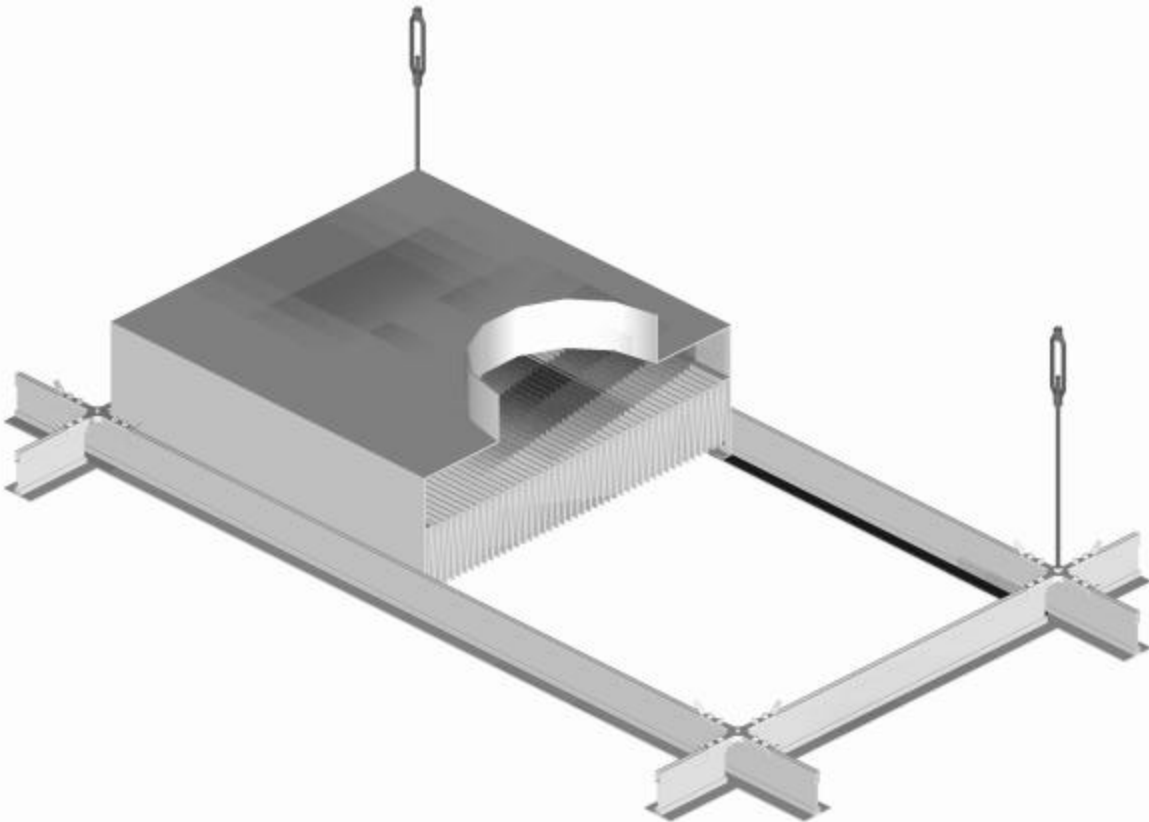
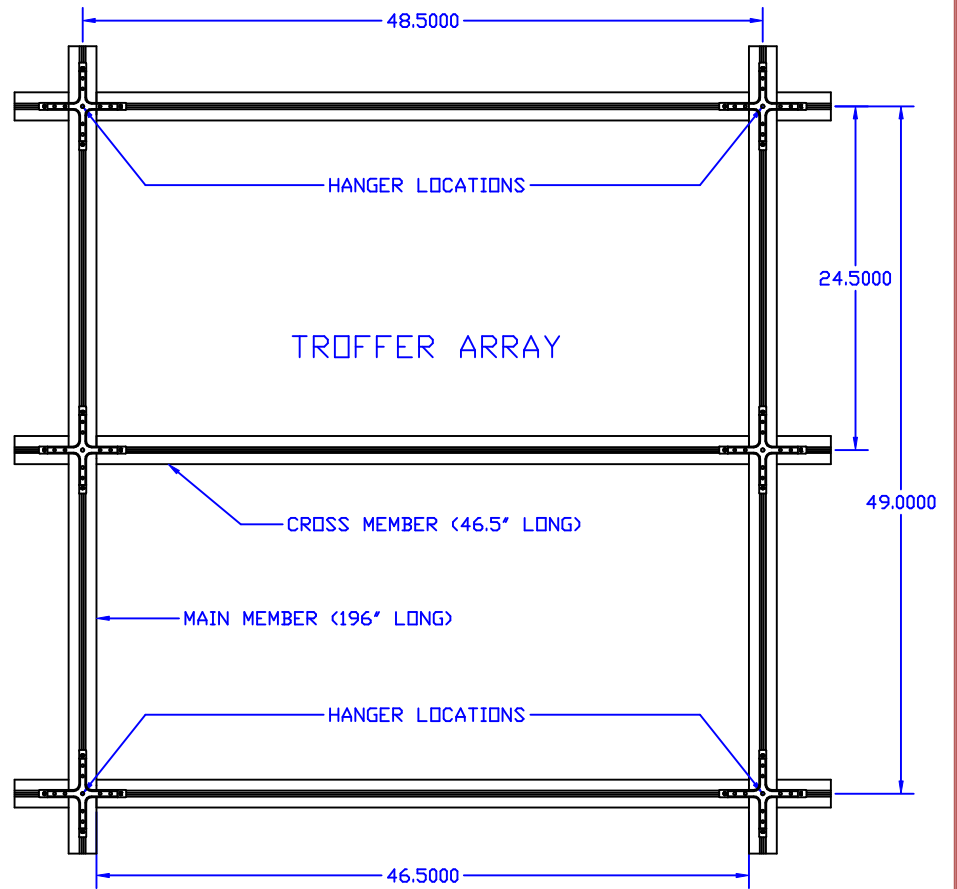
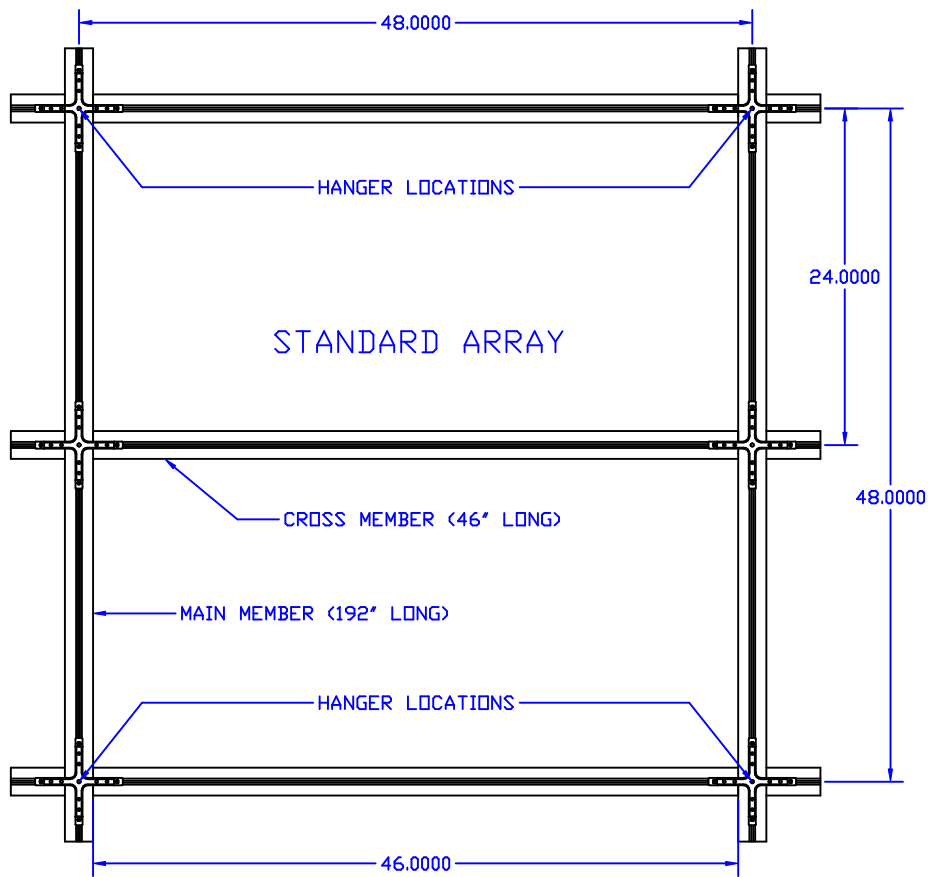




# INSTALLATION MANUAL





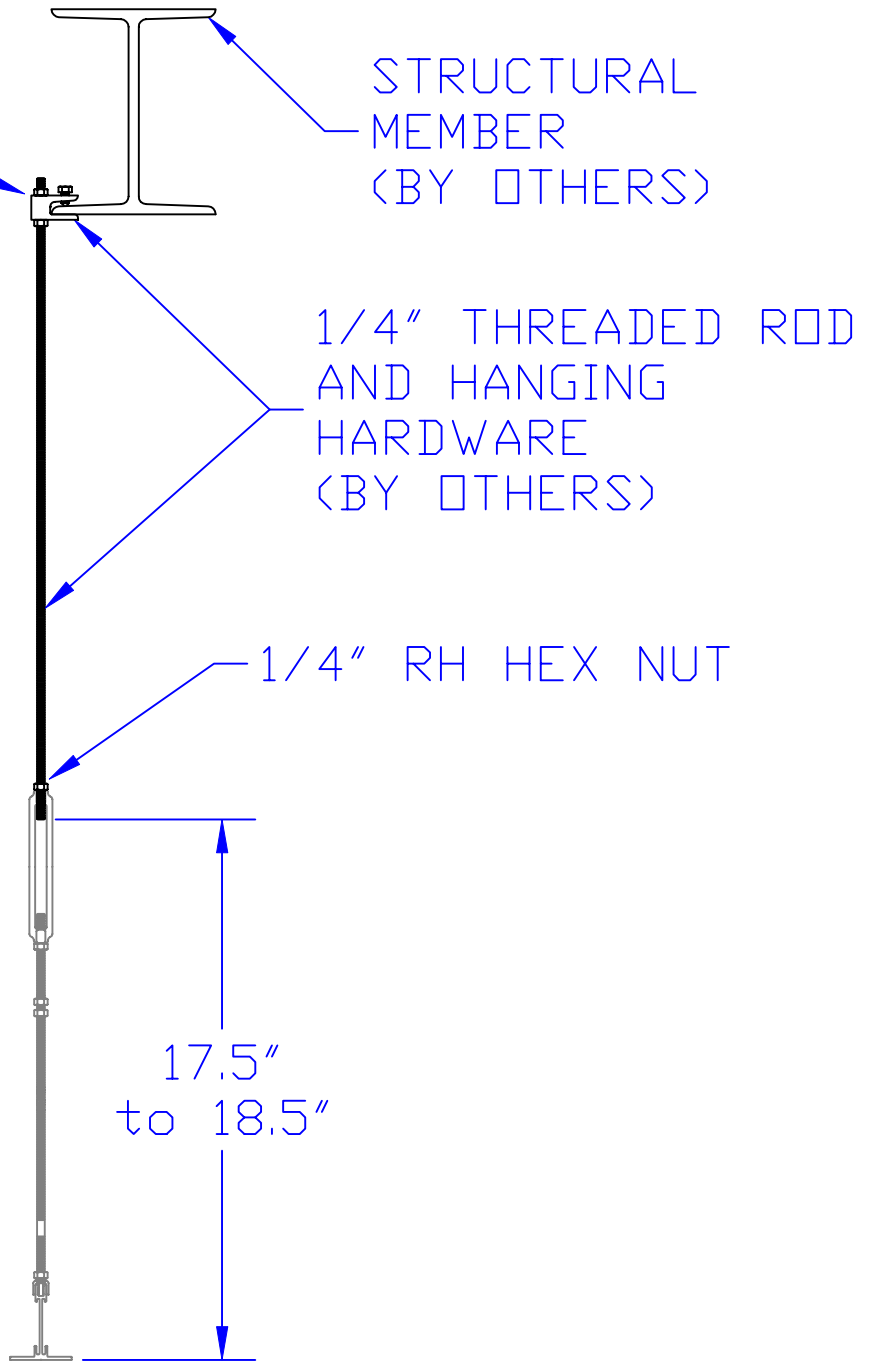
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THIS DRAWING IS THE PROPERTY OF CLEANPAK AND CAN NOT BE REPRODUCED IN WHOLE OR IN PART, NOR DELIVERED TO OTHERS WITHOUT THE EXPRESS WRITTEN PERMISSION OF CLEANPAK.			

TOLERANCES UNLESS OTHERWISE SPECIFIED
FRACTIONS : ±1/32
0.0 : ±0.1
0.00 : ±0.03
0.000 : ±0.010
0.0000 : GIVEN
ANGLES : ±0.5°


DRAWN BY: yars
ISSUED ON: 2/22/00
CHECKED BY:
SCALE:

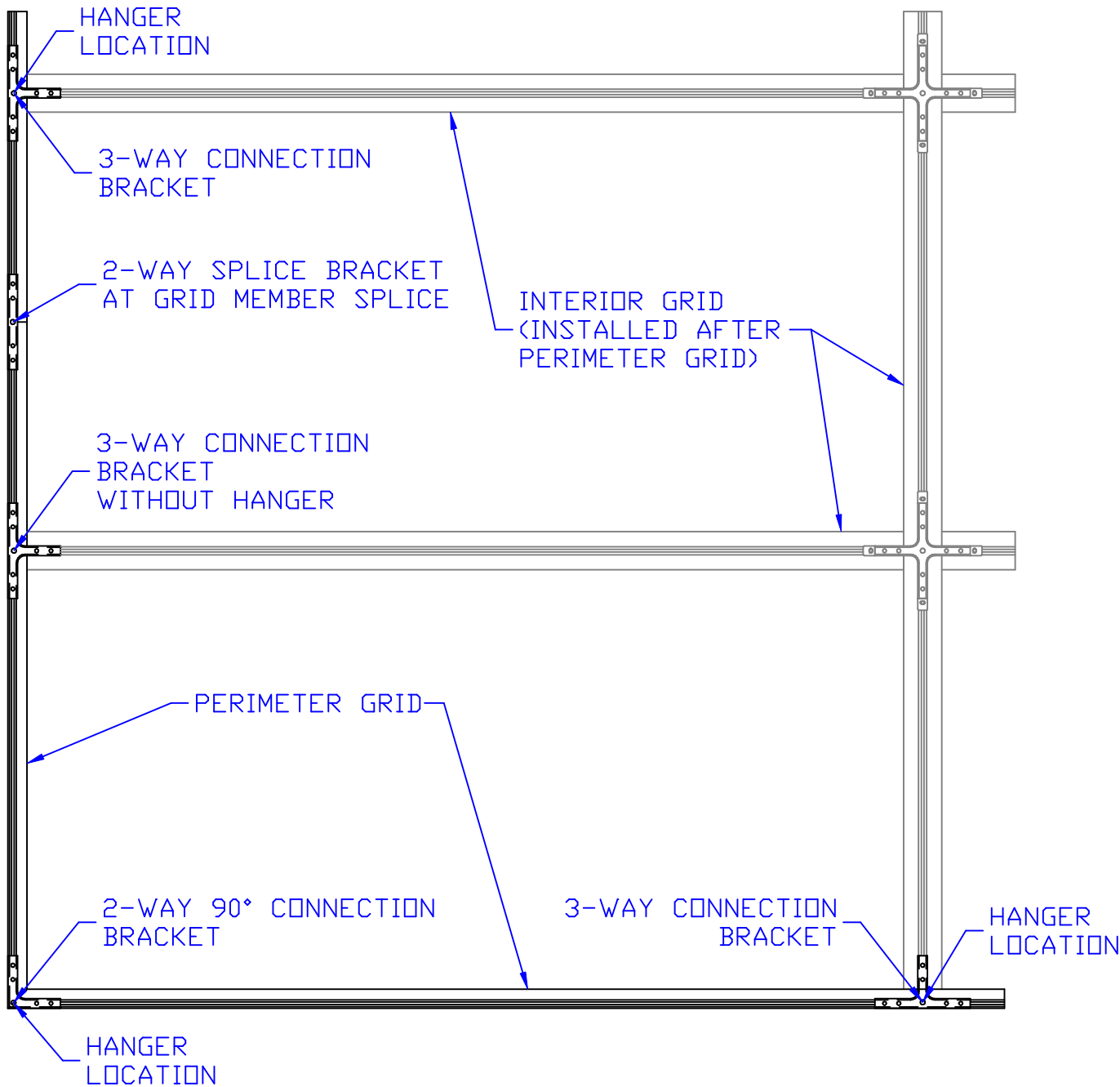
	11241 S. E. HIGHWAY 212 CLACKAMAS OR 97015 Phone (503) 557-4500 Fax (503) 557-4501	
	TITLE: STANDARD AND TROFFER LAYOUT ARRAYS FOR SLIMTRAK	
SIZE: A	DRAWING NO.: 27-40-FIGURE 1	
JOB NO.:	SHEET OF	


BEAM CLAMP  
IS SHOWN FOR  
ILLUSTRATION  
ONLY. ACTUAL  
METHOD OF  
ATTACHMENT IS  
THE RESPON-  
SIBILITY OF  
OTHERS

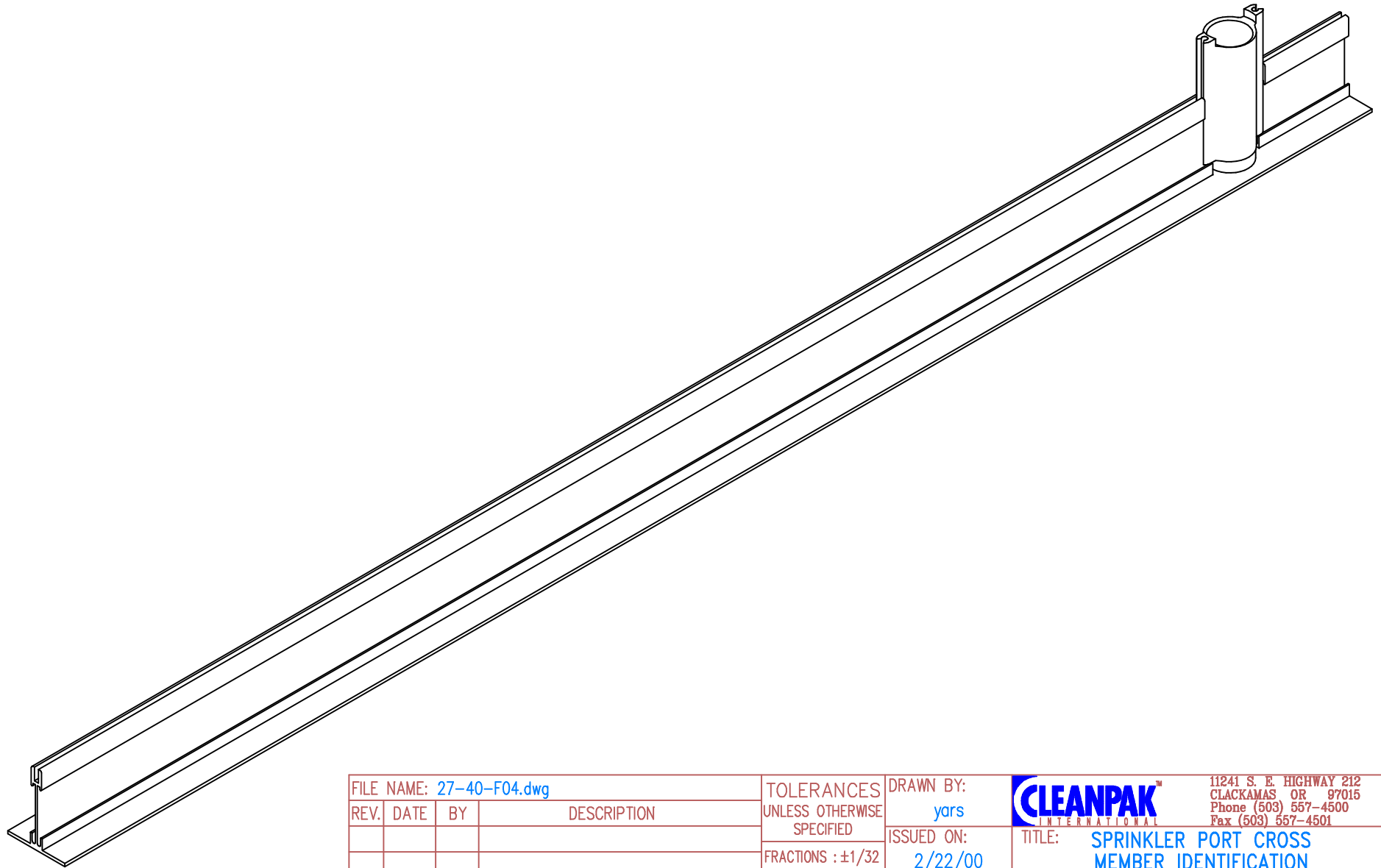



NOTE: ALL  
HARDWARE AND  
CONNECTIONS,  
INCLUDING  
STRUCTURAL  
CALCULATIONS,  
ABOVE TURNBUCKLE  
ARE THE  
RESPONSIBILITY OF  
OTHERS

FILE NAME: 27-40-F02.dwg				TOLERANCES UNLESS OTHERWISE SPECIFIED		DRAWN BY: <b>years</b>		 11241 S. E. HIGHWAY 212 CLACKAMAS OR 97015 Phone (503) 557-4500 Fax (503) 557-4501	
REV.	DATE	BY	DESCRIPTION	FRACTIONS : ±1/32		ISSUED ON: 2/22/00		TITLE: EXAMPLE OF INTERSTITIAL HANGING HARDWARE FOR SLIMTRAK	
				0.0 : ±0.1		CHECKED BY:		SIZE: <b>A</b> DRAWING NO.: 27-40-FIGURE 2	
				0.00 : ±0.03		SCALE:		JOB NO.:	
				0.000 : ±0.010				SHEET OF	
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				ANGLES : ±0.5°					



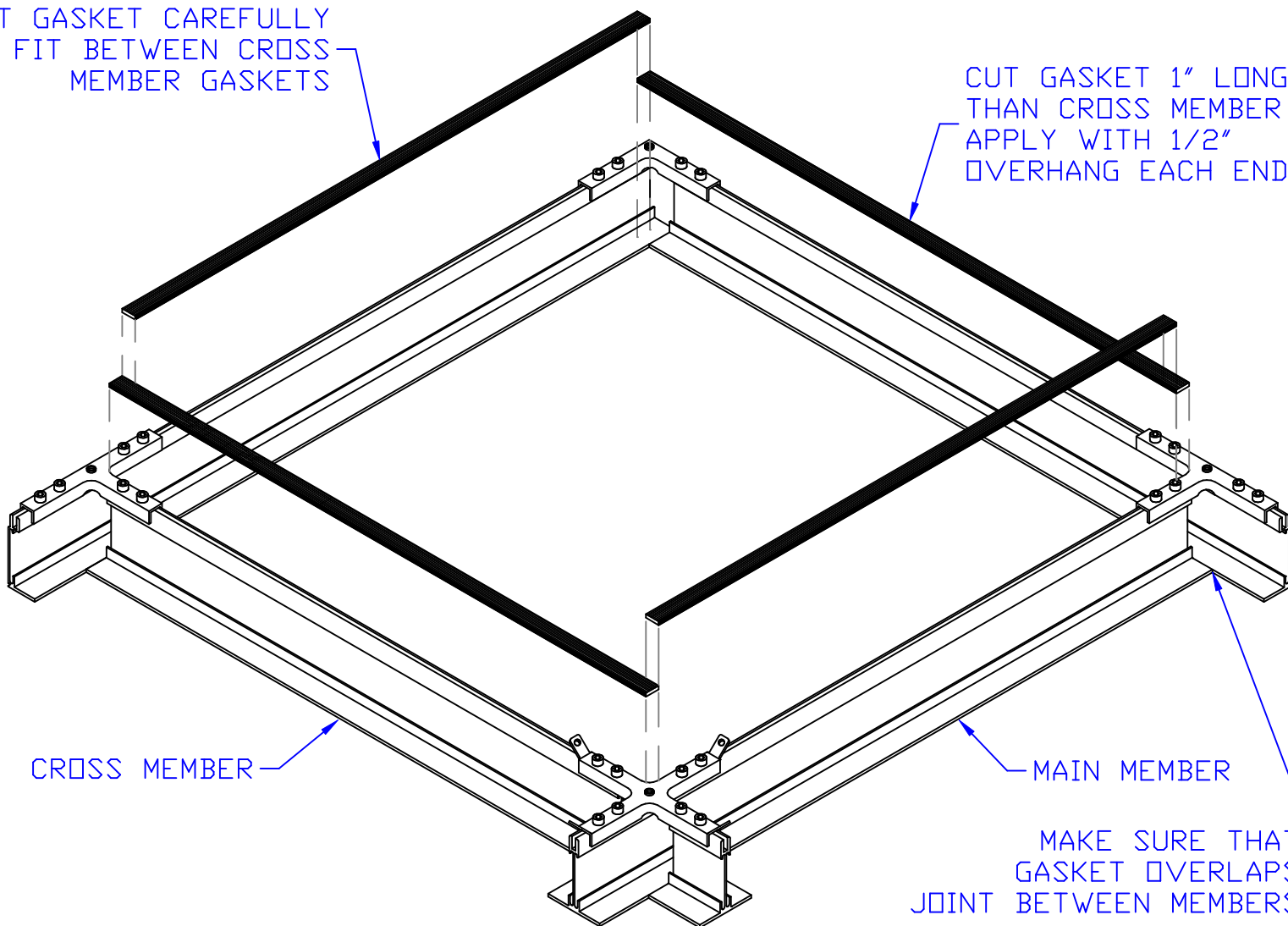
FILE NAME: 27-40-F03.dwg				TOLERANCES UNLESS OTHERWISE SPECIFIED		DRAWN BY: <b>years</b>		 11241 S. E. HIGHWAY 212 CLACKAMAS OR 97015 Phone (503) 557-4500 Fax (503) 557-4501	
REV.	DATE	BY	DESCRIPTION	FRACTIONS : ±1/32		ISSUED ON: 2/22/00		TITLE: PERIMETER GRID BRACKET CONNECTIONS FOR SLIMTRAK	
				0.0 : ±0.1		CHECKED BY:		SIZE: A DRAWING NO.: 27-40-FIGURE 3	
				0.00 : ±0.03		SCALE:		JOB NO.:	
				0.000 : ±0.010				SHEET OF	
				0.0000 : GIVEN					
				ANGLES : ±0.5°					
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FILE NAME: 27-40-F04.dwg				TOLERANCES UNLESS OTHERWISE SPECIFIED	DRAWN BY: yars	 11241 S. E. HIGHWAY 212 CLACKAMAS OR 97015 Phone (503) 557-4500 Fax (503) 557-4501
REV.	DATE	BY	DESCRIPTION			
				FRACTIONS : ±1/32	ISSUED ON: 2/22/00	TITLE: <b>SPRINKLER PORT CROSS MEMBER IDENTIFICATION FOR SLIMTRAK</b>
				0.0 : ±0.1	CHECKED BY:	
				0.00 : ±0.03	SCALE:	SIZE: <b>A</b> DRAWING NO.: <b>27-40-FIGURE 4</b>
THIS DRAWING IS THE PROPERTY OF CLEANPAK AND CAN NOT BE REPRODUCED IN WHOLE OR IN PART, NOR DELIVERED TO OTHERS WITHOUT THE EXPRESS WRITTEN PERMISSION OF CLEANPAK.				0.000 : ±0.010		JOB NO.:
				0.0000 : GIVEN		
				ANGLES : ±0.5°		

CUT GASKET CAREFULLY  
TO FIT BETWEEN CROSS  
MEMBER GASKETS


CUT GASKET 1" LONGER  
THAN CROSS MEMBER AND  
APPLY WITH 1/2"  
OVERHANG EACH END



CROSS MEMBER

MAIN MEMBER

MAKE SURE THAT  
GASKET OVERLAPS  
JOINT BETWEEN MEMBERS

FILE NAME: 27-40-F05.dwg				TOLERANCES UNLESS OTHERWISE SPECIFIED	DRAWN BY: yars	 11241 S. E. HIGHWAY 212 CLACKAMAS OR 97015 Phone (503) 557-4500 Fax (503) 557-4501
REV.	DATE	BY	DESCRIPTION			
				FRACTIONS : ±1/32	CHECKED BY:	SIZE: A DRAWING NO.: 27-40-FIGURE 5
				0.0 : ±0.1	SCALE:	
				0.00 : ±0.03		SHEET
				0.000 : ±0.010		OF
				0.0000 : GIVEN		
				ANGLES : ±0.5°		
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I. Parts Identification  
 A. Standard Parts—Table A

<b>Description</b>	<b>Actual Length</b>	<b>Identification &amp; Notes</b>	<b>CPI Part No.</b>
<b><i>Grid Members</i></b>			
<b>16' (192") Perimeter Member</b>	191.985 in.	"L" shaped grid members	27-40004
<b>16' (192") Main Member</b>	191.98 in.	"T" shaped grid members	27-40002
<b>16' (196") Main Member (for Troffer Array)</b>	195.98 in.		27-40011
<b>4' (46") Cross Member</b>	45.985 in.		27-40001
<b>4' (46.5") Cross Member (for Troffer Array)</b>	46.485 in.		27-40010
<b>2' (22") Cross Member</b>	21.985 in.		27-40000
<b>4' (46") Member w/ Sprinkler Port</b>	45.985 in.		Ceiling grid members with factory installed sprinkler ports 4" from one end
<b>4' (46.5") Mem w/ Sprk Port (Troffer Array)</b>	46.485 in.	27-40012	
<b>2' (22") Member w/ Sprinkler Port</b>	21.985 in.	27-40006	
<b><i>Connecting Hardware</i></b>			
<b>4-Way Connecting Bracket Assy w/ Tabs</b>	For 4-way grid intersections and connection of sway bracing		27-40101
<b>3-Way Connecting Bracket Assy</b>	For 3-way grid intersections		27-40102
<b>2-Way 90° Connecting Bracket Assy</b>	For 90 degree (corner) grid connections		27-40103
<b>2-Way Splice Connecting Bracket Assy</b>	For grid splice connections		27-40104
<b><i>Hanging Assembly (parts per assembly)</i></b>			<b>27-40105</b>
<b>1/4" RH Hex Nut</b>	One per hanger assembly		125-25-10
<b>1/4" LH Hex Nut</b>	Three per hanger assembly		125-25-11
<b>1/4" 2-Ended Stud</b>	One per hanger assembly		175-72-104
<b>1/4" x 1/4" Turnbuckle</b>	One per hanger assembly		175-72-74
<b><i>Miscellaneous</i></b>			
<b>Blank Pan Hold Down Clip</b>	For securing blank pans		175-00-12
<b>2'x4' Blank Pan</b>	Standard blank pan		78-00013
<b>2'x2' Blank Pan</b>	Standard blank pan		78-00014
<b>Universal Hold-Down Clip</b>	For use with filters, blank pans and R/A		175-00-90
<b>0.125" x 0.625" Poron Gasket</b>	For use with gasketed system only		175-82-77

- II. Grid Handling Requirements
  - A. Prior to any assembly or installation work, perform a physical count of all items on the master ship list. Report any shortages to the factory immediately.
  - B. Handle all parts with care to prevent damage during installation. Parts are cleaned and wrapped to factory standards at the CLEANPAK facilities. FROM RECEIPT THROUGH COMPLETE INSTALLATION, THE INSTALLER IS RESPONSIBLE FOR HANDLING ALL CLEANPAK PRODUCTS ON THE SITE.
  - C. After receiving the parts from the shipper, do not store them outside. Do not store them in high-traffic or unprotected areas.
  - D. All parts should be stored in a controlled environment, especially when delivered to job sites with variable (hot or cold) or humid climates. The optimal storage temperature is 70° F (12° C).
  - E. It is the responsibility of the installer to protect the parts from damage at all times. CLEANPAK does not take responsibility for damage to packaging that may result in damage to the parts.
  - F. All parts should be unpackaged in a manner consistent with site/project specific protocol requirements.
    - i. Avoid double handling of parts.
    - ii. Unpack all parts in protocol-approved area prior to moving parts into staging area to be installed.
      - a. Wipe down parts as required by protocol taking care not to scratch painted surfaces.
- III. Interstitial Preparation
  - A. SlimTrak is hung on a 4'x4' array. Refer to the appropriate hanging layout for this project (normally not supplied by CLEANPAK).
    - i. SlimTrak is normally arrayed for 2'x4' openings (or occasionally 4'x4' openings). A 2'x4' array may be either 24"x48" or it may also be 24.5"x48.5" (the larger array is used to fit standard troffer light fixtures – referred to as a "troffer array") – See Figure 1. Prior to installation, determine which of these arrays is used on this project as this will determine whether the hangers are hung on a 48"x48" array or a 48.5"x49" array.
    - ii. It is the responsibility of the installer to ensure that sufficient structure or sub-structure is available for hanging the SlimTrak on the required hanging array. This includes load and rigidity requirements necessary to meet installation specifications and applicable building codes.
    - iii. Prior to hanging SlimTrak, the installer is to secure ¼" threaded rod from structure or sub-structure in locations directly above the hanging points required for this job.
      - a. The threaded rod should terminate between 17½ and 18½ inches above the specified finished height of the ceiling for proper installation – see Figure 2.
      - b. Thread a ¼" RH hex nut onto the end of the threaded rod at least ½" up.
- IV. Installation
  - A. Perimeter – See Figure 3
    - i. SlimTrak installation is best accomplished by first framing an area with perimeter grid.
      - a. Most installations will use perimeter extrusion (L-shaped) for this purpose.
      - b. Some installations will use interior extrusion (T-shaped) for the perimeter – this is at the option of the buyer.
    - ii. The perimeter is installed in 16' lengths.
    - iii. Start installing perimeter grid in a corner and continue with 16' members end to end until the next corner is reached. Field cut the last member in a row to fit as necessary.
      - a. The perimeter is either hung from the threaded rods (installed in the previous section) and turnbuckles, or fastened directly to the perimeter wall.
        - 1. Fastening to the perimeter wall is at the option of the buyer and no hardware is included for this. Typical fastening scenarios include self-tapping screws through the perimeter extrusion and into the wall.
        - 2. If the perimeter is hung from threaded rods, connecting brackets will be used in conjunction with ¼" 2-ended studs.
          - a) At perimeter locations, either 3-way, 2-way 90° or 2-way splice brackets will be used. Consult the layout for the proper brackets.
          - b) All splices between consecutive members require a connecting bracket whether or not a hanger is included at that location.

- c) A splice without a hanger requires either a 3-way or a 2-way splice bracket (a 3-way bracket will be used if this location is going to have a T-connecting interior grid member installed).
    - b. Corners require 2-way 90° brackets. The perimeter grid members may be mitered (this is a field operation as parts are not mitered at the factory) or may be butt-jointed at the buyer's discretion.
    - c. To install brackets:
      - 1. Locate centerline of brackets on grid members and mark with protocol-approved pen.
      - 2. Carefully press bracket in place with ¼" threaded hole directly above centerline mark. The fit is intentionally tight and may require tapping with a non-marring mallet.
      - 3. Screw in the #10-24 socket-headed cap screws (either 2 or 4) and torque to 26 in-lb.
      - 4. For brackets which will be connected to hangers above:
        - a) Thread ¼" RH nuts ¾" onto the short threaded end of ¼" 2-ended studs.
        - b) Screw the short threaded end of ¼" 2-ended studs into the ¼" threaded hole in each bracket until snug. With a locking wrench on the non-threaded portion of the stud, turn an additional 1/3 turn.
        - c) Turn the ¼" RH nut until ¼ turn past snug.
        - d) Thread three (3) ¼" LH nuts at least 1" down the top end of each stud.
        - e) Thread a ¼" turnbuckle at least ½" down the top end of each stud.
      - 5. Raise the grid member into place and thread the turnbuckles down onto the 2-ended studs.
    - iv. Once the perimeter frame has been completed, level to specified ceiling height with turnbuckles if applicable. Lock in place with jam nuts above and below turnbuckle (two additional LH nuts below the turnbuckle are for attaching filter hold-down hardware and do not require adjustment at this point).
- B. Main Members
  - i. The pre-hung threaded rods should line up with the main member rows.
  - ii. The main members measure 16' (or 16'-4" for troffer array)
  - iii. Pre-assemble connecting brackets along the lengths of main members – usually on 24" (or 24.5" for troffer array) intervals – check layout.
    - a. Most of the brackets will be 4-way brackets. Secure with four (4) #10-24 socket-headed cap screws as described above.
    - b. Connect ¼" 2-ended studs as described above (including the nuts and turnbuckles), every 48" (or 49" for troffer array), in locations matching the hanger locations.
  - iv. Raise the main runners into place and secure to the hangers as described above. A rough level is all that is required at this point.
  - v. Continue the row of main members in the same manner, using 2-way splice brackets and four (4) #10-24 socket-headed cap screws at splices (unless splices occur at locations that require another bracket).
  - vi. Field cut the last portion of a main member row to fit as necessary.
  - vii. Complete each row of main members in the same way.
- C. Cross Members
  - i. The cross members will measure 46" (or 46.5" for troffer array), except possibly at some perimeter locations where cross members may measure 22".
  - ii. Install the cross members at the appropriate locations between main members, securing to the connecting brackets with additional #10-24 socket-headed cap screws.
    - a. Make sure the butt joint between members is tight.
  - iii. Cross members at perimeter locations may require field cutting to fit depending upon the layout.
  - iv. Install all cross members as determined by the layout.
- D. Level grid to specified level using a laser level and securing all jam nuts.
- V. Fire Protection – See Figure 4
  - A. If this project includes fire protection through the grid, you have been supplied with a sufficient quantity of cross members with sprinkler ports to cover the ceiling at the specified density (typically 1 port per 100 square feet). Locations and orientations for these must be coordinated with the appropriate parties.

- B. Installation is identical to that of the cross members.
    - i. If possible, determine sprinkler port locations prior to installing the grid. At each required location, install a cross member with sprinkler port instead of a standard cross member.
    - ii. If the locations were not known prior to installing the grid, existing cross members will need to be removed and replaced with cross members with sprinkler ports.
  - C. Couplings may have been provided with this job if cross members with sprinkler ports are included. These are stainless steel pipes, usually about 14" long, and either have a male threaded end or a flexible stainless steel mesh hose attached. Only an authorized fire protection contractor should install these.
- VI. Preliminary Cleaning (as required or mandated by Protocol)
- A. Vacuum and clean the grid of all foreign objects.
  - B. Perform a preliminary wipe down using a 10:1 solution of de-ionized water and isopropyl alcohol, or as per protocol procedures. Be certain the grid dries prior to applying the gasket. It is best to allow a full 12 hours between this cleaning and any touch-up. **IMPORTANT: DO NOT EXCEED A 10% RATIO OF ISOPROPYL ALCOHOL IN GRID CLEANING SOLUTION.**
- VII. Touch-Up
- A. Touch up any scratches with matching touch-up paint. The touch-up is for cosmetic purposes only, and is not required on exposed surfaces that have been cut.
- VIII. Application of Filter Seal (Gasket) – See Figure 5
- A. A gasket seal is applied to grid after cleaning solutions and touch-up paint are dry.
    - i. Gasket will measure ½" to wide and 1/16" to 1/8" thick, and will have an adhesive on one side.
    - ii. The default factory-supplied (if any) gasket is ½" x 1/8" Poron brand black urethane gasket. However specifications and/or owner preference may require an alternate gasket. Regardless of the gasket supplied with the system, it remains the installer's responsibility to confirm which type of gasket is appropriate.
    - iii. It is possible that the gasket for this project is not being supplied by CLEANPAK. It may be supplied by the owner, the general contractor or even by the installer. If it has not been provided with this package, please consult with the general contractor or owner before consulting the factory.
  - B. The gasket should be supplied in rolls, generally 40 or 50 feet long. One side of the gasket must have an adhesive applied, with a protective backing. Do not use a gasket with adhesive on both sides.
    - i. Using a sharp knife or pair of scissors, carefully cut gasket to length before removing the protective backing.
    - ii. Cut strips 1" longer than the Cross Members.
      - a. Remove the protective backing from one strip at a time, and carefully apply the side with adhesive to one side of the member's gasket surface.
      - b. Take care to align gasket with edge of grid member and avoid gasket overhang.
      - c. Ends of gasket should extend ½" over each end of the Cross Member, onto the Main Members.
  - C. Carefully cut strips that will go between the Cross Member strips (to form a frame of gasketing that a filter, troffer or blank pan can sit on).
    - i. These strips must have ends cut square and must be placed on main runners with ends tightly against the gasket which has been applied to the cross runners, but not overlapping.
    - ii. A very small gap of a few thousandths of an inch will self-fill once a filter has been pressed down onto the gasket, but any larger of a gap may cause leaks.
    - iii. It is the installer's responsibility to ensure the proper seal has been maintained.
- IX. Final Cleaning
- A. After gasket has been applied, and before installing filters, the grid may require a final clean (consult with Protocol).
  - B. Confirm with protocol that the cleanroom is at the appropriate protocol level for filter installation prior to the final clean.
  - C. Wipe all grid members with a cleanroom-approved 10:1 solution of de-ionized water and isopropyl alcohol, or as specified by owner. This clean is to remove any remaining debris or contaminants just prior to filter installation. **IMPORTANT: DO NOT EXCEED A 10% RATIO OF ISOPROPYL ALCOHOL IN GRID CLEANING SOLUTION.**

- X. Seismic Bracing
  - A. A structural engineer licensed in the state and/or country in which the grid is installed must determine method of seismically bracing this grid.
  - B. CLEANPAK International is not responsible for seismic bracing unless specifically contracted for this project.
  - C. The 4-way connector brackets include tabs that may be used a connection points for seismic bracing cables or wires.