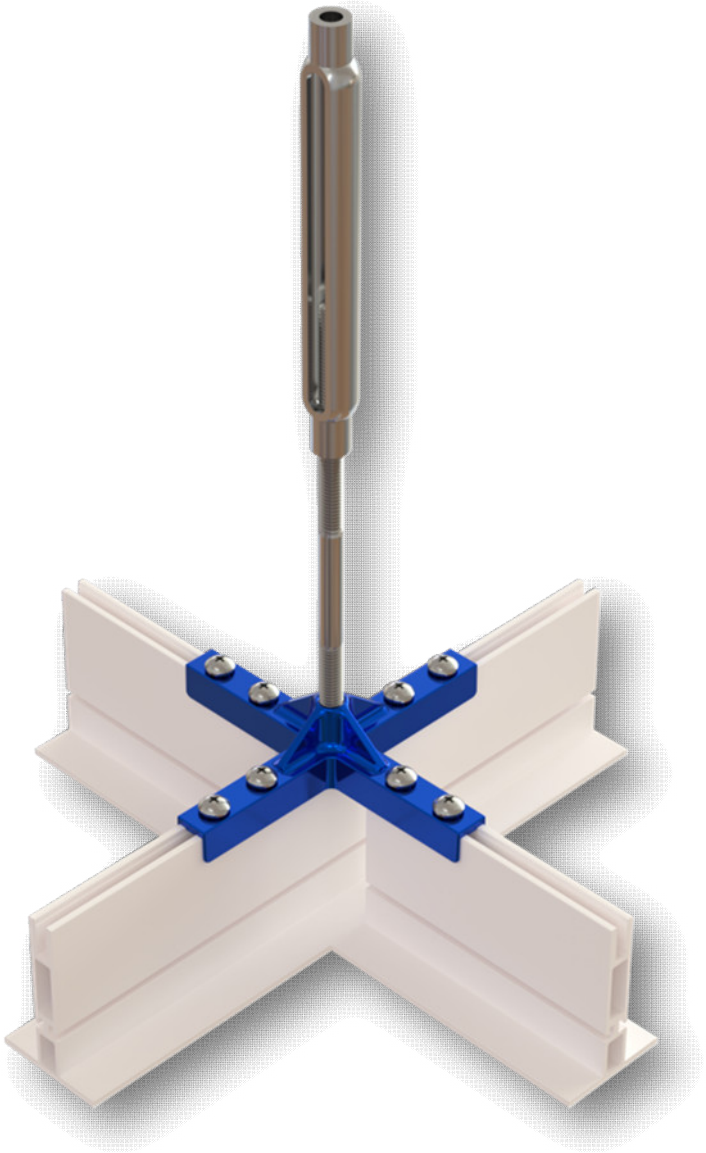
Critical Thinking for Your Critical Environment

MICRO-TW

(*Walkable*)

2" WIDE CLEANROOM CEILING GRID SYSTEM

MANUFACTURED IN AMERICA BY USA COMPANIES



SUBMITTAL DATA & DETAILS

INSTALLATION, OPERATION, MAINTENANCE INSTRUCTIONS

8701 Elmwood Ave #400 ● Kansas City, MO 64132 PH: (816) 231-5522 ● www.ajmfg.com

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OVERVIEW

The ***AJ Manufacturing***, **Micro-TW** grid system is designed for carrying the load of standard filter modules in ISO 4 (Class 10) to ISO 8 (Class 100,000) Cleanroom areas for various industries including but not limited to Aerospace, Biotechnology, Health Care, Microelectronic, Pharmaceutical, Semiconductor, etc. The Micro-TW is a gasket-seal ceiling grid system comprised of 2" (50mm) wide extruded aluminum tee grid members that are bolted together forming a continuous gasketed ledge to receive HEPA or ULPA filters for ultra-clean environments. This ceiling grid system is suspended using ⅜-16 threaded rod with turnbuckles. Each Micro-TW grid member comes factory pre-cut. The Micro-TW main '4-way' connectors are designed for all 4-way intersections. These 'zinc die-cast' connectors can be cut to make other grid connectors used at a splice, three-way, inside corners, outside corners, and outside-edge-perimeter connections. The connectors are mounted from the top to the Micro-TW grid, which interconnects to the top threaded boss with ¼-20 hardware. The 'zinc die-cast' connector has been specially designed to engage with the top upper area of the main runners and cross-tee sections for accurate grid alignment. All Micro-TW grid intersections are designed for straight cuts to facilitate ease of construction on the job site.

The Micro-TW main runners, cross-tees, and wall-angles are supplied with a powder coat white finish. The sections are shipped in boxes interwoven with paper for protection. The boxes are placed on skids for further protection. Carton sizes are kept to a minimum weight for ease of handling on the job site. For large projects, the grid sections may be "master-packed" for savings when shipping directly to the job site from our aluminum extruder.

The Micro-TW grid sections are pre-cut for a standard layout of 24 ½" x 48 ½". This will utilize 46 ½" length cross-tees. The main runners and wall angles are provided in 144" lengths. This layout arrangement will fit most standard filter modules used in the industry. The most commonly used filter module size is 23 ⅝" x 47 ⅝". Light fixtures are also available that fit this grid layout arrangement. They are designed for the lens to fit the 22 ½" x 46 ½" opening with this grid layout pattern. The Micro-TW grid system can also be used when a 24" x 48" or 48" x 48" layout is required. This will use filter modules that are 23 ⅛" x 47 ⅛" or 47 ⅛" x 47 ⅛".

The upper part of the Micro-TW main runner, cross-tee, and wall angle is extruded with a ¼-20 threaded boss. This threaded boss is used for attaching the zinc die-casting connectors to the grid extrusion using ¼-20 x ¾ Philips pan head screws. This top thread boss allows for securing a zinc die-cast connector anywhere along the top of the extruded main runners, cross-tees, and wall angles. This top slot can also be used for mounting or clamping down blank panels, filters, and light fixtures with the appropriate tie-down hardware.

Each zinc die-cast connector is tapped for hanging with a ⅜" threaded rod. The recommended hanging center distance is nominally 48" x 48" centers. If the grid system chosen is a 24 ½" x 48 ½" system, the hang centers will be 49" x 48 ½". It is recommended that an interstitial Strut support system be used in conjunction with the grid system for ease of installation and leveling. The system is provided with ⅜" x 8" threaded rods with both right-hand (RH) and left-hand (LH) threads to be used in conjunction with a 7" body turnbuckle. Enough of these assemblies will be provided for suspension on nominal 4x4 centers. The threaded rod from the turnbuckle up is by others. See drawing layouts for recommendations.

Each project or Micro-TW grid system is shipped with main runners, cross runners, perimeter wall angle, 4-way cross, splice, three ways, perimeter connectors, connecting hardware, RH-LH threaded rods, and turnbuckles. Installation instructions are also provided with each shipment.

FEATURES AND BENEFITS:F

1. Suspension points can be placed anywhere on the upper Threaded boss of the grid.
2. Hangers below the grid can be placed anywhere by drilling a ¼" diameter hole and bolting through the grid for support with ¼" hardware.
3. Head-Tracks to wall systems mount easily to the face of the grid with simple drill and tap type fasteners.
4. The Micro-TW grid system is compatible with teardrop, sealed fixtures or flow-through light fixtures.

OPTIONS:

1. Special coatings - Clear anodizing
2. Grid layouts, 24" x 48", 48" x 48"
3. Factory applied gasket material 3⁄16" x ⅝" Lite Grey PVC by Norseal
4. Bearing Rails for room side entry of Filters

MICRO-TW PARTS:

1. **Main Runner** –Powder coated white aluminum, 144" or 147"
2. **Cross Tee** – Powder coated white aluminum, 46 ½"
3. **Wall Angle** – Powder coated white aluminum, 144"
4. **4-Way Intersection Connector** – zinc die-casting
5. **Splice Connector** – zinc die-casting
6. **Three-Way Connector** – zinc die-casting
7. **Three-Way Perimeter Connector** – zinc die-casting
8. **Inside Corner Connector** – zinc die-casting
9. **Outside Corner Connector** – zinc die-casting
10. **Turnbuckle** – ⅜-16, 7" body, roll formed, zinc plated
11. **Threaded Rod** – RH-LH – 8" long zinc plated
12. **Philips Pan Head Screw** – ¼-20 x ¾" Philips Pan Head zinc plated
13. **Field Applied Gasket** - 3⁄16" thick x ⅜" wide closed cell lite grey PVC Gasket, adhesive one side, supplied for field mounting; see option for factory gasket profiles, supplied in 50' rolls
14. **Factory Applied Gasket** – 3⁄16" thick x ⅝" wide closed cell, lite grey PVC – Norseal

MICRO-TW GRID SYSTEM	L/180	L/240	L/360
HANGER SPACING (in.)	**48**	**48**	**48**
MAIN TEE SPACING (in.)	**48**	**48**	**48**
MAX POINT LOAD (lbs.)	**380**	**380**	**380**
MAX UNIFORM LOAD (PLF)	**115***	**115***	**115***
APPLIED LOAD (PSF)	**57.5***	**57.5***	**57.5***

Based on Testing by: **ESi - Engineering Systems Inc.** *ESi Matter No: 106495 09/06/2024*

Testing Review by: **BSE - Structural Engineers** *Updated: 07/10/2025*

1) *Maximum load listed is per main Tee at the listed spacing using all 4 casting legs under equal loading. Total load from all Ts framing into a single hanger must be checked against allowable hanger and connection loads.*

2) *Maximum point load assumes the load is placed at the center of the Tee and does not include any distributed or area load for other infill. Higher loads may be possible for other offset locations. Contact AJ Mfg. & BSE for additional information.*

3) *Loads denoted by * have been reduced from maximum allowable bending or deflection loads to limit casting stress. Additional capacity may be available based on load placement. Contact AJ Mfg. & BSE for additional information.*

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INSTALLATION, OPERATION, MAINTENANCE INSTRUCTIONS

SHIPPING, RECEIVING

When your shipment arrives either on pallets or crates, inspect for any external damage that may have occurred during shipping. Note any damage to the delivery carrier. It is your responsibility to file a freight claim with the carrier at the time of receiving the package. Take pictures to prove that freight damage has occurred. After receiving it, check to make sure that all the packages, boxes, pallets or crates have been delivered. Unpack the packages carefully to avoid any damage to the components or painted members. This is a good time to get familiar with the components.

SUPER-STRUT GRID SUPPORT SYSTEM

The grid system has been designed to be suspended using ⅜-16 threaded rod and turnbuckles which includes a RH-LH threaded rod connection to the grid system. The Micro-TW grid system is supplied to the job site from the turnbuckle down. Any additional support including the threaded rod from the turnbuckle 'up' and the super-strut intermediate grid supports is by others. The grid has been supplied with enough turnbuckles for a grid support on a nominal 4' x 4' center distance. See drawings for the location of turnbuckles. The turnbuckles are generally located at the 4-way intersection of the grid system. The grid system main runners are spaced either 48" or 48 ½" from each other. The super-strut is run perpendicular to the main runners on 49" centers when the grid is placed on a 24 ½" x 48 ½" center distance OR 48" centers when the grid is placed on a 24" x 48" center distance. Centerline spacing shall be determined by the installation contractor. Any additional support with the Micro-TW grid system shall be done anywhere along the top profile using a splice connection with provision for another ⅜" rod.

GRID INSTALLATION

Refer to the Architectural drawings for the grid system layout along with the Super-strut layout. This will show the hanger point locations for the grid system. The grid system should be laid out to the design of the ceiling. Generally, the wall angle is installed first. Always use a laser to install the grid. Continue to use the laser to level all the grid components. The use of adjustable turnbuckles will ease the leveling of the grid system. Once the wall angle has been installed find a datum point for installing the first piece of main runner. Do not measure from clip, to clip, to clip, to avoid tolerance build up. Always continue to double check your layout to make sure that you are within design plans and that the grid is installed perpendicular to the walls and that the grid is level. The system is installed easily if good planning is followed. If the clips are installed at the correct locations on the main runners the cross-tee bars will automatically self-align with each other. *Note: For 144" long main runners, it is a good idea to run your main runners, so that a splice occurs between 4-way intersections. For 147" long main runners, the splice will occur at the 4-way intersection die-casting.* Use a good 80-100 tooth carbide tip triple chip blade with a good miter saw to finish end cuts of the main runners, wall angle and cross tee bar extrusions. AJ Manufacturing cannot emphasize enough that the start point and the continued measuring is the most important part of a good grid installation.

GASKET INSTALLATION

After the grid has been installed, it is advisable to wait to install the gasket material until all other trades are finished in the space if this is possible. At this time clean the grid with a water and alcohol wipe down. Install the gasket after the grid has been wiped clean. Install the gasket tape with the adhesive side to the grid. *Note: leave the paper on while applying the gasket*. Apply the gasket all around the inside edge of the t-bar leaving at least a ⅛" space from the inside edge of the open space on the t-bar ledge. When coming to a 90° corner pinch the gasket and turn the corner. When coming to the end of a complete 2x4 opening, overlap or butt join the gasket at this point. It is important not to stretch the gasket but to apply the gasket to the top grid surface. Leaving the paper on the top during installation will help with not allowing the gasket to stretch. After the gasket is applied rub the top of the paper on the gasket to seat the gasket to the grid runner, then remove the paper and proceed to the next grid opening. Prior to gasket installation check to make sure that your ordered light fixtures, filters or blank panels is or is not using pre-installed gasket on the downstream side. If this is the case do not put gasket on the grid in their respective locations. *NOTE: 1) In some cases, it might be advisable NOT to install the gasket on the grid system but to apply the gasket to the bottom of filters, light fixtures and blank panels. This is a good way to go since you can clean the tee bar from any construction dust prior to installing the components into the grid system*.

Installations with the optional "Bearing Rail" - DO NOT place gasket on the grid but on the bottom perimeter of the Filter just prior to installation. Note: "Bearing Rails" WILL NOT install properly if there is gasket installed on the grid!

FILTER, LIGHTS AND BLANK INSTALLATION

After the grid and gasket have been installed it is now time to install the ceiling grid components. Always take care when installing HEPA or ULPA filters. Generally, the light fixtures are the first components to be installed followed by filters and then the blank panels. At this time the fire protection system has already been installed either through the grid or in the blank panels. Make sure that when installing the ceiling components that you do not damage the gasket. Be sure to place the components on the t-bar; do not slide the components over the gasket to avoid tearing the gasket.

BEARING RAIL INSTALLATION FOR ROOM SIDE FILTER MODULE INSTALLATION

"Bearing Rail" installation for Fan Filter Modules; Note: DO NOT install gasket on the grid openings where filters will be installed. The Gasket is to be installed on the bottom perimeter of the Filter which will mate with the "bearing rails" and the top edge of the tee bar. The bearing rails will be cut to length for the grid spacing for the particular project.

1. First identify your "Bearing rails"
2. Apply gasket to the bottom outside perimeter of the HEPA Filter (*Filters can be ordered with pre-installed gasket on the downstream perimeter of the filter frame*)
3. Install the nominally 46" or 46.5" long piece by rotating into the cross runner.
4. Install the remaining rails in a clockwise rotation. Note: (4) rails make up for the filter install.
5. Note: the bearing rails are installed after the filter is in place above the grid opening on the installation lift.
6. After the bearing rails are installed, then lower the Filter module in place on the bearing rails. Note: the filter rests on top surface of the (4) bearing rails.
7. It is very important that the ceiling grid be installed on the correct centers in order for the "Bearing Rails" to fit properly – Center Distances must be maintained

TOOLS REQUIRED FOR INSTALLATION

An industrial miter saw is recommended for all cuts. Use a high quality 10" diameter triple chip carbide tip saw blade with 80-100 teeth. After cutting, deburr the end of the cuts as necessary. The 4-way die-cast connectors each require (8) ¼-20 x ¾" screws. The 3-way connectors each require (6) ¼-20 x ¾" screws. Use a laser level to level all grid components or to transfer the grid layout from the floor up. Note: a laser can also be used to locate all hang points on the super-strut intermediate grid support.

GRID COMPONENTS

1. **Main Runner** –Powder coated white aluminum, 144" or 147"
2. **Cross Tee** – Powder coated white aluminum, 46 ½"
3. **Wall Angle** – Powder coated white aluminum, 144"
4. **4-Way Intersection Connector** – zinc die-casting

5. **Splice Connector** – zinc die-casting
6. **Three-Way Connector** – zinc die-casting
7. **Three-Way Perimeter Connector** – zinc die-casting
8. **Inside Corner Connector** – zinc die-casting
9. **Outside Corner Connector** – zinc die-casting
10. **Turnbuckle** – ⅜-16, 7" body, roll formed, zinc plated
11. **Threaded Rod** – RH-LH – 8" long zinc plated
12. **Philips Pan Head Screw** – ¼-20 x ¾" Philips Pan Head zinc plated
13. **Field Applied Gasket** - 3/16" thick x ⅜" wide closed cell lite grey PVC Gasket, adhesive one side, supplied for field mounting; see option for factory gasket profiles, supplied in 50' rolls

OPTIONS

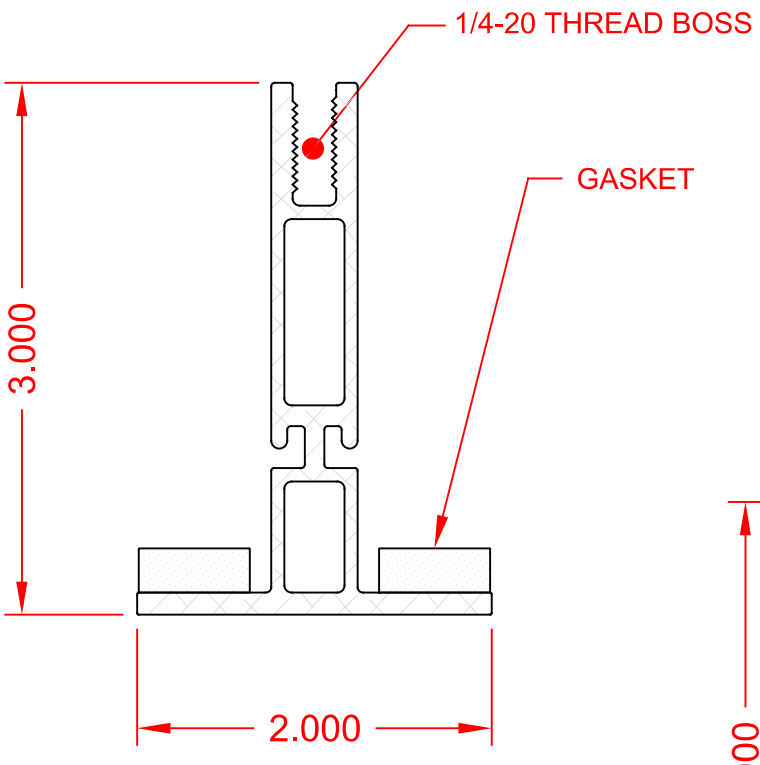
1. **Bearing Rails:** for room side installation of filters
2. **Sprinkler Drop:** provision for flexible Sprinkler Drop in Cross Runner
3. **Custom Cut Castings:** provided as required
4. **Factory applied Gasket:** 3/16" thick x ⅝" Wide Closed Cell Lite Grey PVC Gasket – adhesive one side, applied to the top flange of the Tee Bar and Wall Angle Extrusion profiles ⅛" from the outside edge of the flange. Cut ¼" longer than the extrusion profile.

AJ Manufacturing LIMITED WARRANTY

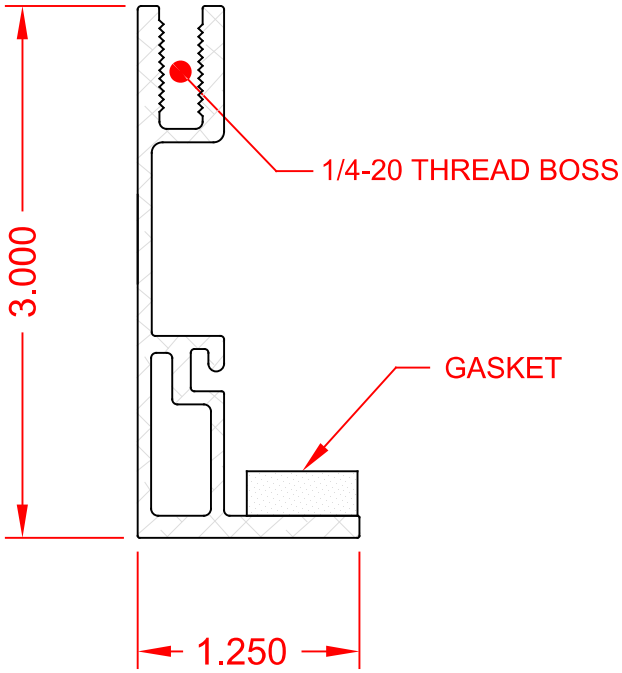
AJ Manufacturing will repair or replace any parts or products which fail because of workmanship or materials at no charge for the cost of parts, materials or transportation to the original purchaser for a period of one year from the date of purchased delivery. At AJ Manufacturing's option, such repairs or replacement will be undertaken at the purchaser's site or AJ Manufacturing's facility. The purchaser shall be responsible for all labor or installation charges concerning the product. The products which have been repaired or replaced by AJ Manufacturing will be warranted for the remainder of said one-year original warranty.

1. Goods returned to AJ Manufacturing without its prior consent and approval will not be accepted.
2. The purchaser must notify AJ Manufacturing under the limited warranty within a reasonable time after discovery, but notice shall not be received after 30 days the date of the defect to which the related claim is discovered or should have been discovered.
3. AJ Manufacturing must be given the opportunity to inspect the product and be satisfied that it has been subject to use and service in accordance with its designed use, and that there exists a defect in workmanship or materials not caused by misuse, accident or improper installation, maintenance or application of the product.
4. Under no circumstances will AJ Manufacturing be responsible for any freight (in or out), installation, or removal or reinstall cost.

AJ Manufacturing disclaims all other warranties, express or implied, including any warranty of merchantability, fitness for a particular use or otherwise.



MAIN RUNNER & CROSS-TEE
PROFILE



WALL ANGLE
PROFILE

Micro-TW (Walkable) CEILING GRID WEIGHT		
COMPONENT	**WEIGHT**	**UNIT**
MAIN RUNNER / CROSS-TEE	1.037	lbs. lnft
WALL ANGLE	0.814	lbs. lnft
4-WAY CROSS CONNECTOR	0.480	lbs. ea.
3/8" THREADED ROD & TURNBUCKLE	0.512	lbs. ea.
TOTAL CEILING GRID & HARDWARE	**1.500**	lbs. sqft

*SQFT WEIGHT IS CALCULATED USING 24-1/2" x 48-1/2" O.C. GRID ONLY LAYOUT

OPTIONAL COMPONENT WEIGHT			
COMPONENT	**WEIGHT**	**UNIT**	**lbs. SQFT**
2x4 DUCTED HEPA/ULPA FILTER	35	lbs. ea.	4.38
4x4 DUCTED HEPA/ULPA FILTER	57	lbs. ea.	3.57
2x4 FAN FILTER UNIT (FFU) w/ FILTER	110	lbs. ea.	13.75
4x4 FAN FILTER UNIT (FFU) w/ FILTER	176	lbs. ea.	11.00
2x4 HONEYCOMB BLANK PANEL 1" THK	8	lbs. ea.	1.00
4x4 HONEYCOMB BLANK PANEL 1" THK	16	lbs. ea.	1.00
2x4 VINYL WRAPPED 1/2" THK	12	lbs. ea.	1.50

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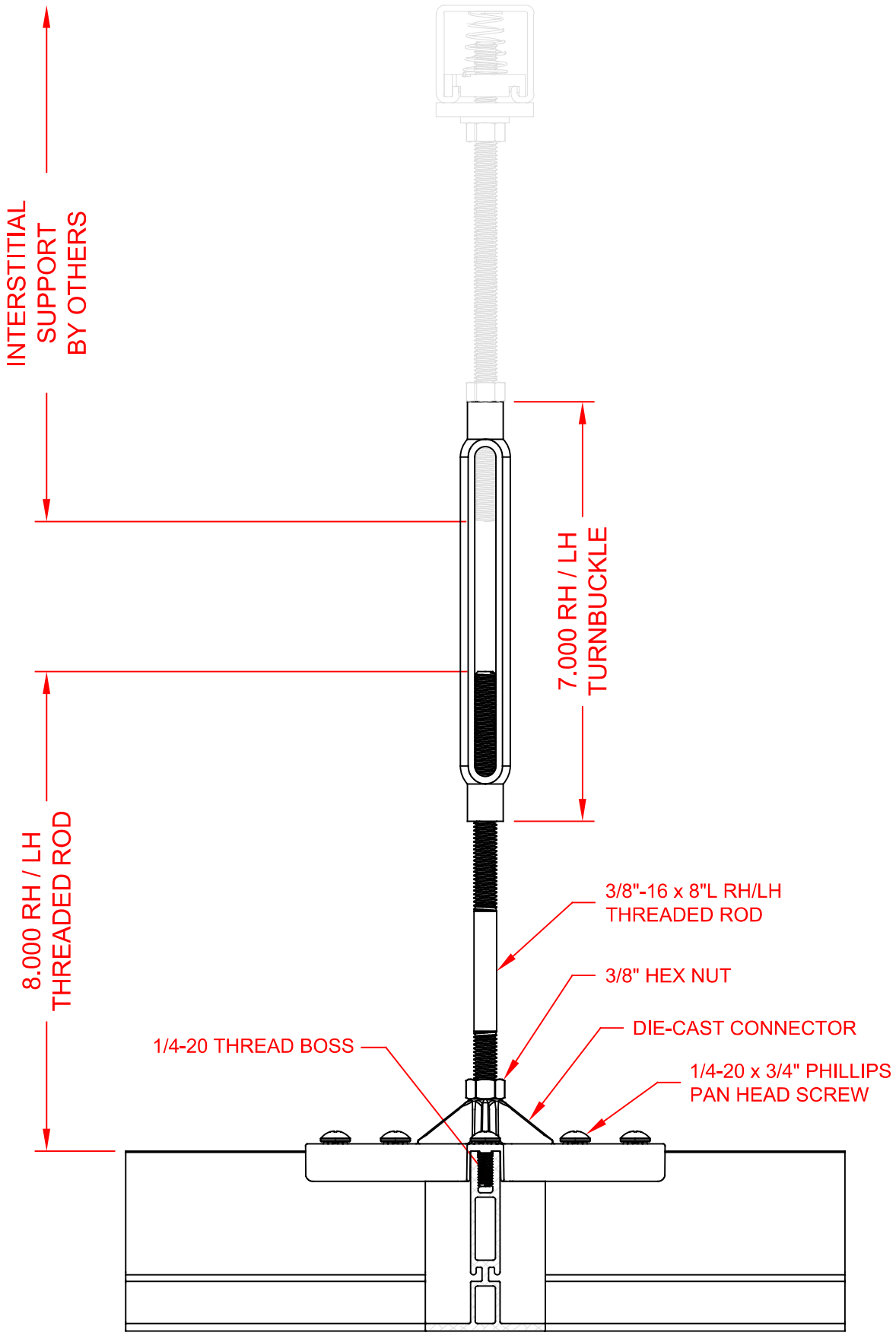
PRODUCT DESCRIPTION:
Micro-TW 2" (Walkable) CEILING GRID, GASKET SEAL

DRAWING TITLE:
Main / Cross-Tee and Wall Angle Extrustion



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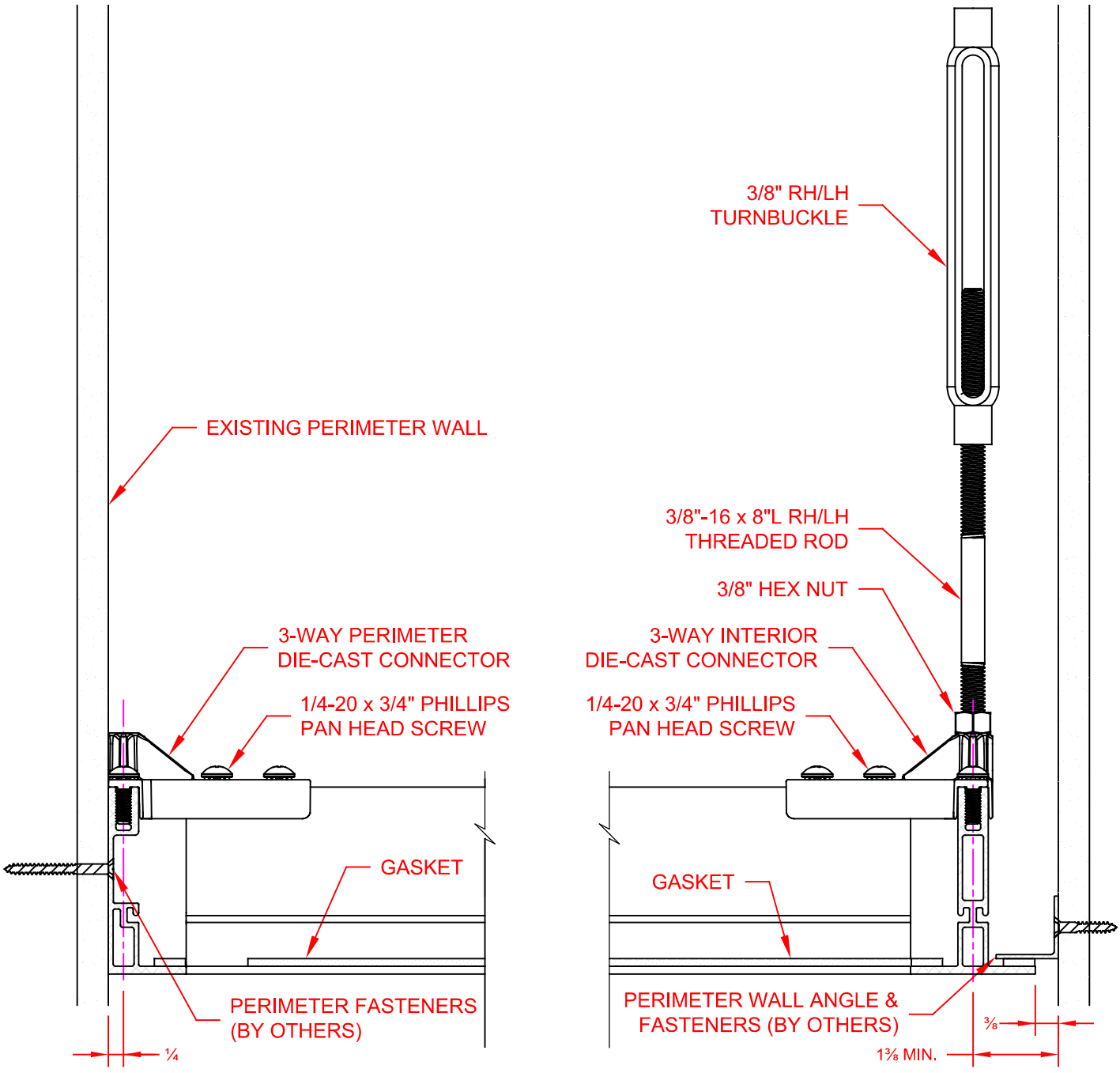

FIXED PERIMETER
Wall Connection

FLOATING PERIMETER
Wall Connection

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PRODUCT DESCRIPTION:
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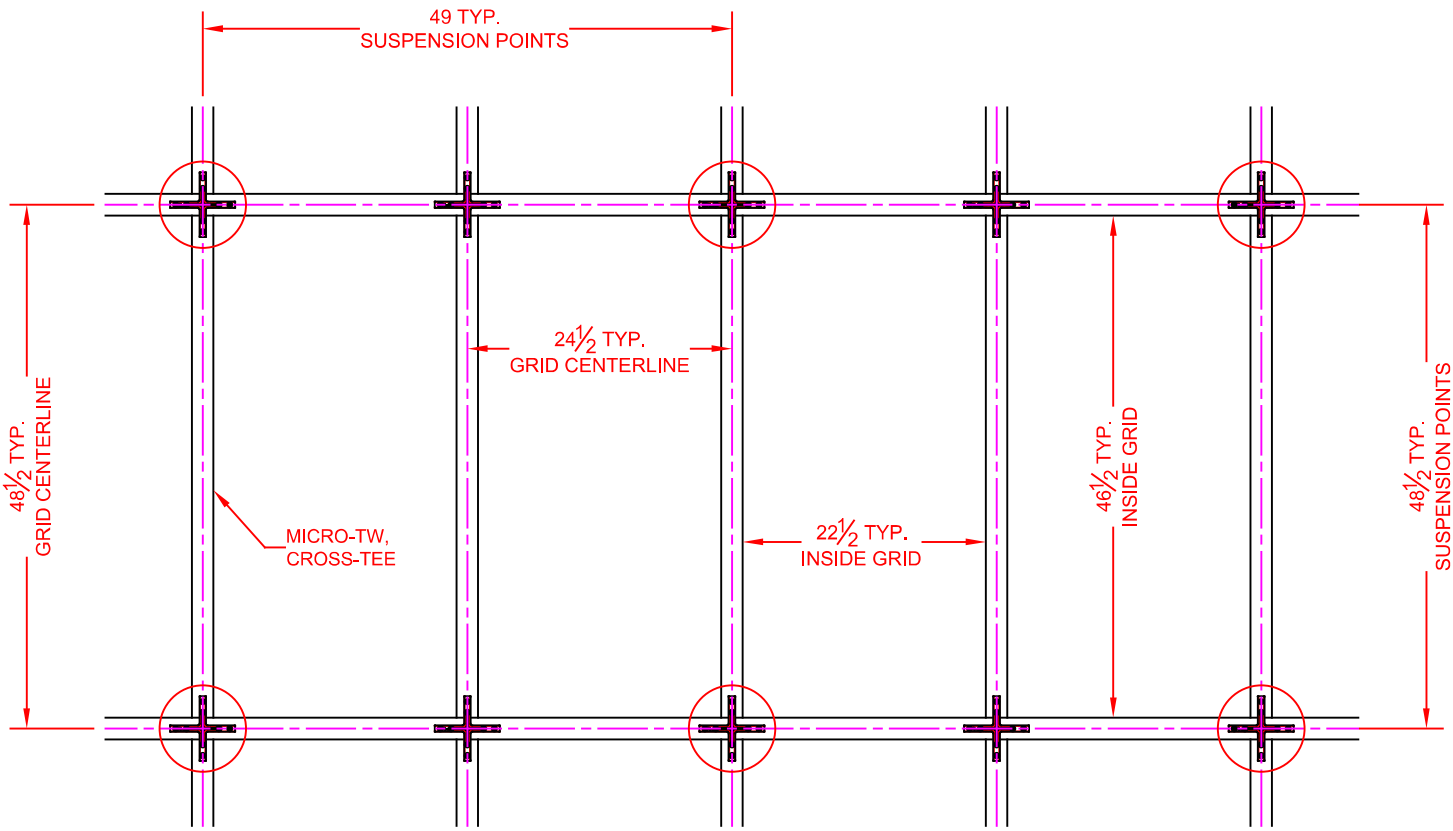
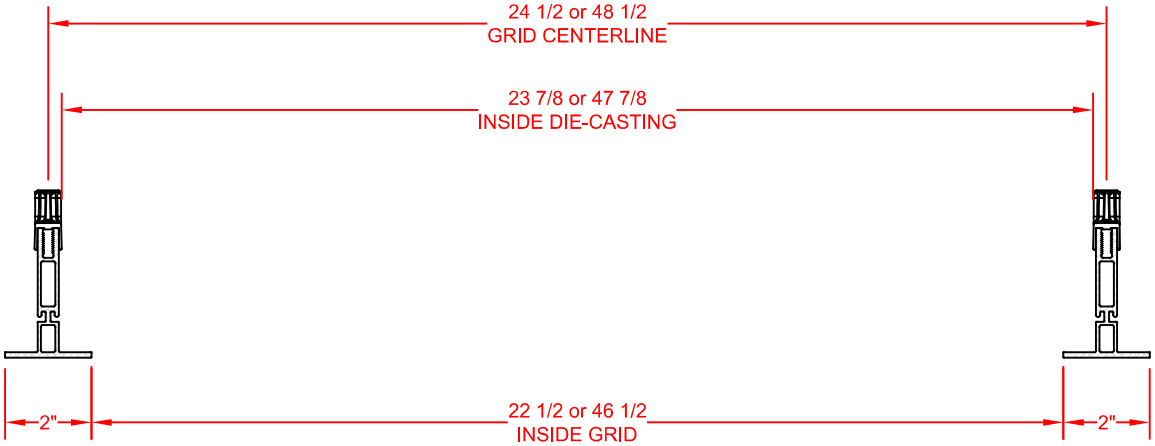
DRAWING TITLE:
Typical Perimeter Wall Connection Details





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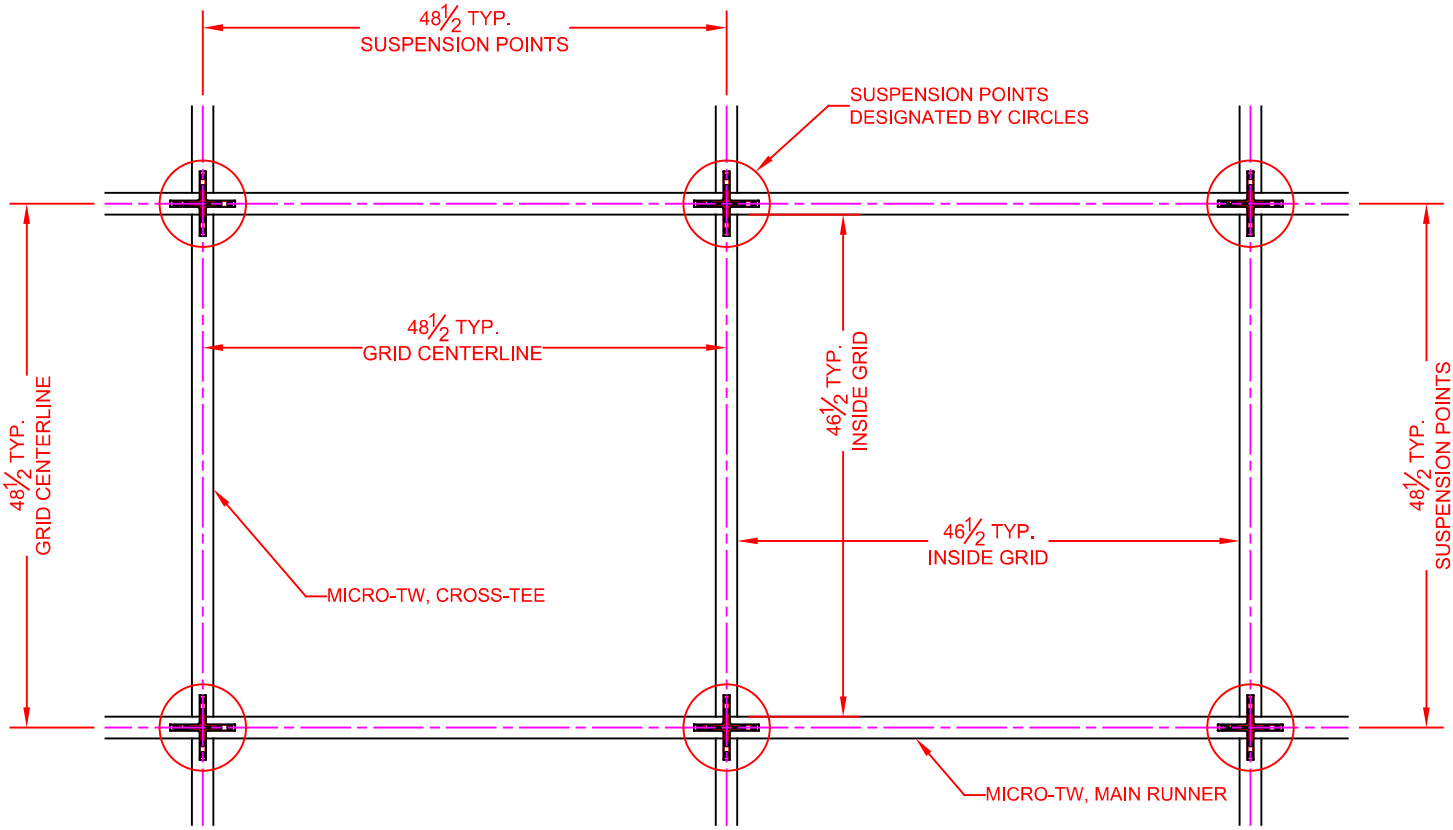
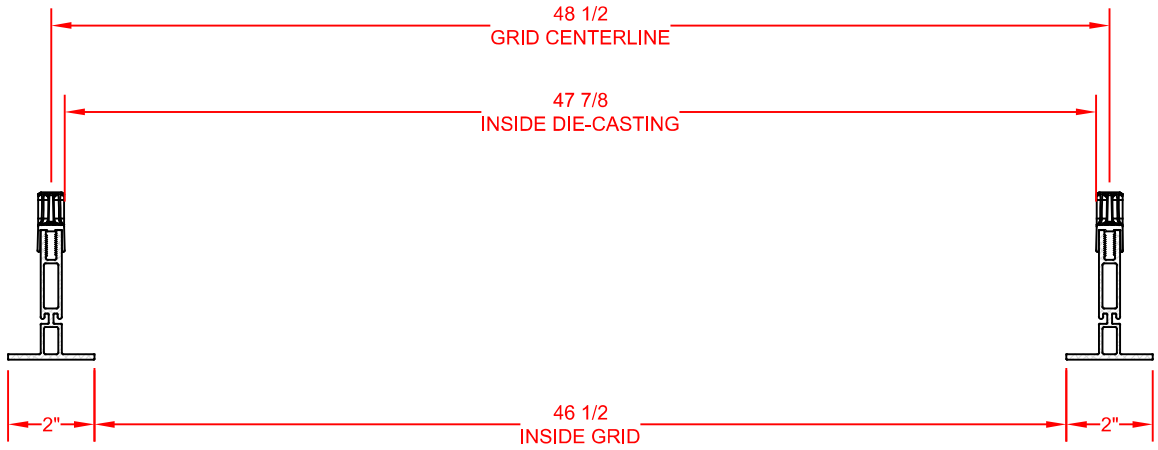
PRODUCT DESCRIPTION:
Micro-TW 2" (Walkable) CEILING GRID, GASKET SEAL

DRAWING TITLE:
24 1/2" x 48 1/2" GRID CENTERLINE ARRAY





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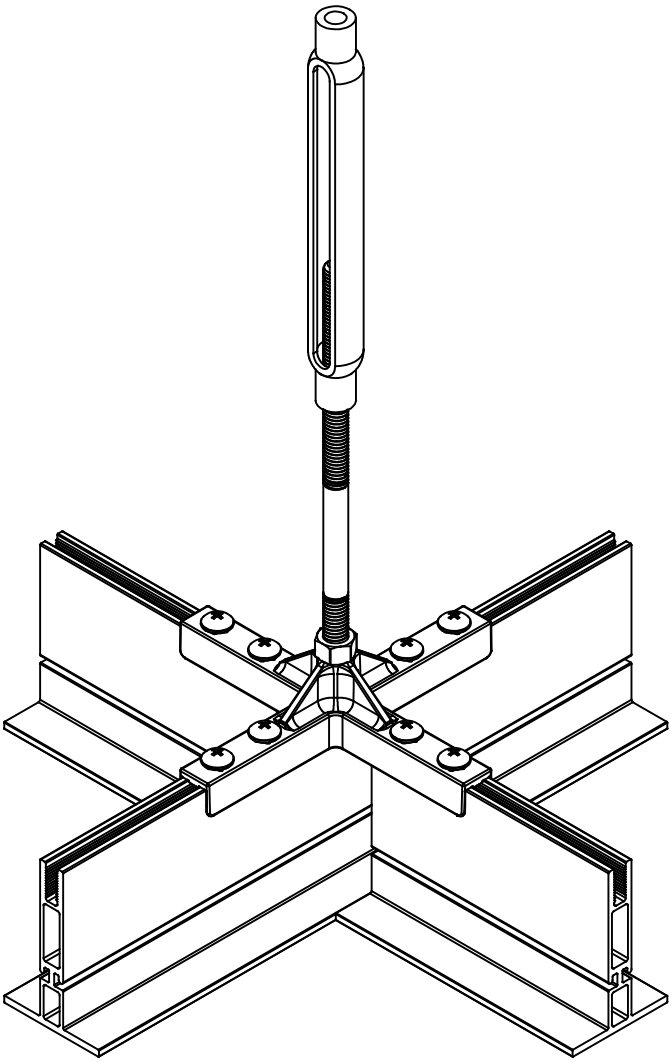
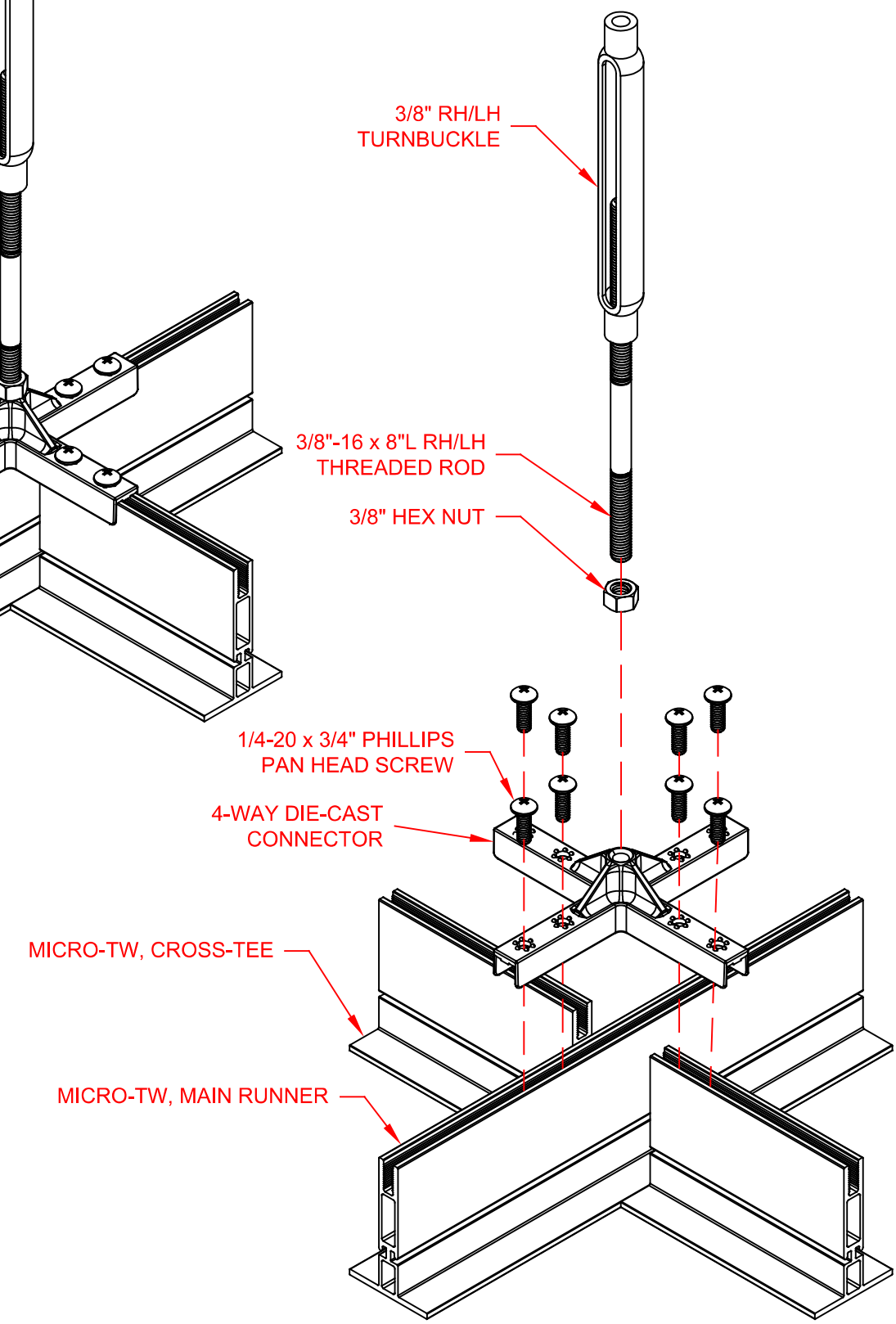
PRODUCT DESCRIPTION:
Micro-TW 2" (Walkable) CEILING GRID, GASKET SEAL

DRAWING TITLE:
48 1/2" x 48 1/2" GRID CENTERLINE ARRAY





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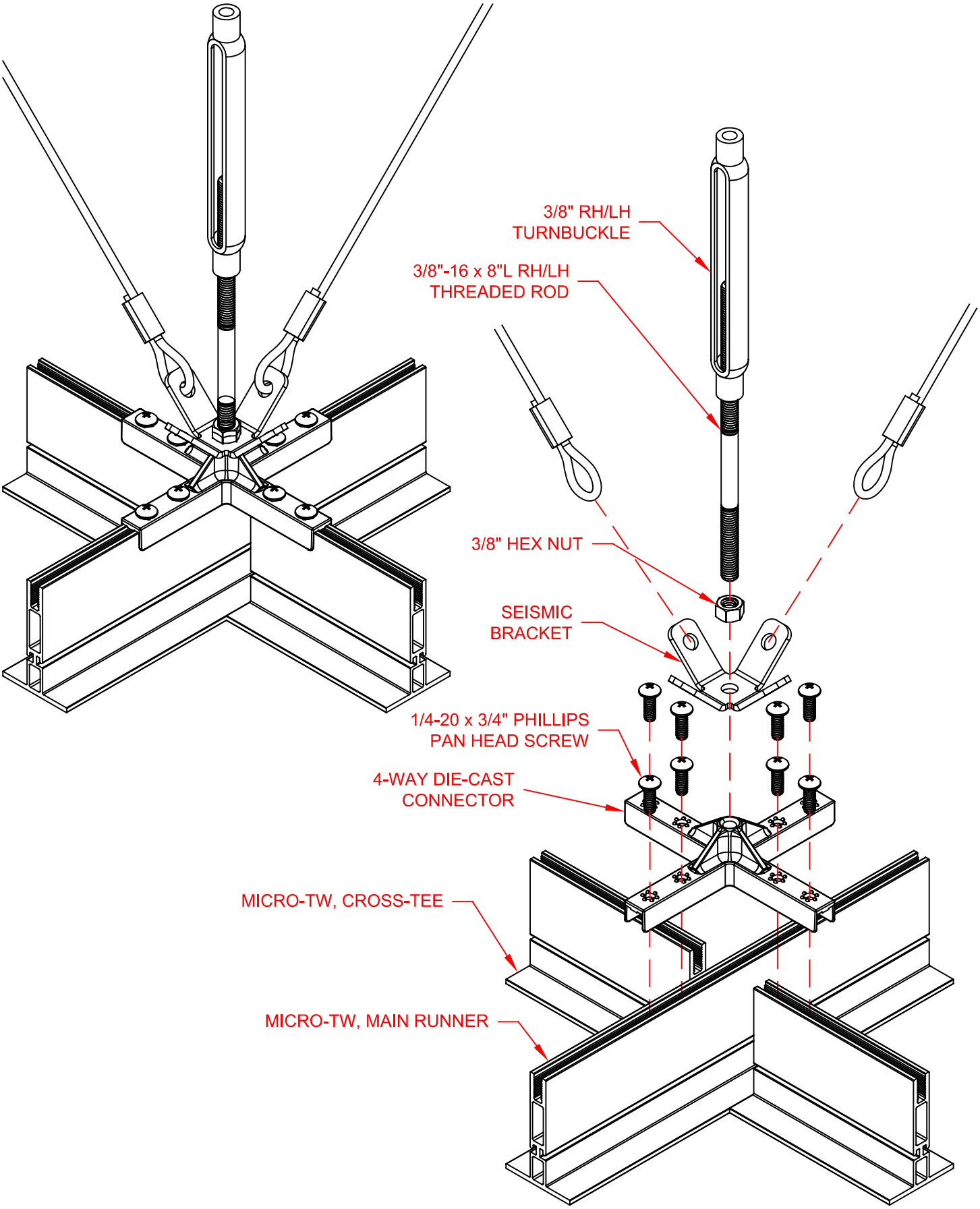
PRODUCT DESCRIPTION:
Micro-TW 2" (Walkable) CEILING GRID, GASKET SEAL

DRAWING TITLE:
4-Way Die-Cast Connector w/ Threaded Rod & Turnbuckle



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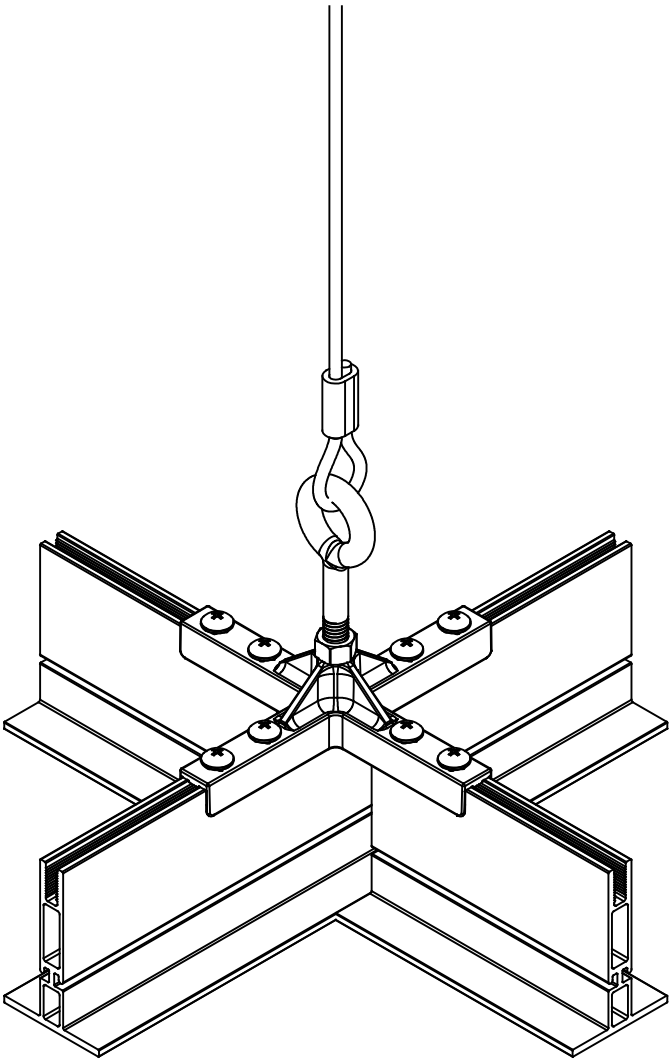
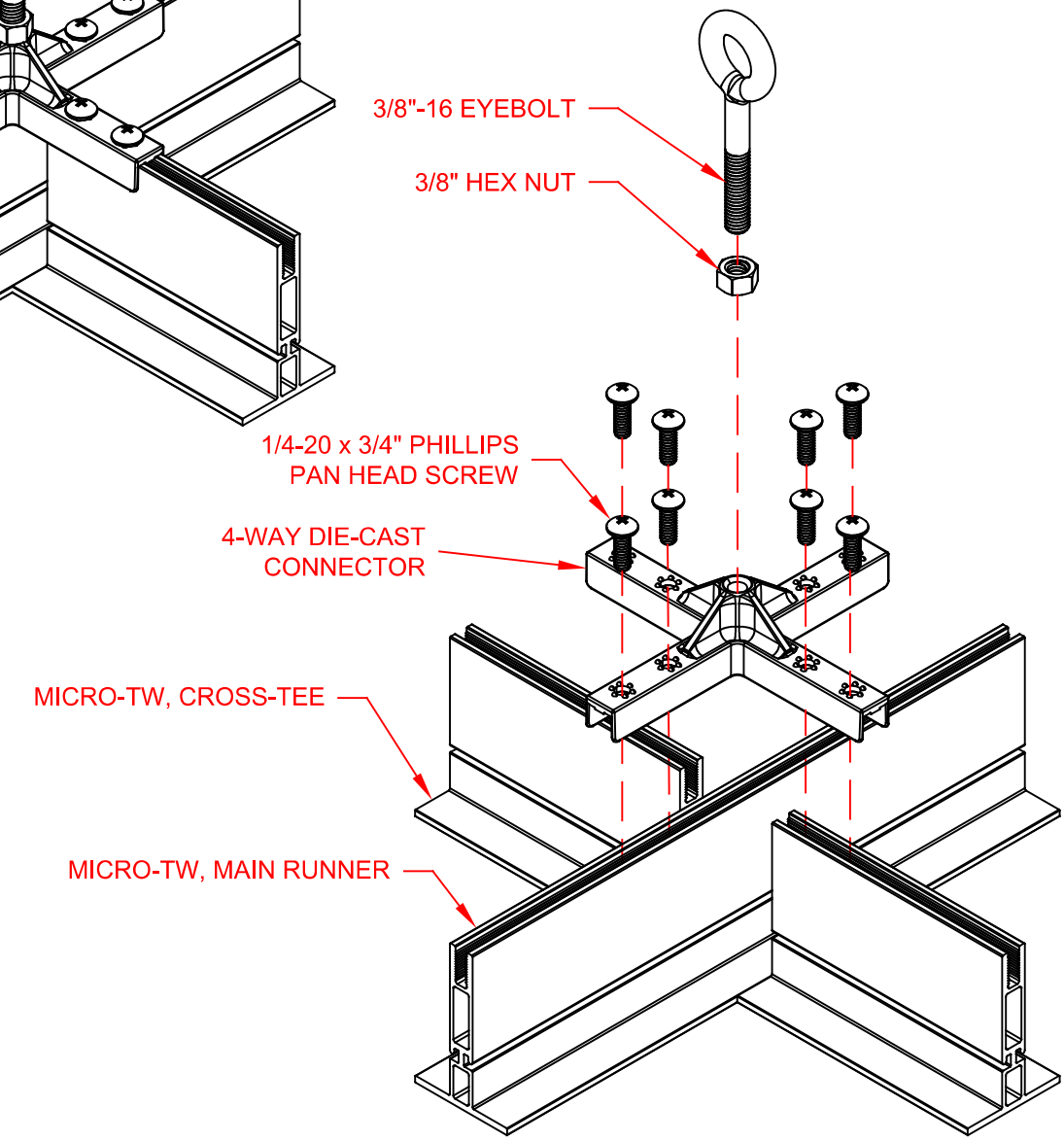
PRODUCT DESCRIPTION:
Micro-TW 2" (Walkable) CEILING GRID, GASKET SEAL

DRAWING TITLE:
4-Way Die-Cast Connector w/ Optional Seismic Bracket





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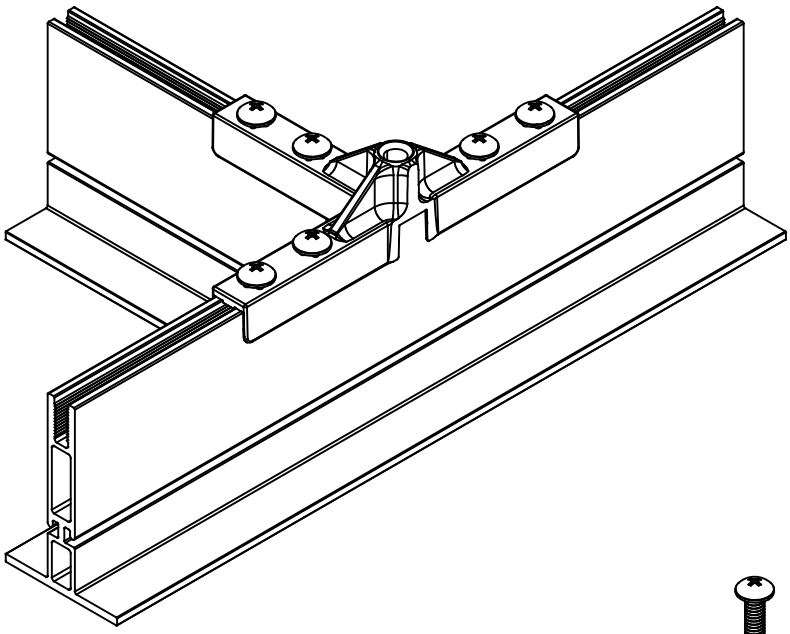
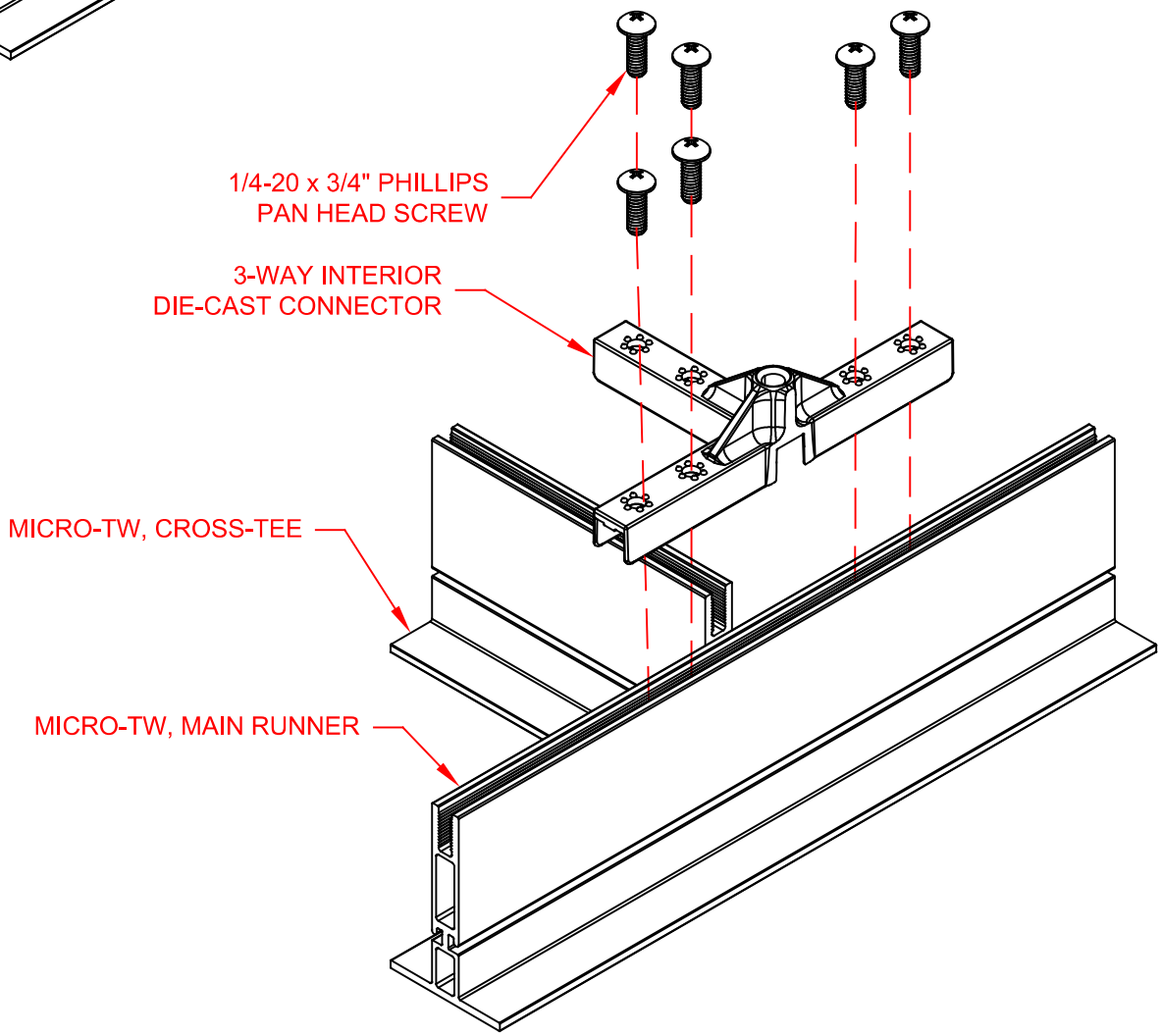
PRODUCT DESCRIPTION:
Micro-TW 2" (Walkable) CEILING GRID, GASKET SEAL

DRAWING TITLE:
4-Way Die-Cast Connector w/ Optional Eyebolt for Wire Hanging





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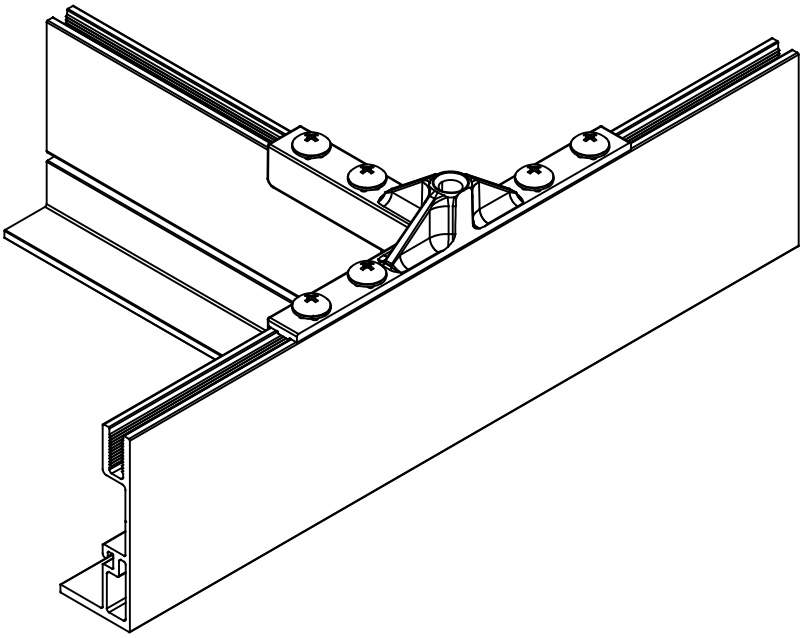
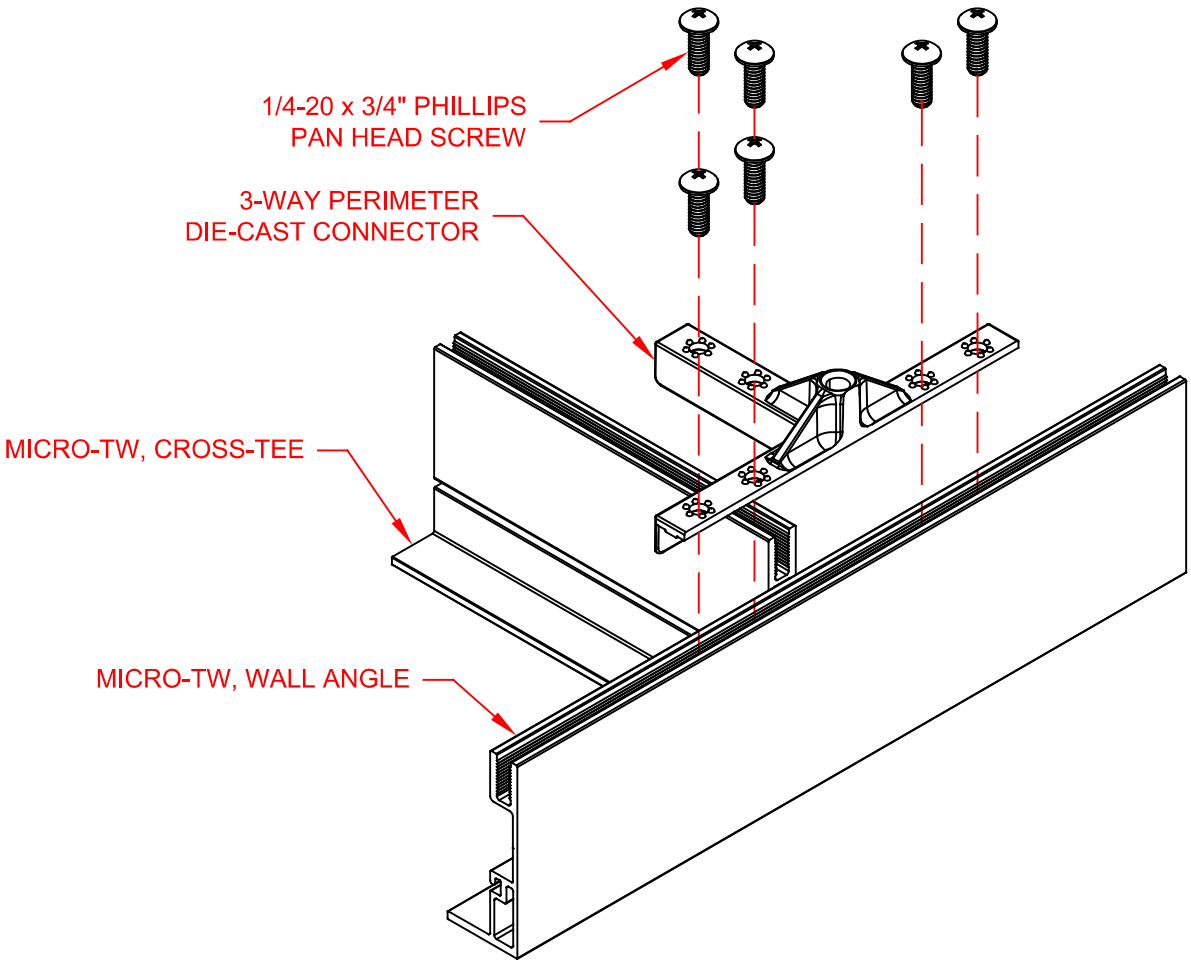
PRODUCT DESCRIPTION:
Micro-TW 2" (Walkable) CEILING GRID, GASKET SEAL

DRAWING TITLE:
3-Way 'Interior' Die-Cast Connector @ Main Runners & Cross-Tee





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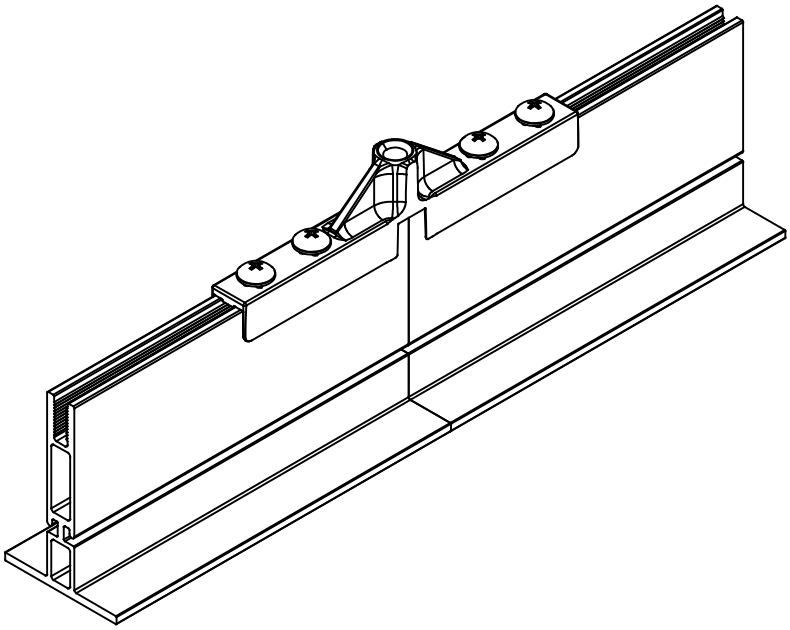
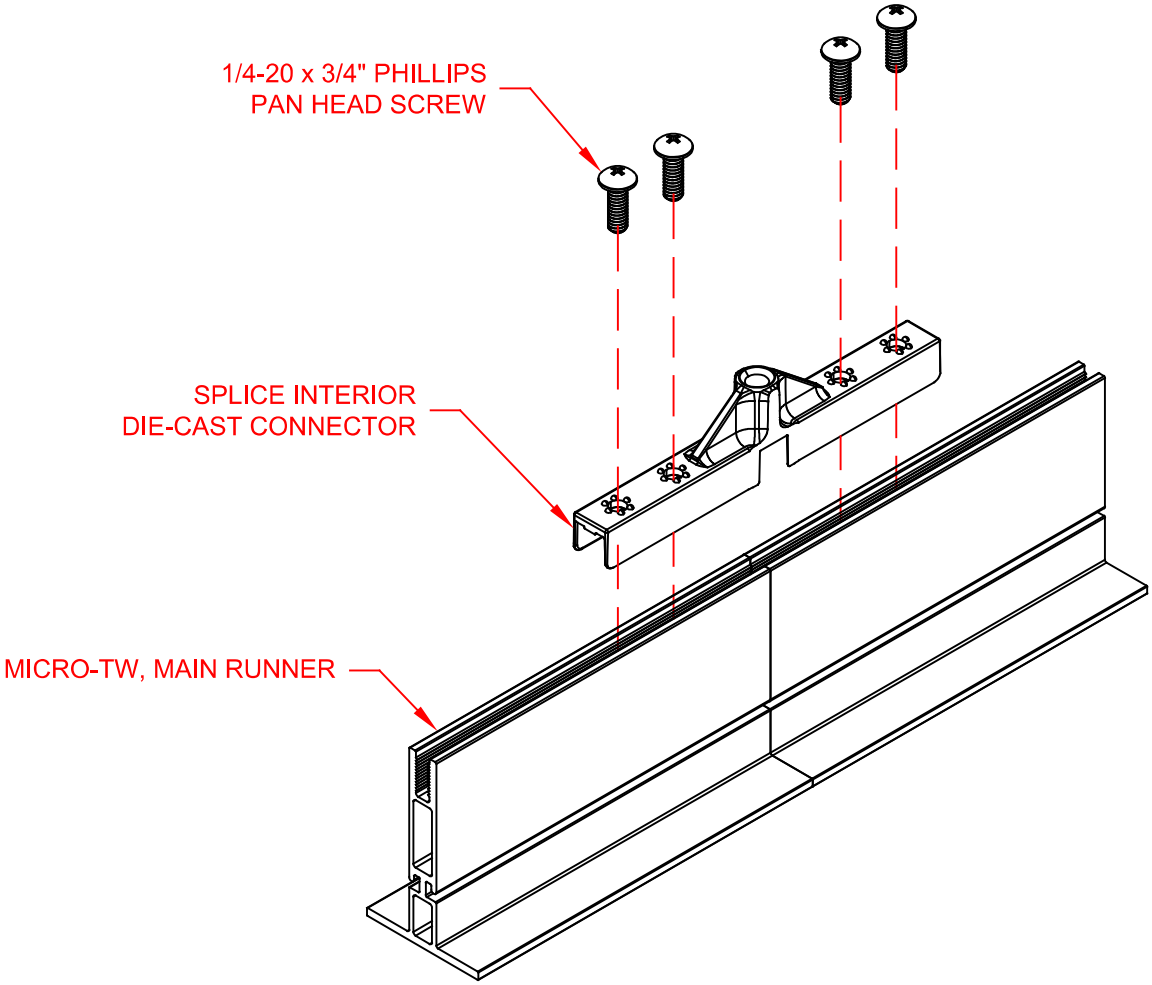
8701 Elmwood Ave #400, Kansas City, MO 64132
Phone: (816) 231-5522 www.AJMFG.com

PRODUCT DESCRIPTION:
Micro-TW 2" (Walkable) CEILING GRID, GASKET SEAL

DRAWING TITLE:
3-Way 'Perimeter' Die-Cast Connector @ Wall Angle





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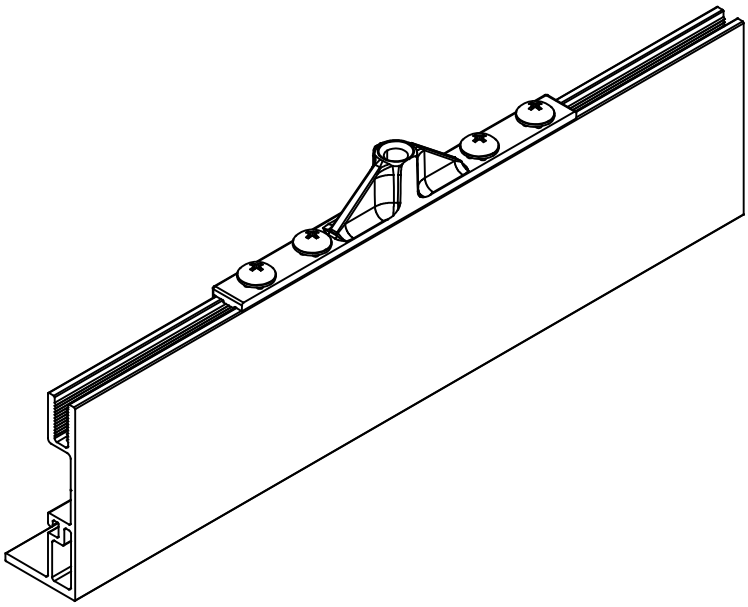
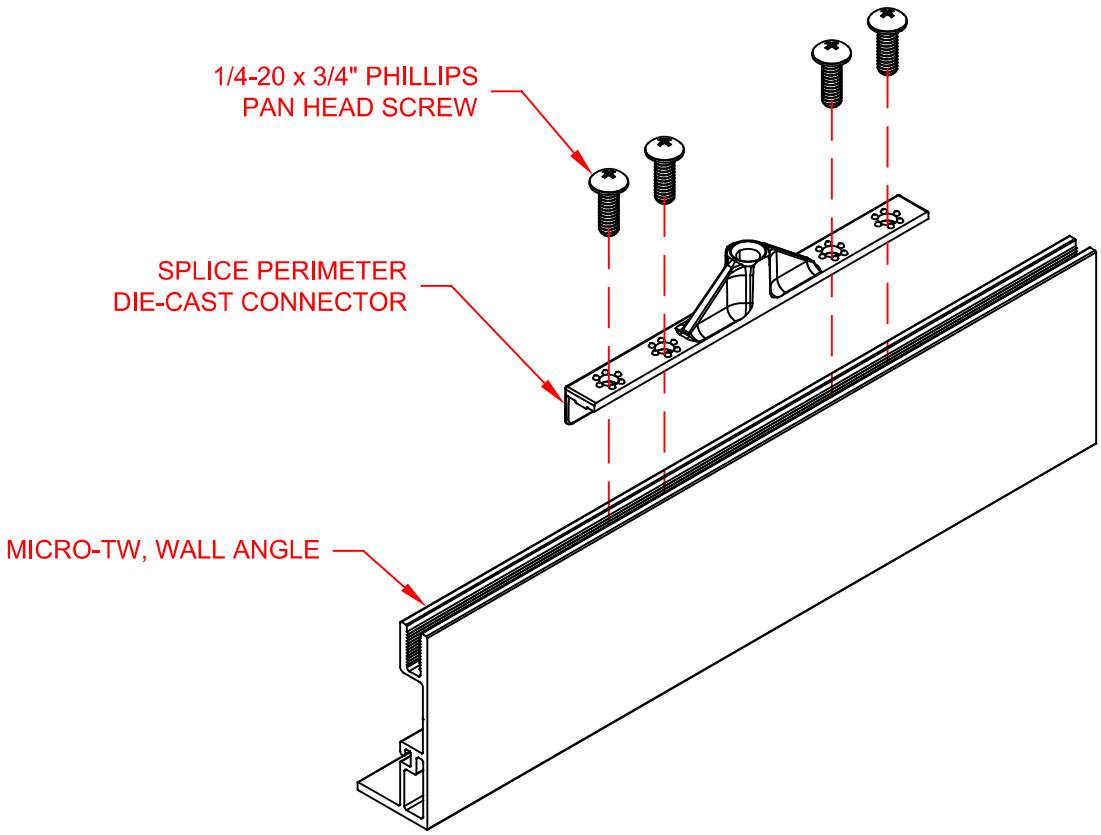
PRODUCT DESCRIPTION:
Micro-TW 2" (Walkable) CEILING GRID, GASKET SEAL

DRAWING TITLE:
Splice 'Interior' Die-Cast Connector @ Main Runners





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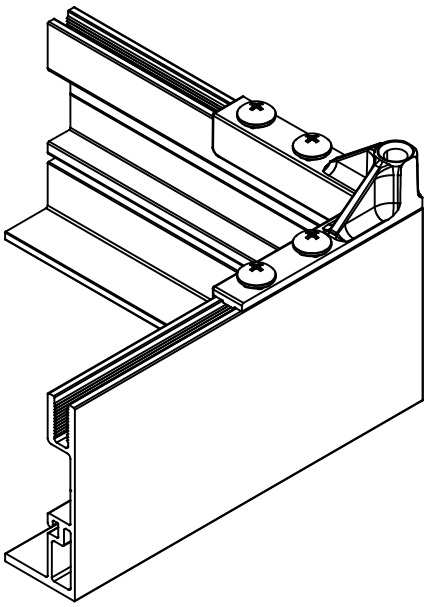
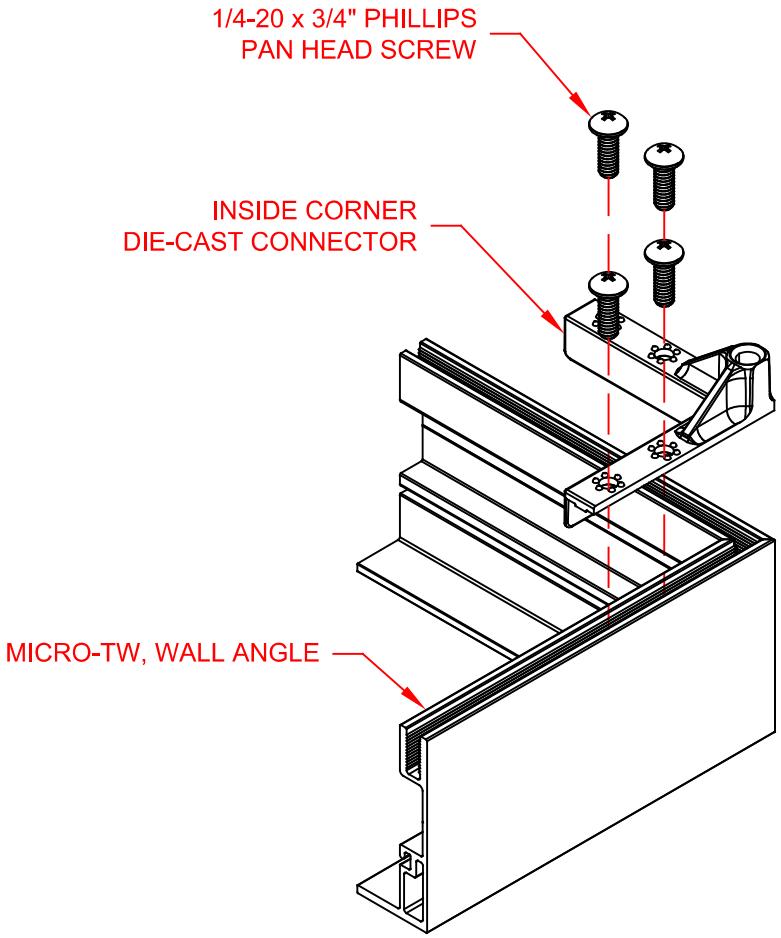
PRODUCT DESCRIPTION:
Micro-TW 2" (Walkable) CEILING GRID, GASKET SEAL

DRAWING TITLE:
Splice 'Perimeter' Die-Cast Connector @ Wall Angle





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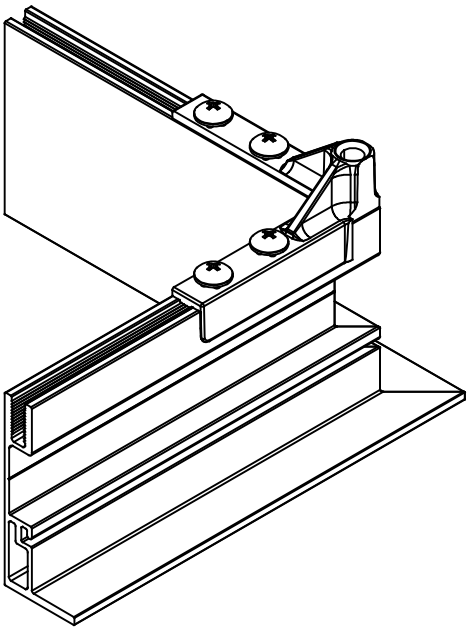
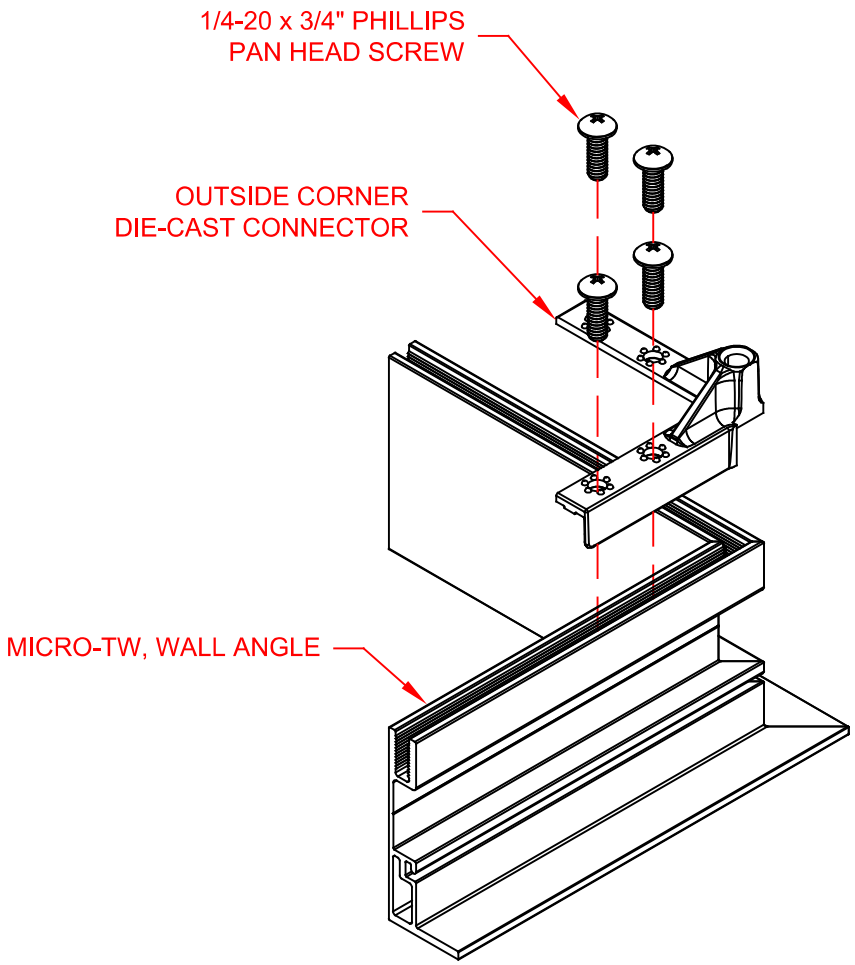
PRODUCT DESCRIPTION:
Micro-TW 2" (Walkable) CEILING GRID, GASKET SEAL

DRAWING TITLE:
Inside Corner Die-Cast Connector @ Wall Angle





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PRODUCT DESCRIPTION:
Micro-TW 2" (Walkable) CEILING GRID, GASKET SEAL

DRAWING TITLE:
Outside Corner Die-Cast Connector @ Wall Angle