS AS CLOSELY AS POSSIBLE WITH THE DIRECTION OF THE WIRE.
6.4 SEPARATE ALL CEILING HANGER AND BRACING WIRES AT LEAST SIX (6) INCHES FROM ALL UNBRACED DUCTS, PIPES, CONDUIT, ETC.
6.5 HANGER WIRES SHALL NOT ATTACH TO OR BEND AROUND INTERFERING MATERIAL OR EQUIPMENT. PROVIDE TRAPEZE OR OTHER SUPPLEMENTARY SUPPORT MEMBERS AT OBSTRUCTIONS TO TYPICAL HANGER SPACING. PROVIDE ADDITIONAL HANGERS, STRUTS OR BRACES AS REQUIRED AT ALL CEILING BREAKS, SOFFITS, OR DISCONTINUOUS AREAS.
6.6 HANGER WIRES THAT ARE MORE THAN ONE (HORIZONTAL) IN SIX (VERTICAL) OUT OF PLUMB SHALL HAVE COUNTER-SLOPING WIRES. PERIMETER HANGER WIRES AT MAIN RUNNERS THAT ARE POSITIVELY ATTACHED TO THE PERIMETER CLOSURE ANGLE, COUNTER-SLOPING IS OPTIONAL.
NOTE: SEE ASTM C636, FIGURE 1, FOR COUNTER-SLOPING METHODS.
6.7 WHEN CONNECTION DETAILS DIFFER FROM THOSE IN THE ATTACHED FIGURES, ATTACHMENT OF BRACING WIRES TO THE STRUCTURE ABOVE AND TO THE MAIN RUNNERS SHALL BE ADEQUATE FOR THE LOAD IMPOSED. THE WEIGHT (WP) SHALL BE TAKEN AS NOT LESS THAN FOUR (4) PSF FOR CALCULATING SEISMIC FORCES (FP).
6.8 WHEN DRILLED-IN CONCRETE ANCHORS OR POWER ACTUATED FASTENERS ARE USED IN REINFORCED CONCRETE FOR HANGER WIRES, 1 OUT OF 10 WIRE/ANCHOR ASSEMBLIES MUST BE FIELD TESTED FOR 200 LBS. IN TENSION. WHEN DRILLED-IN CONCRETE ANCHORS ARE USED FOR BRACING WIRES, 1 OUT OF 2 WIRE/ANCHOR ASSEMBLIES MUST BE FIELD TESTED FOR 440 LBS. IN TENSION IN THE DIRECTION OF THE WIRE. POWER ACTUATED FASTENERS IN CONCRETE ARE NOT PERMITTED FOR BRACING WIRES.
NOTE: DRILLED-IN ANCHORS OR POWER ACTUATED FASTENERS REQUIRE DSA APPROVAL PRIOR TO USE IN PRESTRESSED CONCRETE.

7. CEILING FIXTURES, TERMINALS, AND DEVICES: ALL FIXTURES, TERMINALS, AND OTHER DEVICES SHALL BE MOUNTED IN A MANNER THAT WILL NOT COMPROMISE CEILING PERFORMANCE IN ACCORDANCE WITH SECTION 13.5.6.2.2(5) OF ASCE 7-10 AS AMENDED BY 2016 CBC SECTION 1616A.1.20 (1616.10.16*) AND ASTM E580 SECTIONS 5.3 AND 5.4.
7.1 CEILING PANELS SHALL NOT SUPPORT ANY LIGHT FIXTURES, AIR TERMINALS OR DEVICES.
7.2 LIGHT FIXTURES:
7.2.1 ALL LIGHT FIXTURES SHALL BE POSITIVELY ATTACHED TO THE CEILING SUSPENSION SYSTEMS BY MECHANICAL MEANS TO RESIST A HORIZONTAL FORCE EQUAL TO THE WEIGHT OF THE FIXTURE. SCREWS OR APPROVED FASTENERS ARE REQUIRED. A MINIMUM OF TWO ATTACHMENTS ARE REQUIRED AT EACH LIGHT FIXTURE, PER ASTM E580, SECTION 5.3.1.
7.2.2 LIGHT FIXTURES WEIGHING LESS THAN OR EQUAL TO 10 LB. SHALL HAVE A MINIMUM OF ONE (1) #12 GAGE SLACK SAFETY WIRE CONNECTED FROM THE FIXTURE HOUSING TO THE STRUCTURE ABOVE.
7.2.3 LIGHT FIXTURES WEIGHING GREATER THAN 10 LB. BUT LESS THAN OR EQUAL TO 56 LBS. MAY BE SUPPORTED DIRECTLY ON THE CEILING RUNNERS, BUT THEY SHALL HAVE A MINIMUM OF TWO (2) #12 GAGE SLACK SAFETY WIRES CONNECTED FROM THE FIXTURE HOUSING AT DIAGONAL CORNERS AND ANCHORED TO THE STRUCTURE ABOVE.
7.2.4 LIGHT FIXTURES WEIGHING GREATER THAN 56 LB. SHALL BE INDEPENDENTLY SUPPORTED BY NOT LESS THAN FOUR (4) TAUT #12 GAGE WIRES ATTACHED TO THE HOUSING AND TO THE STRUCTURE ABOVE. THE FOUR (4) TAUT #12 GAGE WIRES, INCLUDING THEIR ATTACHMENT TO THE STRUCTURE ABOVE, MUST BE CAPABLE OF SUPPORTING FOUR (4) TIMES THE WEIGHT OF THE UNIT.
7.2.5 ALL FOUR FOOT X FOUR FOOT LIGHT FIXTURES MUST HAVE SLACK SAFETY WIRES AT EACH CORNER UNLESS SUPPORTED PER SECTION 7.2.4.
7.2.6 SURFACE-MOUNTED FIXTURES SHALL BE ATTACHED TO THE MAIN RUNNER WITH AT LEAST TWO POSITIVE CLAMPING DEVICES MADE OF MATERIAL WITH A MINIMUM #14 GAGE. ROTATIONAL SPRING CATCHES DO NOT COMPLY. A #12 GAGE SUSPENSION WIRE SHALL BE ATTACHED TO EACH CLAMPING DEVICE TO THE STRUCTURE ABOVE. PROVIDE ADDITIONAL SUPPORTS WHEN LIGHT FIXTURES ARE EIGHT (8) FEET OR LONGER. MAXIMUM SPACING BETWEEN SUPPORTS SHALL NOT EXCEED EIGHT (8) FEET.
7.2.7 SUPPORT PENDANT-MOUNTED LIGHT FIXTURES DIRECTLY FROM THE STRUCTURE ABOVE WITH HANGER WIRES OR CABLES PASSING THROUGH EACH PENDANT HANGER AND CAPABLE OF SUPPORTING TWO (2) TIMES THE WEIGHT OF THE FIXTURE. SEE IR 16-9 FOR ADDITIONAL REQUIREMENTS FOR PENDENT MOUNTED FIXTURES.
IF THE PENDANT MOUNTED LIGHT FIXTURE IS DIRECTLY AND INDEPENDENTLY BRACED BELOW THE CEILING, I.E., AIRCRAFT CABLES TO WALLS, THEN A BRACE ASSEMBLY IS NOT REQUIRED ABOVE THE CEILING.
IF THE PENDANT MOUNTED LIGHT FIXTURE IS NOT DIRECTLY AND INDEPENDENTLY BRACED BELOW THE CEILING, THEN A BRACING ASSEMBLY IS REQUIRED WHERE THE PENDANT HANGER PENETRATES THE CEILING. SPECIAL DETAILS ARE REQUIRED TO ATTACH THE PENDANT HANGER TO THE BRACING ASSEMBLY TO TRANSMIT THE HORIZONTAL FORCE.
EXCEPTION: WHERE THE WEIGHT OF THE FIXTURE IS LESS THAN 20 POUNDS, THE COMPRESSION POST SHOWN IN FIGURE 1 IS NOT REQUIRED.
7.2.8 RIGID CONDUIT SHALL NOT BE USED FOR ATTACHMENT OF THE FIXTURES.
7.3 SERVICES WITHIN THE CEILING:
7.3.1 ALL FLEXIBLE SPRINKLER HOSE FITTINGS, CEILING-MOUNTED AIR TERMINALS OR OTHER SERVICES SHALL BE POSITIVELY ATTACHED TO THE CEILING SUSPENSION SYSTEMS BY MECHANICAL MEANS TO RESIST A HORIZONTAL FORCE EQUAL TO THE WEIGHT OF THE COMPONENT. SCREWS OR APPROVED FASTENERS ARE REQUIRED. A MINIMUM OF TWO ATTACHMENTS ARE REQUIRED AT EACH COMPONENT.
7.3.2 FLEXIBLE SPRINKLER HOSE FITTINGS, CEILING-MOUNTED AIR TERMINALS OR OTHER SERVICES WEIGHING LESS THAN OR EQUAL TO 20 LB. SHALL HAVE ONE (1) #12 GAGE SLACK SAFETY WIRE ATTACHED TO THE TERMINAL OR SERVICE TO THE STRUCTURE ABOVE.
7.3.3 FLEXIBLE SPRINKLER HOSE FITTINGS, CEILING-MOUNTED AIR TERMINALS OR OTHER SERVICES WEIGHING MORE THAN 20 LB. BUT LESS THAN OR EQUAL TO 56 LB. SHALL HAVE TWO (2) #12 GAGE SLACK SAFETY WIRES ATTACHED TO THE TERMINAL OR SERVICE TO THE STRUCTURE ABOVE.
7.3.4 FLEXIBLE SPRINKLER HOSE FITTINGS, CEILING-MOUNTED AIR TERMINALS OR OTHER SERVICES WEIGHING MORE THAN 56 LB. SHALL BE SUPPORTED DIRECTLY FROM THE STRUCTURE ABOVE BY NOT LESS THAN FOUR (4) TAUT #12 GAGE WIRES ATTACHED TO THE TERMINAL OR SERVICE AND TO THE STRUCTURE ABOVE. THE FOUR (4) TAUT #12 GAGE WIRES, INCLUDING THEIR ATTACHMENT TO THE STRUCTURE ABOVE, MUST BE CAPABLE OF SUPPORTING FOUR (4) TIMES THE WEIGHT OF THE UNIT.
7.4 OTHER DEVICES WITHIN THE CEILING:
7.4.1 ALL LIGHTWEIGHT MISCELLANEOUS DEVICES, SUCH AS STROBE LIGHTS, OCCUPANCY SENSORS, SPEAKERS, EXIT SIGNS, ETC., SHALL BE ATTACHED TO THE CEILING GRID PER SECTION 7.3.1 OF THIS IR. IN ADDITION, DEVICES WEIGHING MORE THAN 10 LBS. SHALL HAVE A #12 GAGE SLACK SAFETY WIRE ANCHORED TO THE STRUCTURE ABOVE PER SECTION 7.2.2 OF THIS IR. DEVICES WEIGHING MORE THAN 20 LBS. SHALL BE SUPPORTED FROM THE STRUCTURE ABOVE PER SECTION 7.3.4 OF THIS IR.

CONTINUED METAL SUSPENSION SYSTEMS FOR LAY-IN PANEL CEILINGS: 2016 CBC AS PER DSA (IR 25-2.13)

8. ADDITIONAL REQUIREMENTS:
8.1 FIRE RATED CEILINGS:
PROVIDE A DETAIL AND DESIGN NUMBER FOR RATED CEILING ASSEMBLIES FROM AN AUTHORIZED TESTING AGENCY. THE COMPONENTS AND INSTALLATION DETAILS MUST CONFORM IN EVERY RESPECT WITH THE LISTED DETAIL AND NUMBER. DETAILS SHALL CLEARLY DEPICT ALL COMPONENTS, INCLUDING INSULATION MATERIALS, FRAMING AND ATTACHMENT OF THE DESIGN SO THAT THE ASSEMBLY CAN BE CONSTRUCTED AND INSPECTED ACCORDINGLY.
POP RIVETS, SCREWS, OR OTHER ATTACHMENTS ARE NOT ACCEPTABLE UNLESS SPECIFICALLY DETAILED ON THE DRAWINGS AND APPROVED BY U.L. AND STATE FIRE MARSHAL (SFM) RECOGNIZED LABORATORIES.
8.2 METAL AND OTHER PANELS:
METAL PANELS AND PANELS WEIGHING MORE THAN ONE–HALF (1/2) PSF, OTHER THAN MINERAL FIBER ACOUSTICAL TILE, ARE TO BE POSITIVELY ATTACHED TO THE CEILING SUSPENSION RUNNERS.
8.3 ESSENTIAL SERVICES BUILDINGS:
EXITWAYS SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 13.5.6.2.2(1) OF ASCE 7–10 AS AMENDED BY 2016 CBC SECTION 1616A.1.20 (1616.10.16*). A MAIN OR CROSS RUNNER SHALL BE INSTALLED ON ALL SIDES OF EACH PIECE OF TILE, BOARD OR PANEL AND EACH LIGHT FIXTURE OR GRILL. SPLICES OR INTERSECTION OF SUCH RUNNERS SHALL BE ATTACHED WITH THROUGH CONNECTORS SUCH AS POP RIVETS, SCREWS, PINS, PLATES WITH END TABS OR OTHER APPROVED CONNECTORS.
8.4 SUSPENDED ACOUSTICAL CEILINGS BELOW GYPSUM BOARD CEILINGS:
WHERE GYPSUM BOARD OR OTHER CEILING FINISHES ARE ATTACHED TO THE FRAMING, SPECIFIC DETAILS WILL BE REQUIRED FOR THE VERTICAL HANGER WIRE AND LATERAL BRACING WIRE SUPPORT CONNECTIONS TO THE FRAMING.

9. RE–USE OF EXISTING CEILING HANGER WIRES AND BRACING WIRES:
9.1 THE GAGE AND SPACING OF THE WIRES MUST COMPLY WITH THE CURRENT APPLICABLE CODES.
9.2 ALL EXISTING CEILING HANGER WIRE/ANCHOR ASSEMBLIES MUST BE TESTED TO 200 LBS.
9.3 ALL EXISTING BRACING WIRE/ANCHOR ASSEMBLIES MUST BE FIELD TESTED TO 440 LBS.
9.4 IF A NEW WIRE IS TO BE SPLICED TO AN EXISTING WIRE, THE FOLLOWING IS REQUIRED:
- THE ARCHITECT OR STRUCTURAL ENGINEER IN GENERAL RESPONSIBLE CHARGE MUST SUBMIT TO THE DSA FOR APPROVAL A DETAIL AND SPECIFICATION DESCRIBING HOW THE SPLICE IS TO BE MADE.
- ALL NEW WIRES, AFTER BEING SPLICED TO THE EXISTING WIRES, MUST BE FIELD TESTED PER SECTIONS 9.2 AND 9.3 ABOVE.
- ALL FIELD TESTS MUST BE PERFORMED IN THE PRESENCE OF THE PROJECT INSPECTOR.

10. MODERNIZATION AND ALTERATION: THE ENTIRE CEILING SHALL BE UPGRADED TO MEET THE CURRENT REQUIREMENTS OF THE CBC AND THIS IR IF ANY PORTION OF THE GRID SYSTEM IS CUT OR ALTERED.
EXCEPTION: THE REPLACEMENT OF EXISTING CEILING PANELS WITH PANELS OF THE SAME MATERIALS AND LIGHT FIXTURES OF THE SAME SIZE, LOCATIONS, AND WEIGHTS DOES NOT REQUIRE AN UPGRADE TO THE CEILING GRID AND SUSPENSION SYSTEM.

11. DSA ACCEPTANCE OF EVALUATION REPORTS: CEILING GRID SYSTEMS OR COMPONENTS, WITH VALID EVALUATION REPORTS ISSUED BY QUALIFIED EVALUATION AGENCIES, IN ACCORDANCE WITH DSA IR A–5, ARE ACCEPTED BY THE DSA, PROVIDED THE SYSTEM OR COMPONENT MEETS THE REQUIREMENTS OF CBC SECTION 1616A.1.20 (1616.10.16*), ASTM C635, C636 AND E580. WHERE A QUALIFIED EVALUATION REPORT IS UTILIZED, THE INSTALLATION SHALL COMPLY WITH ALL THE REQUIREMENTS SPECIFIED IN THE EVALUATION REPORT, I.E. CONNECTIONS, MEMBER SIZES, PERIMETER DETAILS, SPECIAL CLIPS TO WALL ANGLES, ETC.
IN ACCORDANCE WITH DSA IR A–5, DSA WILL ACCEPT OSHPD PREAPPROVED DETAILS (OPD) "2016 CBC STANDARD SUSPENDED CEILING DETAILS FOR ACOUSTICAL TILE OR LAY–IN PANEL CEILINGS."

12. CONSTRUCTION DOCUMENTS: DRAWINGS AND SPECIFICATIONS SHALL CLEARLY IDENTIFY ALL SYSTEMS AND SHALL DEFINE OR SHOW ALL SUPPORTING DETAILS, LIGHTING FIXTURE ATTACHMENT, LATERAL FORCE BRACING, PARTITION BRACING, SEISMIC SEPARATIONS, ETC.
WHERE ACCEPTED PROPRIETARY DEVICES, CLIPS, WALL ANGLES, ETC. ARE UTILIZED, THE DETAILS ON THE APPROVED CONSTRUCTION DOCUMENTS SHALL CLEARLY INDICATED THE INSTALLATION DETAILS AS NECESSARY TO SHOW COMPLIANCE WITH ALL EVALUATION REPORT REQUIREMENTS.
WHERE DIFFERENCES OCCUR BETWEEN PROVISIONS OF THIS IR AND THE CBC, THE PROVISIONS OF THE CBC SHALL APPLY.
A LIST OF ACCEPTABLE GRID SYSTEMS MUST BE SHOWN ON THE DRAWINGS. THE GRID SYSTEMS SPECIFIED SHALL HAVE VALID EVALUATION REPORTS IN ACCORDANCE WITH IR A–5. THE FOLLOWING INFORMATION SHALL BE INCLUDED ON THE DRAWINGS FOR EACH ACCEPTABLE GRID SYSTEM SPECIFIED:
CLASSIFICATION OF CEILING GRID IS HEAVY DUTY.
MANUFACTURER'S CATALOG NUMBER – MAIN RUNNER: SEE DETAIL 1/–
MANUFACTURER'S CATALOG NUMBER – CROSS RUNNER: SEE DETAIL 1/–
MANUFACTURER'S CATALOG NUMBERS OF DETAIL FOR RUNNER SPLICE: SEE DETAIL 1/–
NOTES: (1) MAIN RUNNERS MUST BE RATED AS HEAVY DUTY.
(2) SHOW MANUFACTURER, DUTY CLASSIFICATION AND CATALOG NUMBERS.
(3) IF A CROSS RUNNER SUPPORTS LIGHT FIXTURES, AIR TERMINALS, OR OTHER CROSS RUNNERS, IT SHALL BE CONSIDERED A MAIN RUNNER FOR THE PURPOSE OF STRUCTURAL CLASSIFICATION.

CBC COMPLIANT CEILING SUSPENSION NOTES:

METAL SUSPENSION SYSTEMS FOR ACOUSTICAL AND LAY-IN PANEL CEILINGS SHALL CONFORM WITH 2016 CBC SECTION 808.1 AND 2016 CBC 1613.1.

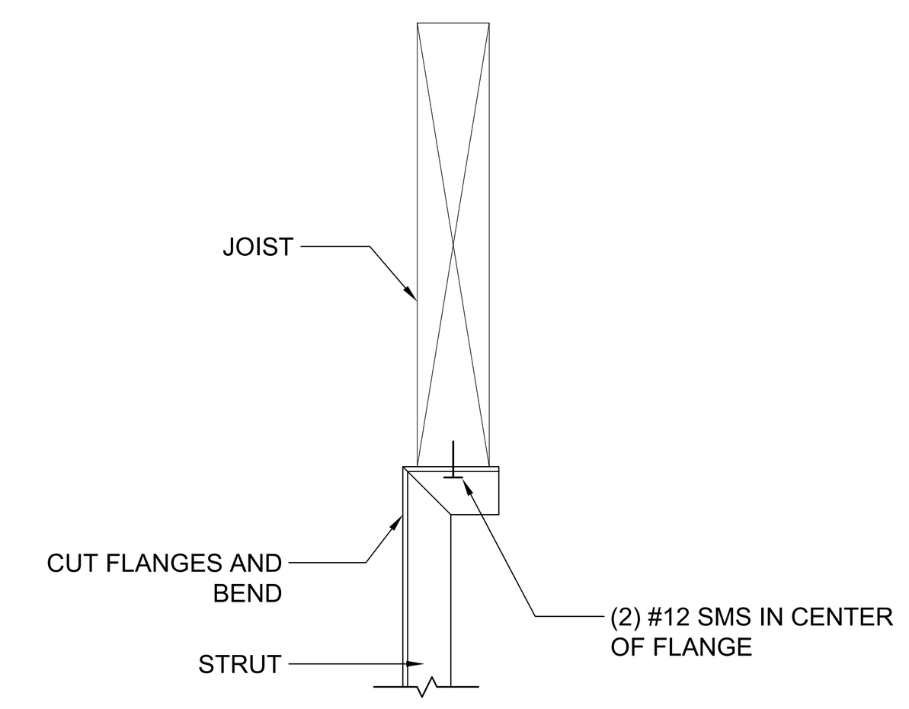
808.1 ACOUSTICAL CEILING SYSTEMS - THE QUALITY, DESIGN, FABRICATION AND ERECTION OF METAL SUSPENSION SYSTEMS FOR ACOUSTICAL TILE AND LAY-IN PANEL CEILINGS IN BUILDINGS OR STRUCTURES SHALL CONFORM WITH GENERALLY ACCEPTED ENGINEERING PRACTICE, THE PROVISIONS OF THIS CHAPTER AND OTHER APPLICABLE REQUIREMENTS OF THIS CODE.

808.1.1 MATERIALS AND INSTALLATION - ACOUSTICAL MATERIALS COMPLYING WITH THE INTERIOR FINISH REQUIREMENTS OF SECTION 803 SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND APPLICABLE PROVISIONS FOR APPLYING INTERIOR FINISH.

808.1.1.1 SUSPENDED ACOUSTICAL CEILINGS - SUSPENDED ACOUSTICAL CEILING SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE PROVISIONS OF ASTM C635 AND ASTM C636.

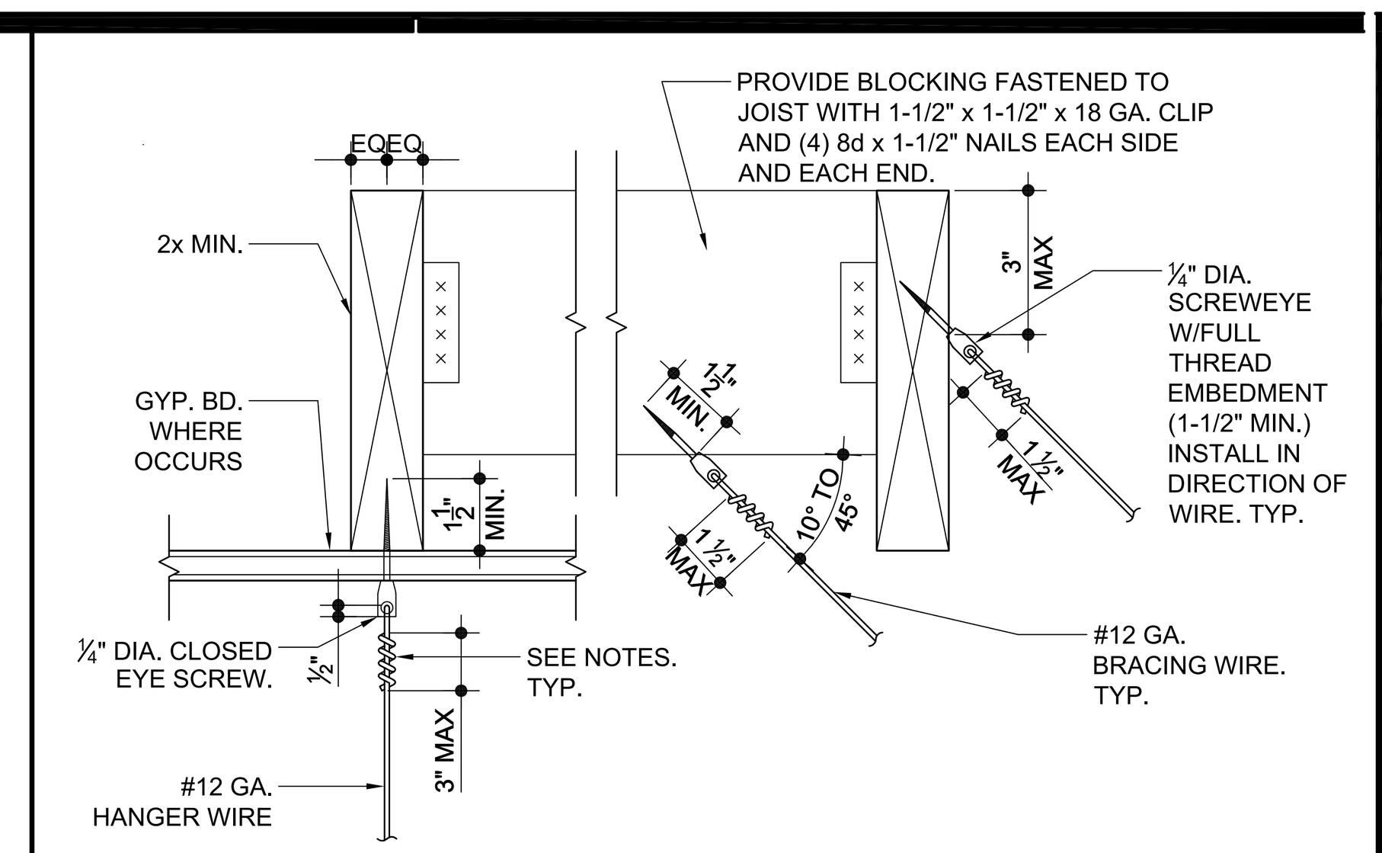
808.1.1.2 FIRE RESISTANCE RATED CONSTRUCTION SHALL BE INSTALLED IN THE SAME MANNER USED IN THE ASSEMBLY TESTED AND SHALL COMPLY WITH THE PROVISIONS OF CHAPTER 7.

1613.1 REQUIRES THAT EVERY STRUCTURE, AND PORTION THEREOF, INCLUDING NONSTRUCTURAL COMPONENTS THAT ARE PERMANENTLY ATTACHED TO STRUCTURES AND THEIR SUPPORTS AND ATTACHMENTS, SHALL BE DESIGNED AND CONSTRUCTED TO RESIST THE EFFECTS OF EARTHQUAKE MOTIONS IN ACCORDANCE WITH ASCE 7.



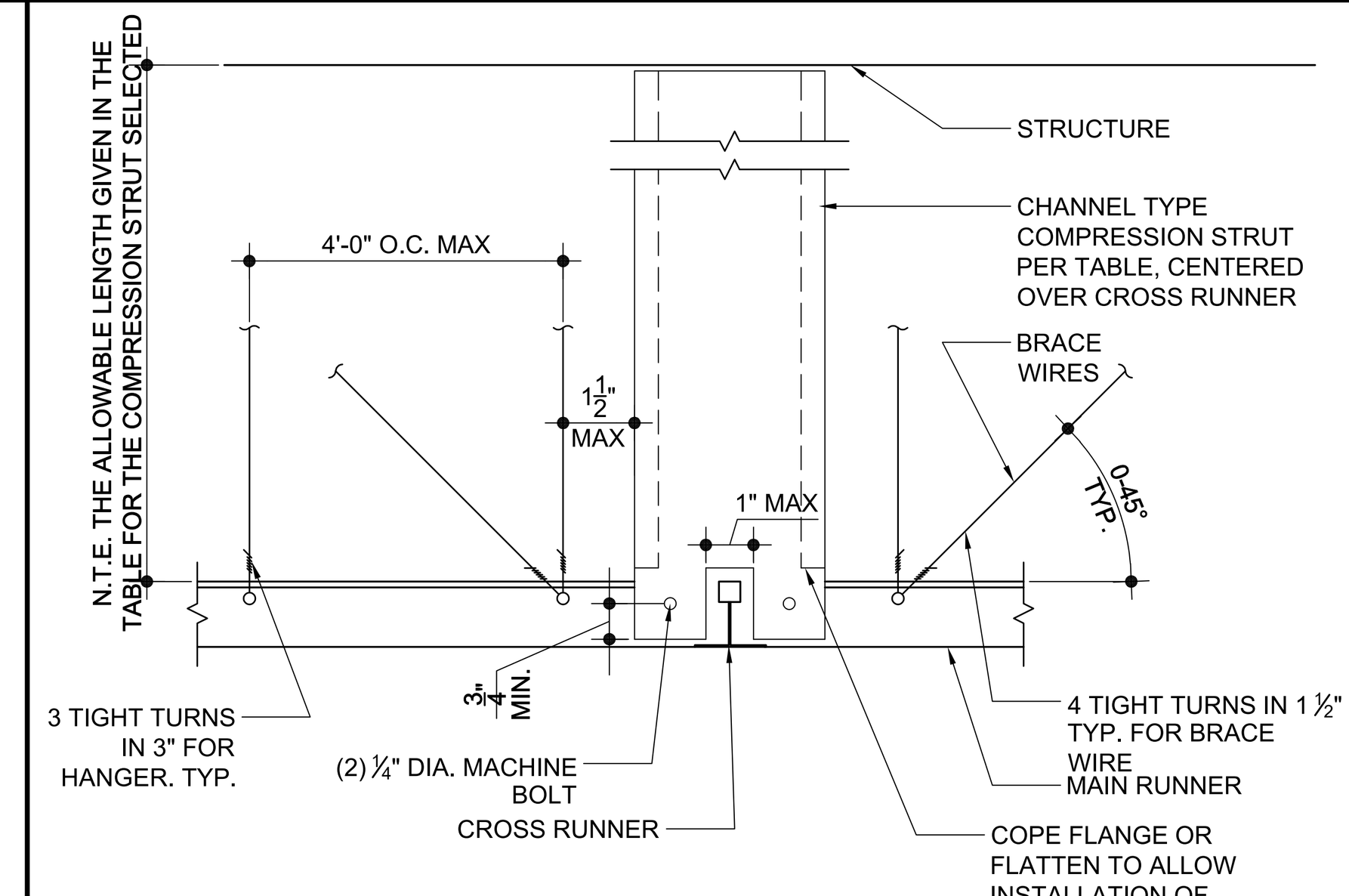
NOTE:
1. COMPRESSION STRUT PER TABLE, SEE 6/-

STRUT CONNECTION TO WOOD JOISTS
SCALE : 3"=1'-0"
5 / -



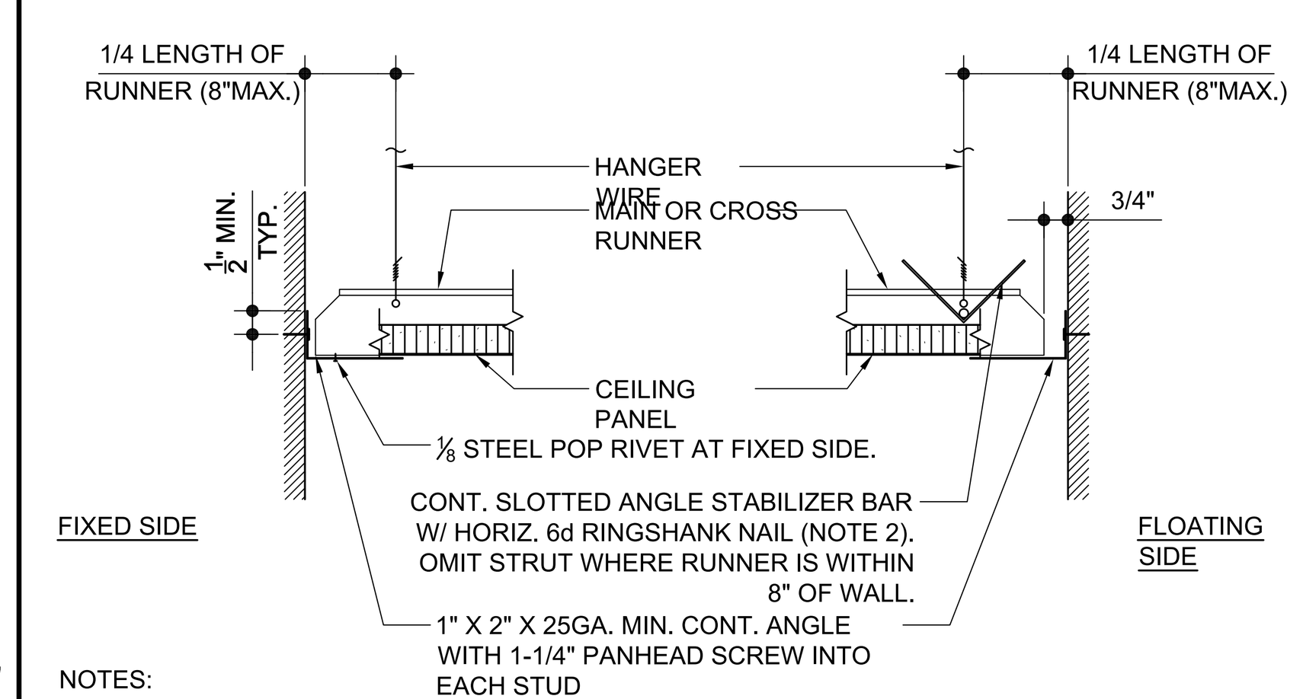
NOTE:
1. WHEN FIRE RATED GYPSUM BOARD IS INSTALLED ON THE BOTTOM FLANGES, USE SCREW EYES WITH SUFFICIENT LENGTH TO AVOID DAMAGING THE FIRE RATED GYPSUM BOARD AND MEET MIN. PENETRATION.
2. PROVIDE 3 TURNS WITHIN 3" AT HANGER WIRES. TYPICAL AT EACH END.
3. PROVIDE 4 TURNS WITHIN 1-1/2" AT BRACE WIRES. TYPICAL AT EACH END.

HANGER/BRACING CONNECTION TO WOOD JOISTS
SCALE : 3"=1'-0"
4 / -



CHANNEL COMPRESSION STRUT	MAXIMUM LENGTH
362S137-33	8'-0"
400S137-43	10'-10"

STRUT CONNECTION TO WOOD JOISTS
SCALE : 3"=1'-0"
6 / -



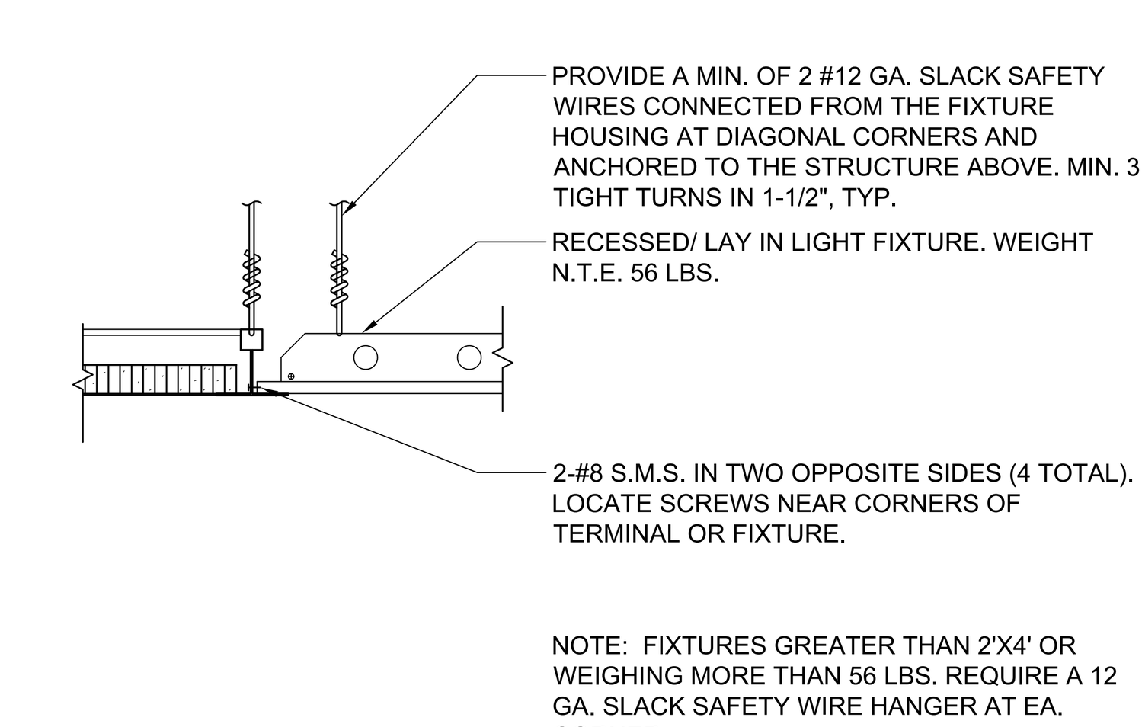
NOTES:
1. PROVIDE #12 GA HANGER WIRES AT ENDS OF ALL MAIN AND CROSS RUNNERS WITHIN 8" OF THE SUPPORT OR WITHIN 1/4" OF THE LENGTH OF THE END TEE, WHICHEVER IS LESS, FOR THE PERIMETER OF THE CEILING AREA. PERIMETER WIRES ARE NOT REQUIRED WHEN THE LENGTH OF THE TEE IS 8"OR LESS.

2. NAILS AT ENDS OF HORIZONTAL STABILIZERS ARE TO BE PLACED WITH NAIL HEAD TOWARD CENTER LINE OF SPAN OF STRUT.

3. STABILIZER BAR MAY BE SLOTTED APPROVED ANGLES OR CHANNELS WITH "DIAMOND POINTS" OF SPRING STEEL WHICH TIGHT TO PREVENT MOVEMENT OF THE STRUT.

4. SEE FINISH SCHEDULE FOR ARCHITECTURAL FINISH. FASTENERS TO PENETRATE STUDS MIN. OF ¼"

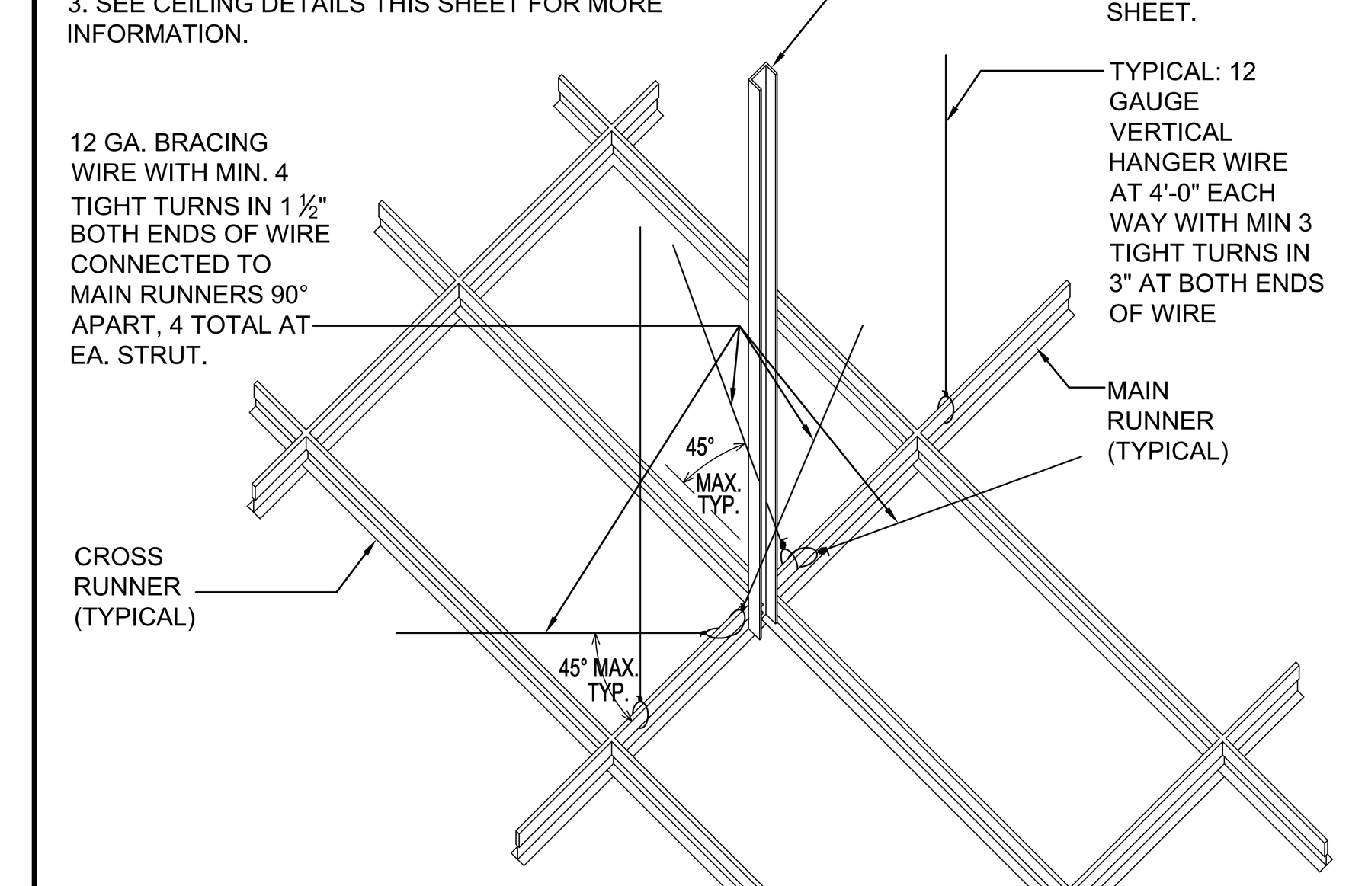
ACOUSTIC CEILING AT PERIMETER
SCALE : 3"=1'-0"
3 / -



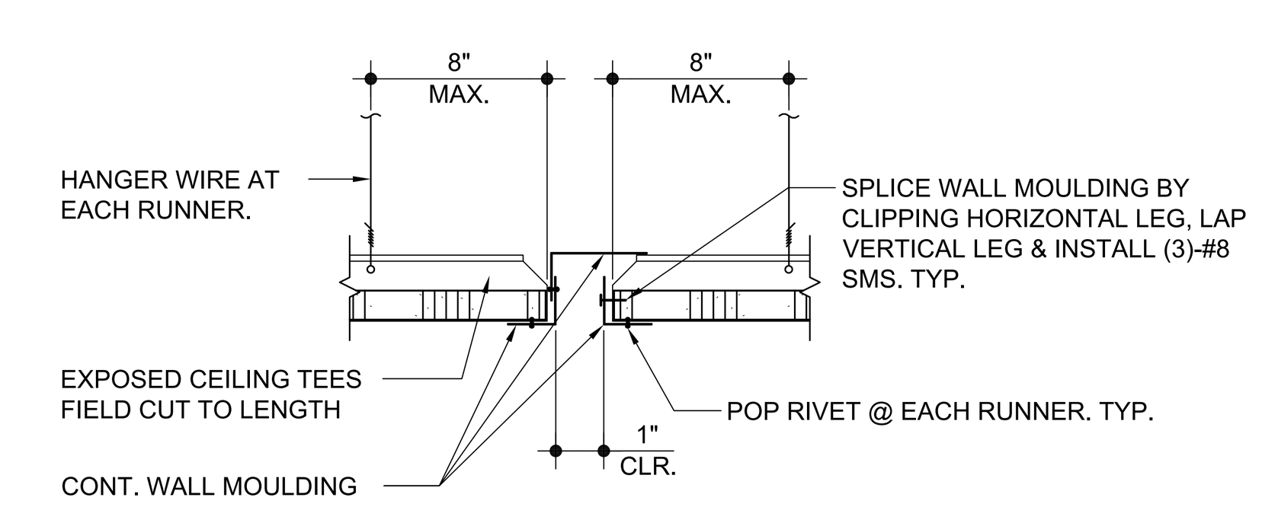
NOTE: FIXTURES GREATER THAN 2'X4' OR WEIGHING MORE THAN 56 LBS. REQUIRE A 12 GA. SLACK SAFETY WIRE HANGER AT EA. CORNER.

LIGHT FIXTURE/ AIR TERMINAL SUPPORT
SCALE : 3"=1'-0"
7 / -

NOTES:
1. STRUTS SHALL NOT REPLACE HANGER WIRES.
2. THE MIN. ACCEPTABLE ANGLE IS DETERMINED SUCH THAT THE WIRES DO NOT INTERFERE WITH THE RUNNERS, LIGHT FIXTURES, ETC. AND REMAIN STRAIGHT AND UNOBSTRUCTED.
3. SEE CEILING DETAILS THIS SHEET FOR MORE INFORMATION.

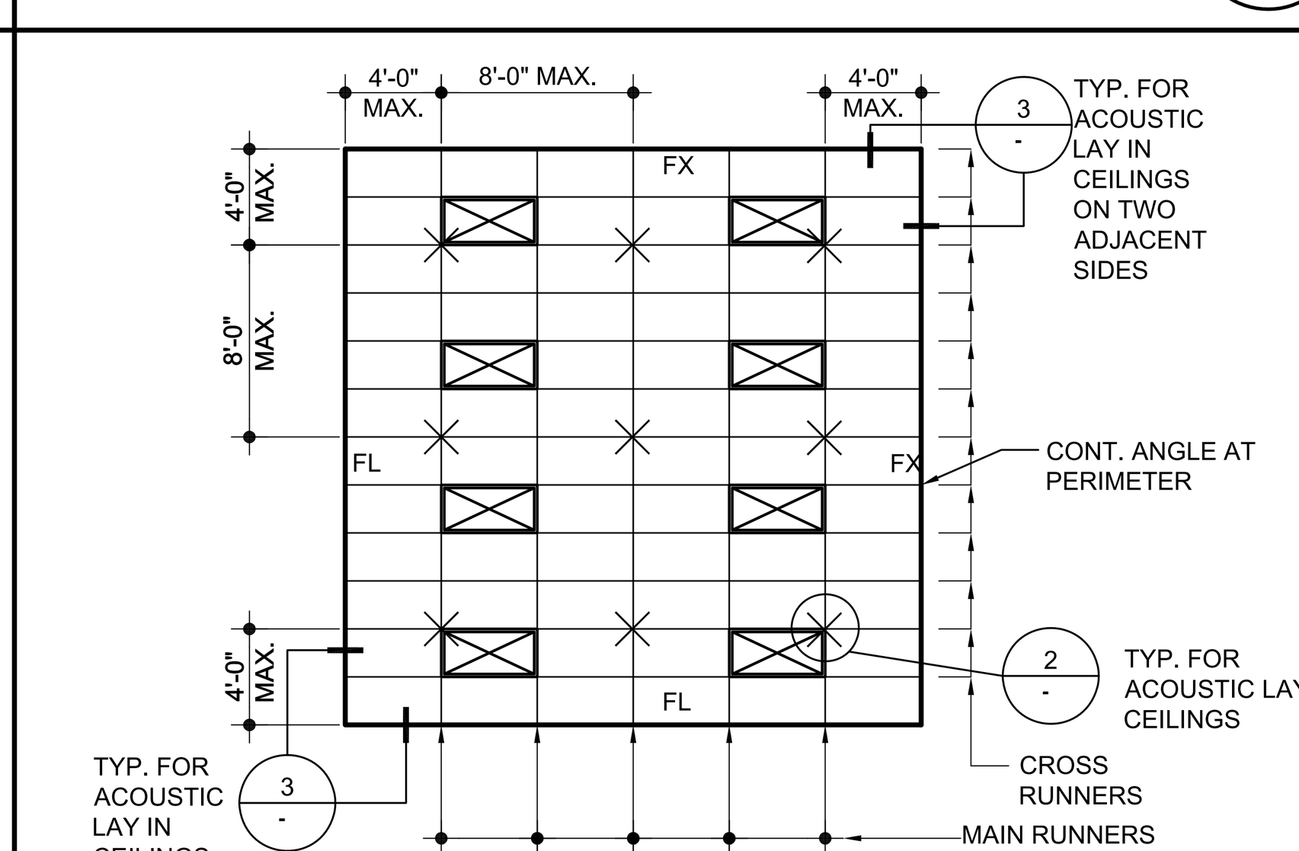


ACOUSTIC CEILING GRID SYSTEM
SCALE : N.T.S.
2 / -



NOTE:
1. A SEISMIC SEPARATION JOINT SHALL BE PROVIDED TO DIVIDE THE CEILING INTO AREAS NOT EXCEEDING 2,500 SF

EXPANSION JOINT T-BAR CEILING
SCALE : 3"=1'-0"
8 / -



NOTE:
BRACING WIRES AND COMP. STRUT SHALL OCCUR AT EVERY 64 SQ. FT. MAX. IN ROOMS OVER 144 SQ. FT.
PROVIDE HEAVY DUTY COMPONENTS FOR USE IN SEISMIC ZONE.
CEILING GRID SHALL BE 15/16" GRID BY ARMSTRONG.
CEILING TILE SHALL BE 2X4 CORTEGA 769A.

TYPICAL CEILING PLAN FOR 8'x8' BRACE ASSEMBLY SPACING
SCALE : 1/8"=1'-0"
1 / -

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Revisions

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—	—	—

OXNARD UNION HIGH SCHOOL DISTRICT

CAMARILLO HIGH SCHOOL ALTERATION PROJECT

4660 MISSION OAKS BLVD.
CAMARILLO, CA 93012

CEILING DETAILS

Job No. 2840.100
Date 07-10-2019

A9.06

ATTACHMENT 6
ADDED SHEET A9.06