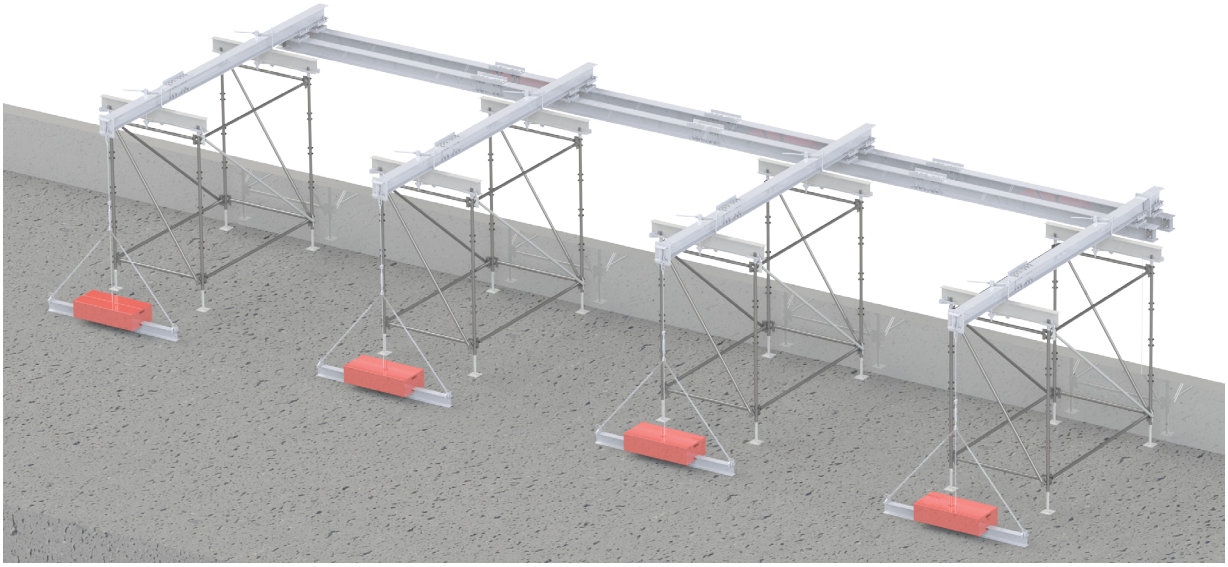
BY BRAND SAFWAY

OPERATOR'S INSTRUCTIONS
SPIDER MONORAIL SYSTEM



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WARNING

- ► It is the responsibility of the user to determine whether the hoist is suitable to be used in conjunction with any other equipment. The user must also determine that the hoist and other components used will be in strict conformity with governing regulations.
- ► Only personnel trained and approved by Spider® shall install and operate scaffold or material hoist.
- ► This equipment shall not be erected or operated without drawings created by a qualified person for the specific site the equipment is being installed on.
- ► All personnel operating this equipment must read and completely understand this manual.
- ► All personnel must be thoroughly trained in the use of the equipment and its operational and safety features.
- ► Only authorized and physically fit personnel shall operate the equipment.
- ► All persons operating this equipment must wear a safety harness at all times and tie-off as required.
- ► Any operation in violation of these instructions is at the operator's own risk and may result in serious injury.
- ► This manual must be kept with the scaffold and/or material hoist at all times.
- ► Only use spare parts and steel wire rope approved by Spider®.
- ► Complete the inspection checklist prior to start of each work shift.

1. GENERAL SAFETY NOTES

1.1 SCAFFOLDING SAFETY

Operators of this equipment must become familiar with all safety procedures and instructions related to this equipment. This includes the procedures listed below, and safety instructions in the other Spider® and vendor manuals that may be included as part of this manual.

- ◆ Do not use equipment if you don't understand all operating and handling procedures.
- ◆ Always inspect equipment before using it.
- ◆ Do not use equipment if you question that it is in safe working order.
- ◆ Report unsafe equipment to proper personnel for repair.
- ◆ Always secure safety lines before using equipment. Use only approved safety lines, grabs, and harnesses at all times.
- ◆ Follow all safety rules and regulations. Failure to do so can result in injury or death.
- ◆ When applicable, refer to manufacturer's operating instructions for further safety information.

1.2 SAFETY SUMMARY

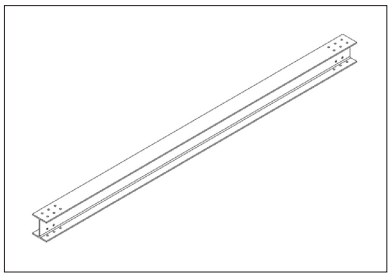
Every year some workers on suspended platforms are careless and try to operate equipment that they don not understand. This may cause accidents, resulting in injury or death to occupants or bystanders.

These instructions are not all inclusive. It is impossible to know, review, and provide instructions on every possible way this equipment may be used; and warn about all possible hazardous situations. Therefore, it is very important that anyone who uses this equipment in a way not covered by these instructions satisfy himself that it will not jeopardize his own safety or the safety of others, or cause damage to the surroundings, or the equipment. Call your local Spider® Branch Office if in doubt.

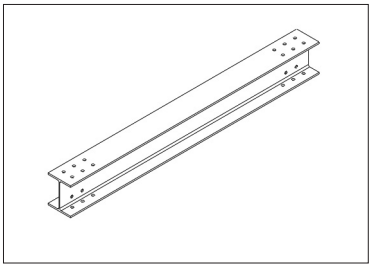
1. Before using this equipment, read and understand this manual.
2. Understand the problem before attempting repairs. Repairs must only be made by people trained and authorized to do so. Never do maintenance or make repairs while the unit is suspended.
3. Care must be used when using the hoist in freezing temperatures where water or moisture can enter the hoist overspeed brake or traction assembly.
4. Do not change, remove, or substitute any hoist parts.
5. Do not overload hoists, platforms, or rigging. Do not exceed rated capacity of any component.
6. Use only approved wire rope. Do not use visibly worn, kinked, bird caged, undersized, or damaged wire rope. Protect wire rope from sharp or abrasive edges of building. Do not use wire rope that has been exposed to fire, excessive wear, corrosive atmosphere, chemicals, passage of electric current, or temperatures above 200° F (93° C).

7. Inspect the wire rope before rigging. Handle, inspect, and maintain wire rope carefully during and after each job. Lubricate the wire rope according to the manufacturer's recommendations.
8. Welding is not to be performed from the platforms provided in this installation.
9. Always check rigging soundness before using this equipment.
10. Work only from the deck of the work cage or platform. Do not stand on stirrups, guardrails, toeboards, or other objects on the platform. Do not use ladders or boxes to get to higher elevations. Do not lean over the hoist or the railings, or stand outside the hoist at the end of the platform.
11. Never operate a work cage or platform without guardrails, midrails, and toeboards in place; and never without using all personal safety equipment.
12. Never use aluminum platforms around caustic materials, acids, or acid fumes. Use approved corrosion resistant platforms when corrosive materials are present.
13. Maintain caution while using hoist. Maintain clearances and make sure there are no obstructions that interfere with unobstructed vertical travel.
14. Make sure the electrical cord is long enough to permit full travel of the suspended equipment. Use electrical cable restraining devices (kellum grips) to protect connections from tension.
15. Only use the operating pushbutton by hand - do not block it in a running position.
16. At the end of the day, disconnect the power cord, put the equipment into the proper storage area, and make sure everything is secured.
17. Keep all persons from away from potential hazards below suspended equipment. If necessary, provide protection below the suspended equipment to prevent injury from falling objects. Use lanyards to secure tools and materials from falling on personnel below.
18. Approved safety harnesses, lanyards, rope grabs, and lifelines must be used at all times.
19. Always operate the platform in a level position.
20. Comply with all local, state, and federal safety codes and regulations that pertain to suspended powered scaffold equipment.
21. Only authorized, properly trained, and physically fit personnel shall operate this hoist. Operator must not be subject to seizures or loss of control, and must not be under the influence of alcohol or drugs.
22. If you hear any strange noises such as grinding, or if the hoist does not appear to work normally, stop immediately. Do not continue to use the equipment until it is repaired.
23. Have an open communication link with building security at all times. Carry a radio to maintain contact.

2. PARTS DESCRIPTION



12FT BEAM
P/N 720000-1



6FT BEAM
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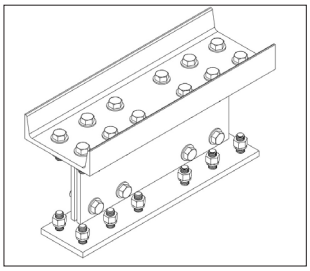
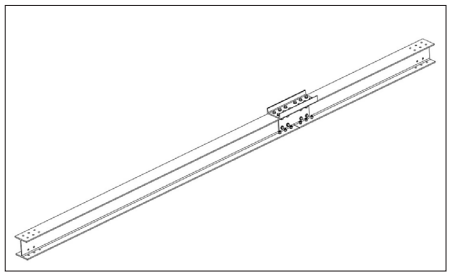
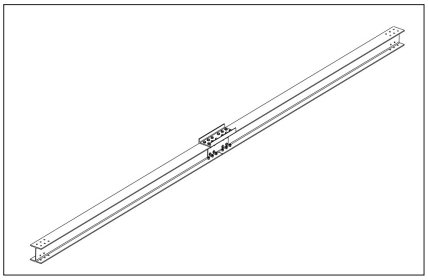


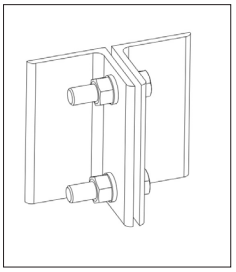
SPLICE ASSEMBLY
P/N 720408-1



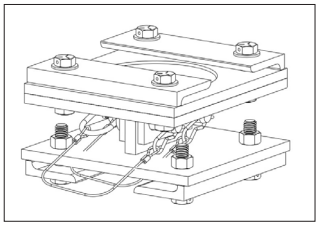
18FT OUTRIGGER
12 FT BEAM + 6 FT BEAM +
SPLICE ASSEMBLY



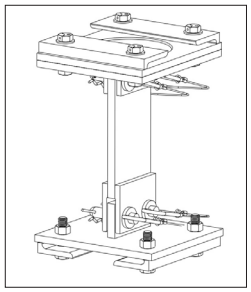
24FT OUTRIGGER
12 FT BEAM + 12 FT BEAM +
SPLICE ASSEMBLY



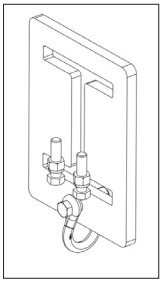
END STOP
P/N 720013-1



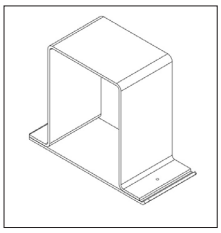
SHORT HANGER BRACKET
ASSEMBLY
P/N 720170-1



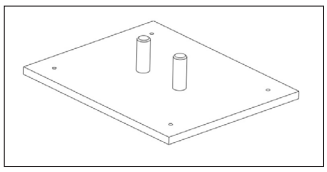
TALL HANGER BRACKET
ASSEMBLY
P/N 720170-2



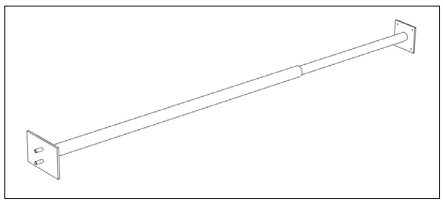
H-PLATE
P/N 720170-2



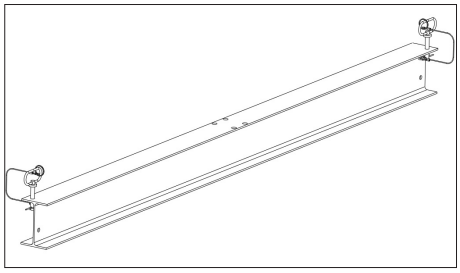
FRONT BRACKET POST SHORE KIT
P/N 720375-1



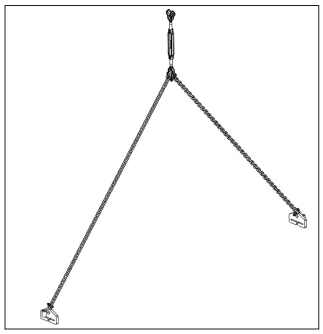
REAR BRACKET POST SHORE KIT
P/N 720022-1



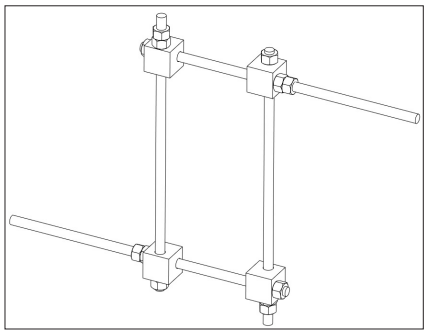
POST SHORE ASSEMBLY
P/N 720172-1



COUNTERWEIGHT BAR
P/N 720029-1



COUNTERWEIGHT BAR SLING
P/N 720213-1



BEAM TIE DOWN ASSEMBLY
P/N 702096-1

3. ASSEMBLY INSTRUCTIONS

3.1 SPLICE ASSEMBLY

All Spider® beams are connected end to end with the splice assembly shown below. Whether beams are used as outriggers supporting a monorail or the monorail itself, the same splice assembly is used for connection. All hardware is grade 5 and split lock washers are provided. All hardware shall be torqued to 115 ft-lb. Ensure splice assembly is oriented as shown with channel on top flange.

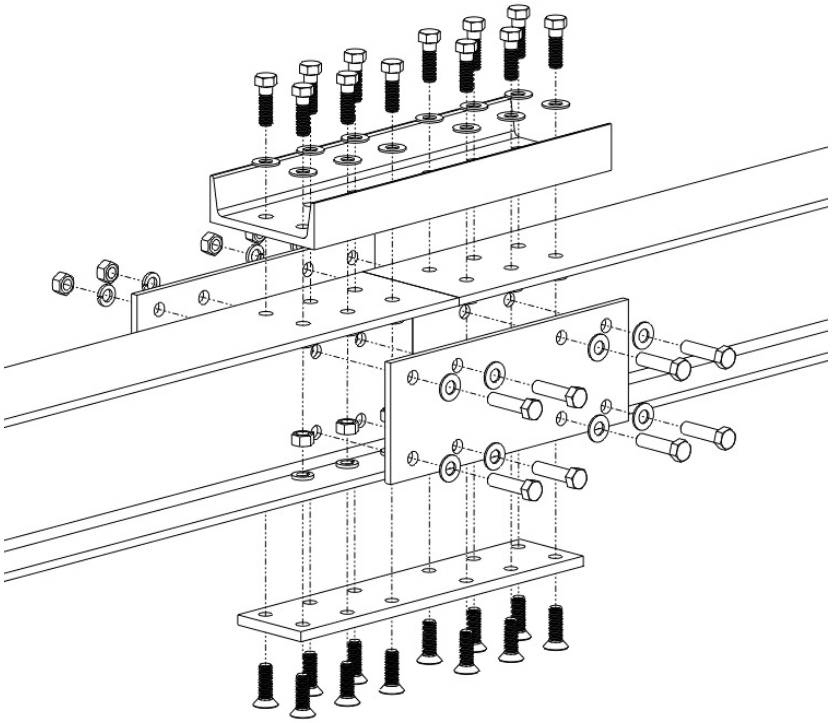


Figure: 3.1.1

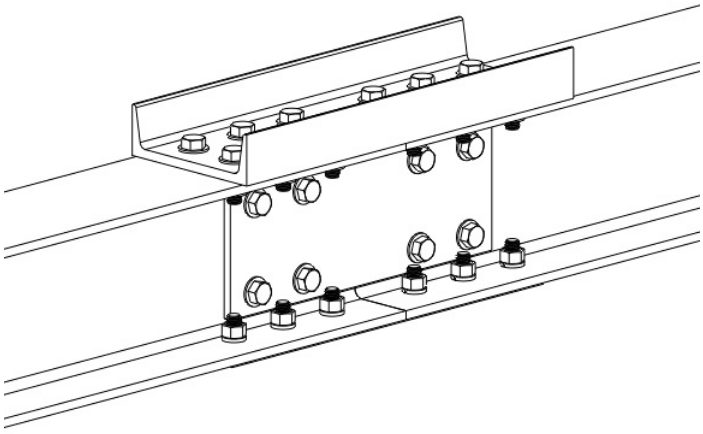


Figure: 3.1.2

3.2 MONORAIL END STOP

All monorail runs shall have the end stop installed as shown below at both ends. All hardware is grade 5 and split lock washers are provided. All hardware shall be torqued to 115 ft-lb.

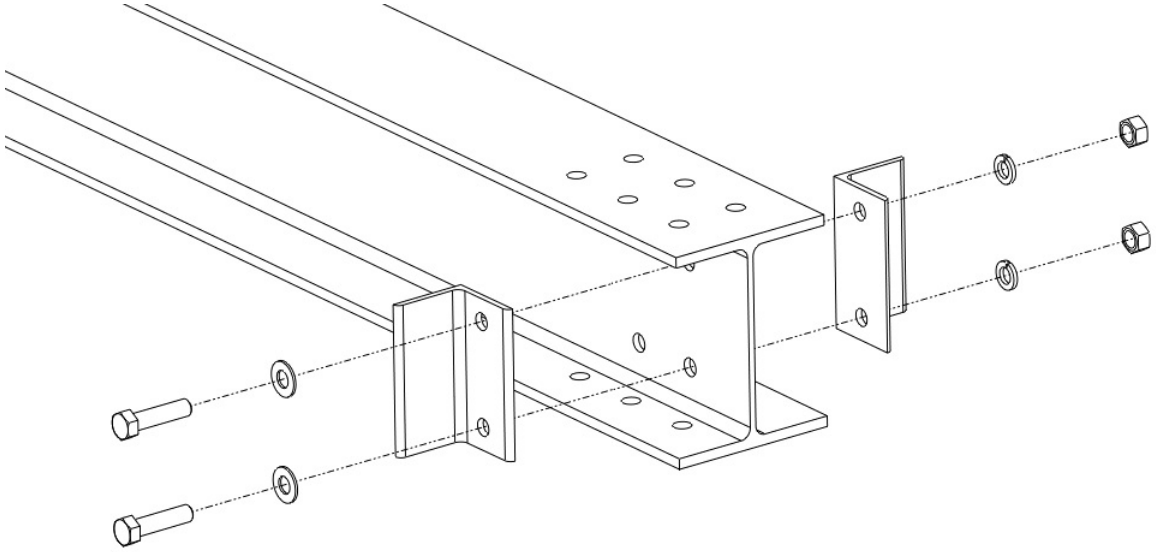


Figure: 3.2.1

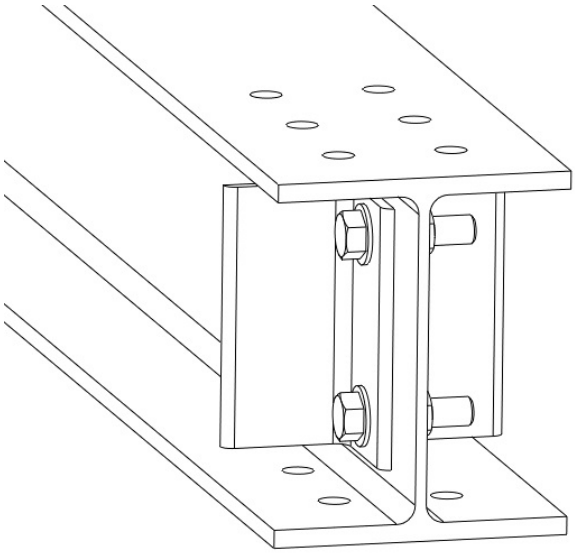


Figure: 3.2.2

3.3 HANGER BRACKET

Monorail beams are connected to the Outriggers with the hanger bracket. The short hanger bracket assembly includes an upper clamping bracket and lower clamping bracket. The two clamping brackets are connected together with two pins.

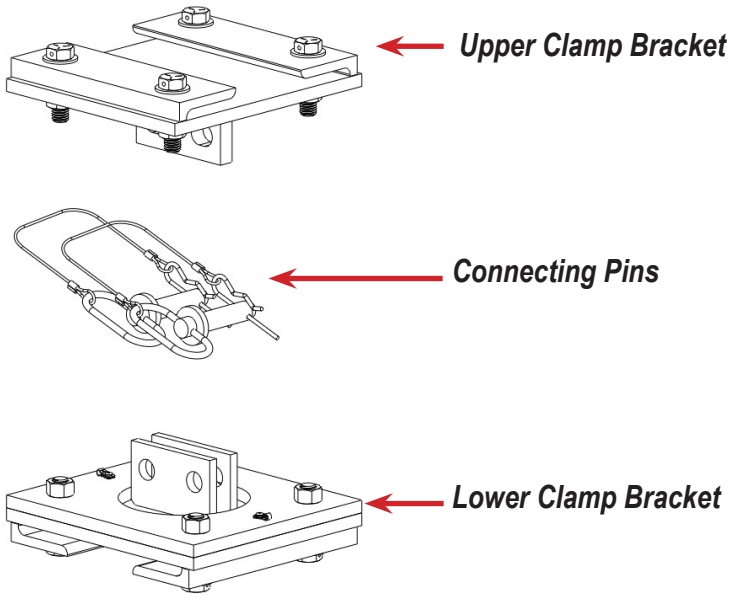


Figure: 3.3.1

The tall hanger bracket assembly uses the same upper and lower clamping brackets, but has an additional connecting bar between the two, utilizing four connecting pins.

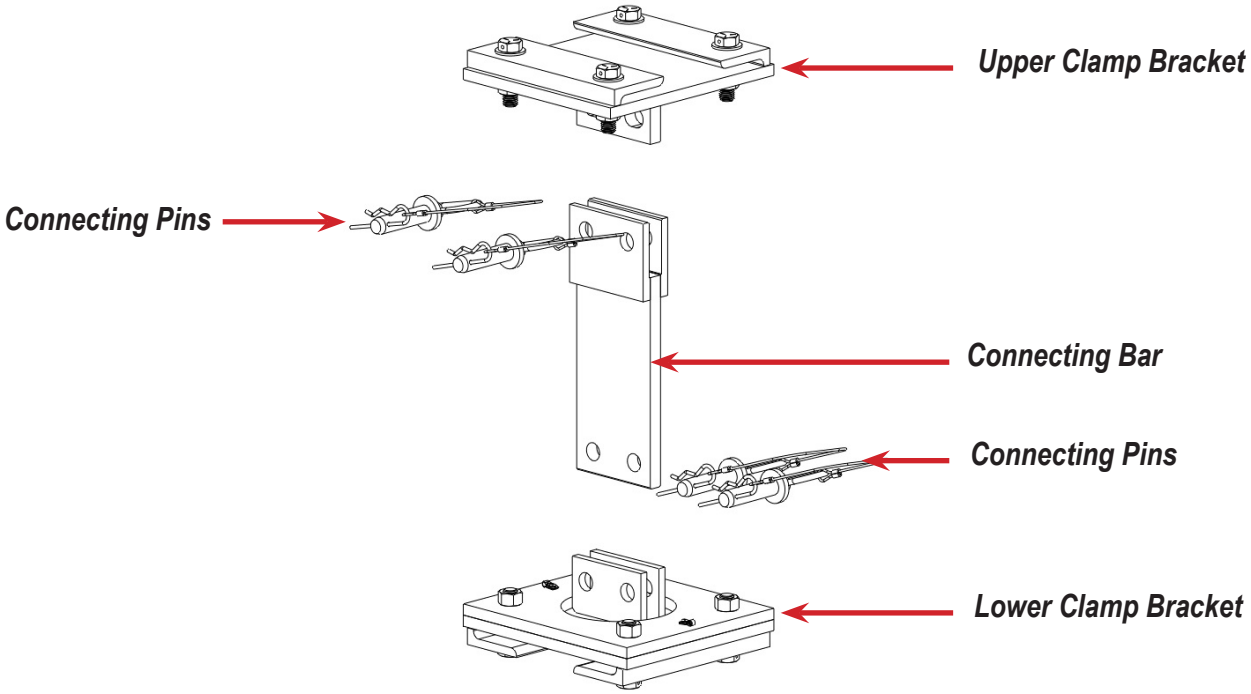


Figure: 3.3.2

The upper and lower clamping brackets attach the beams in the same method. The upper clamping bracket connects to the bottom flange of the outrigger beam. The lower clamping bracket connects to the top flange of the monorail beam.

All hardware is grade 5. All hardware shall be torqued to 115 ft-lb.

NOTE: The hardware provided on the upper and lower clamping brackets is provided with bolt heads that are designed to be secured with tie wire. Once torqued with upper and lower clamp bracket hardware is required to be tie wired together to keep the hardware from loosening.

Ensure the connecting pins are fully inserted and secured with hair pins provided.

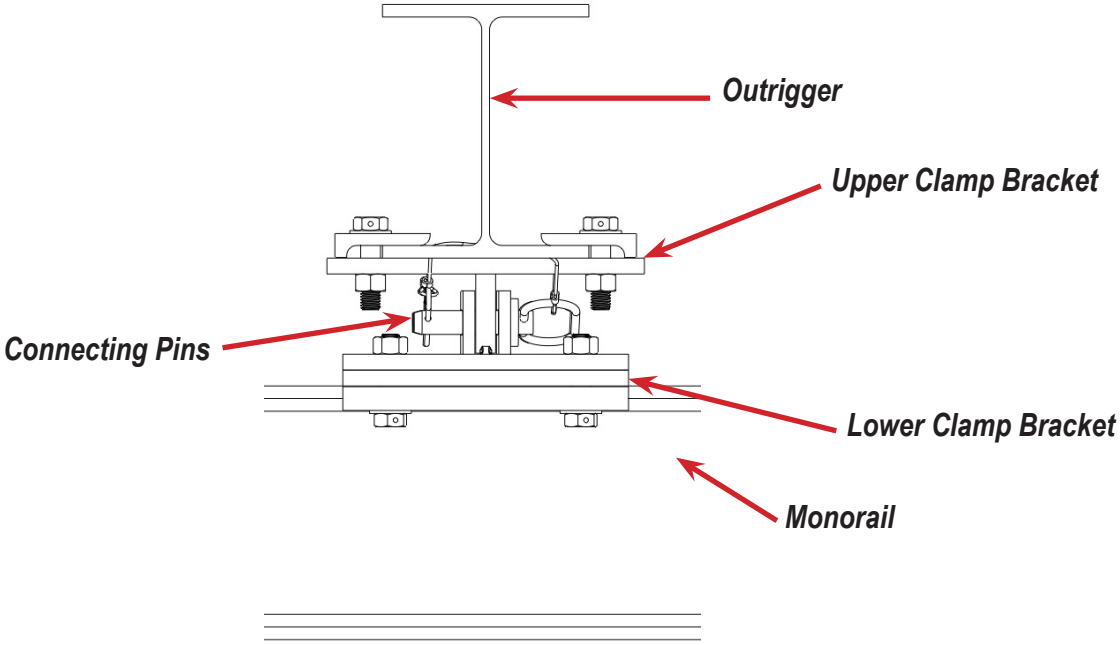


Figure: 3.3.3

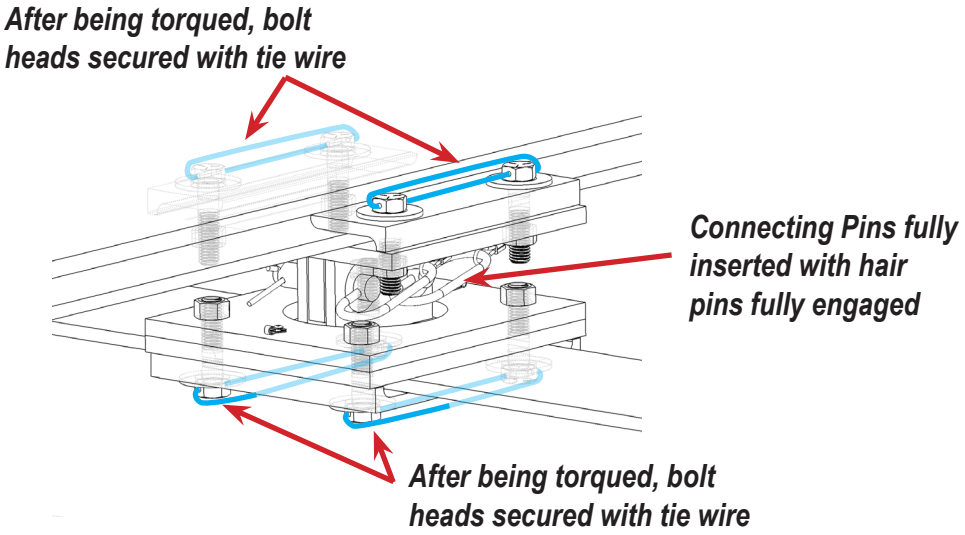


Figure: 3.3.4

3.4 H-PLATE

The H-plate assembly is installed on the outrigger beam as either an attachment point for suspension wire rope, attachment point for a secondary wire rope, or as an attachment point for securing counterweights or direct tie down at for the outrigger.

The H-plate is normally used near the end of the outrigger beam where its position is limited by installing grade 5 5/8” bolts, lock nuts, and nuts into the holes in the lower flange of the beam. Hardware shall be installed and tightened to fully collapse the spring lock washer.

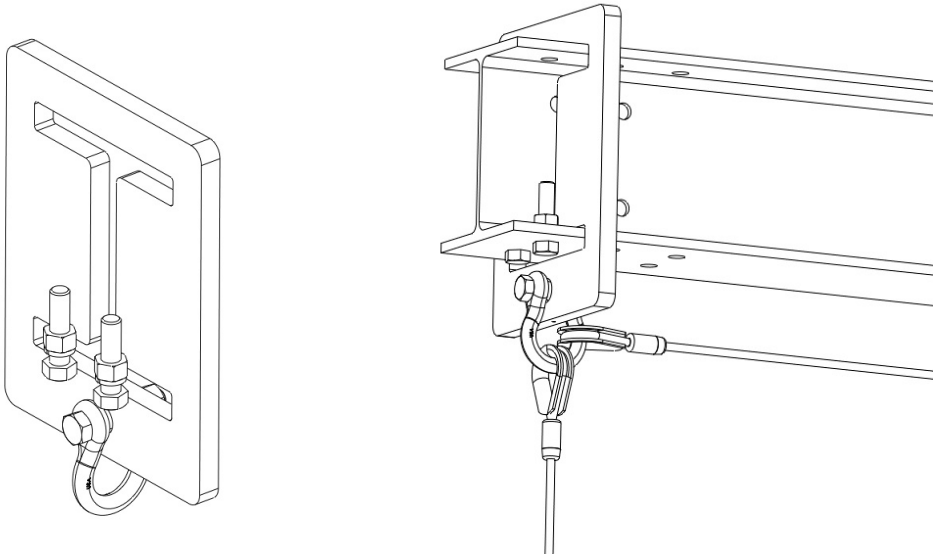


Figure: 3.4.1

The H-plate when used as a suspension point, shall have a tieback. If two H-plates are used to provide suspension for the primary wire rope and a secondary point for an independent safety wire rope, each H-plate shall have it’s own tieback.

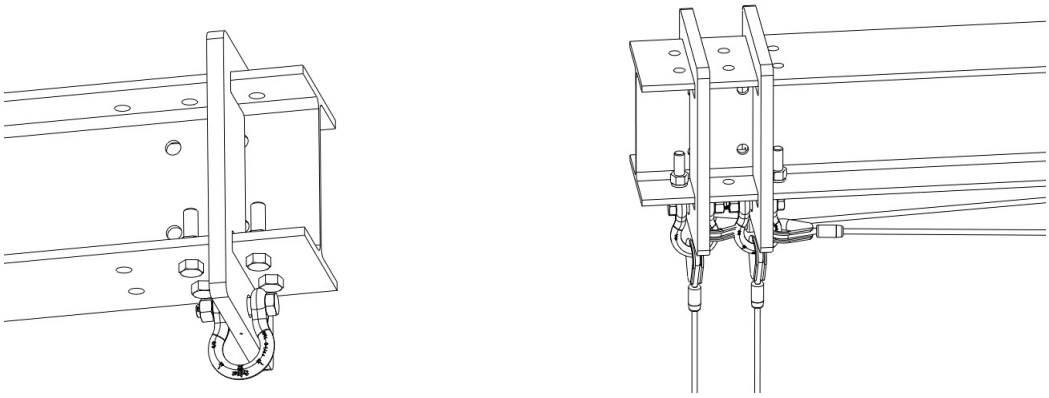


Figure: 3.4.2

If the H-plate is located at a location on the outrigger beam away from the flanges holes where hardware can be used to maintain H-plate position, then another means shall be provided to maintain the H-plate position along the beam such as positioning wire rope or beam clamps.

3.5 HANGER BRACKET HARDWARE STOP

The outrigger shall aways have installed two sets of 5/8” hardware including bolt, nut, and lock washer at the end of the beam, outboard of the hanger bracket, regardless of hanger bracket position. Hardware shall be grade 5 and tightened to fully collapse the spring lock washer.

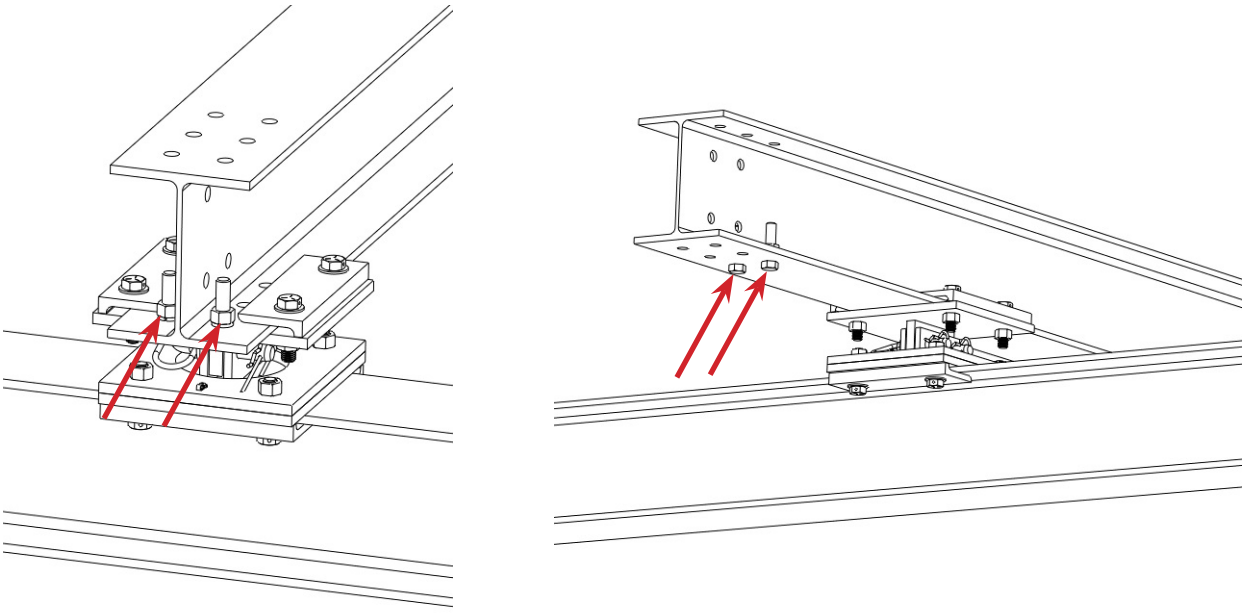
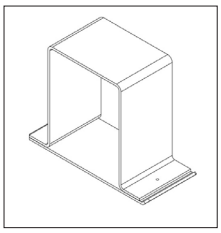


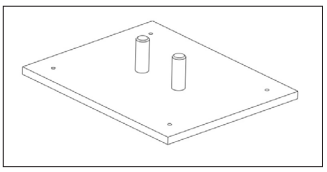
Figure: 3.5.1

3.6 POST SHORE KIT

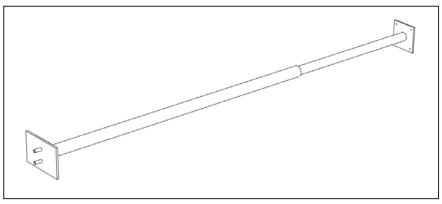
The post shore kit consists of three sub-assemblies shown below.



FRONT BRACKET POST SHORE KIT P/N 720375-1



REAR BRACKET POST SHORE KIT P/N 720022-1



POST SHORE ASSEMBLY P/N 720172-1

The outrigger using the post shore kit shall be level. The post shore shall be installed straight and vertically plumb. Once the outrigger is tightened, the top of the post shore shall be anchored into the overhead using a fastener set capable of supporting an ultimate shear load of 1500 lb (680 kg).

The front and rear brackets shall be anchored into the supporting slab using a fastener set capable of supporting an ultimate shear load of 1500 lb (680 kg).

A tieback is required when using the post shore kit.

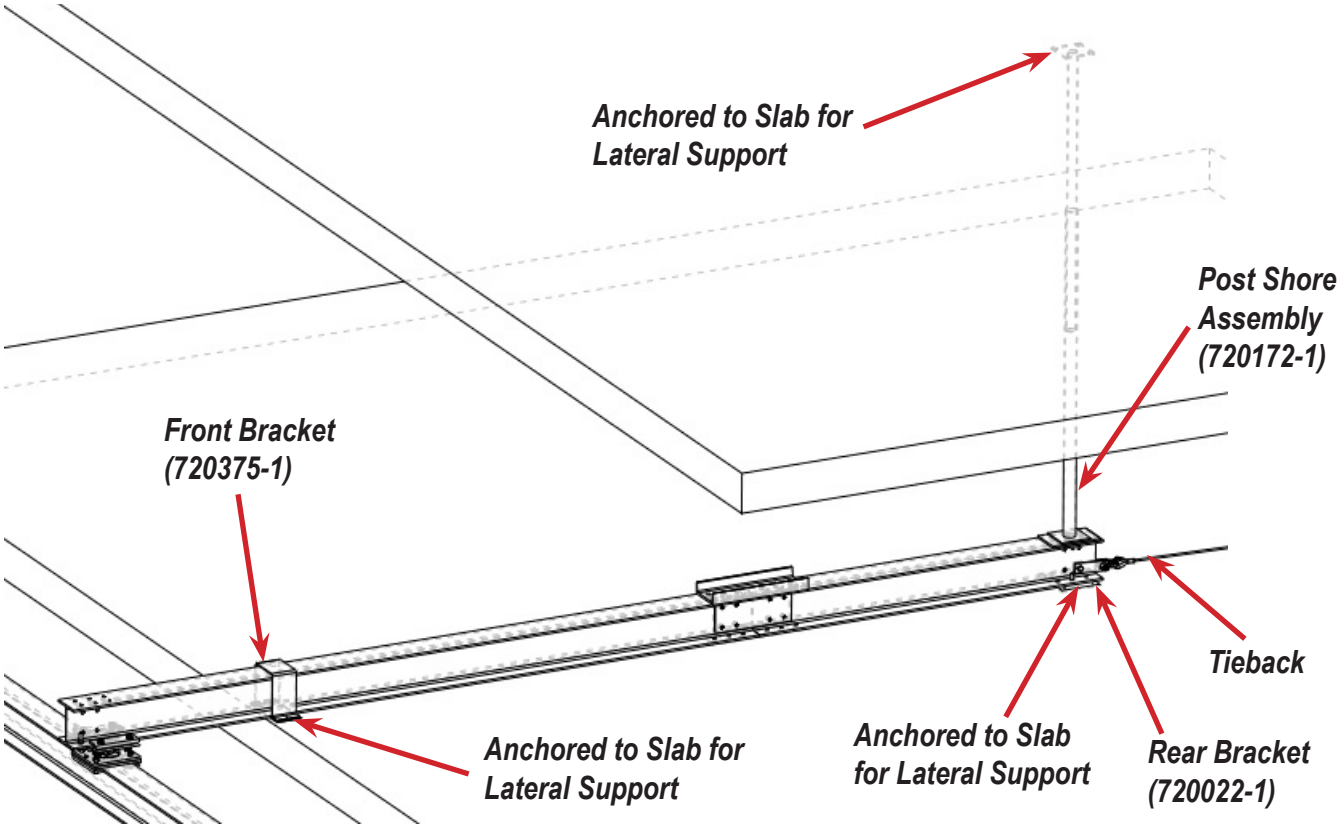


Figure: 3.6.1

3.7 COUNTERWEIGHT BAR

The counterweight bar can be used by two methods. Method one is when the counterweight bar is bolted directly to the rear of the outrigger beam. This can only be used when the outrigger beam is sitting directly on the support structure. The counterweight bar is connected to the outrigger beam with a set of four grade 5 5/8” bolts, washers, lock washers, and nuts.

The fulcrum of the outrigger shall be set on dunnage to keep the outrigger beam level.

The counterweights shall be centered and located equally on both sides of the counterweight bar.

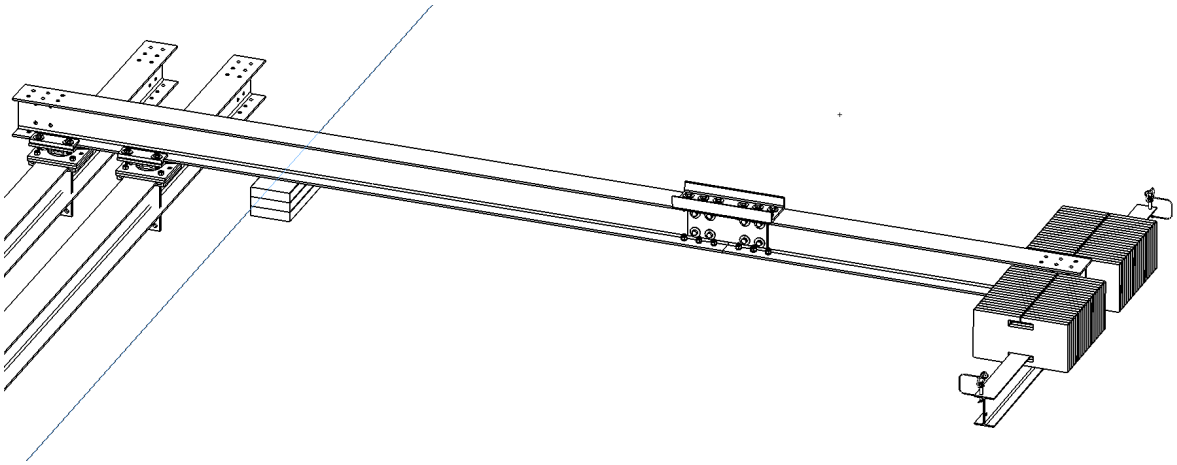


Figure: 3.7.1

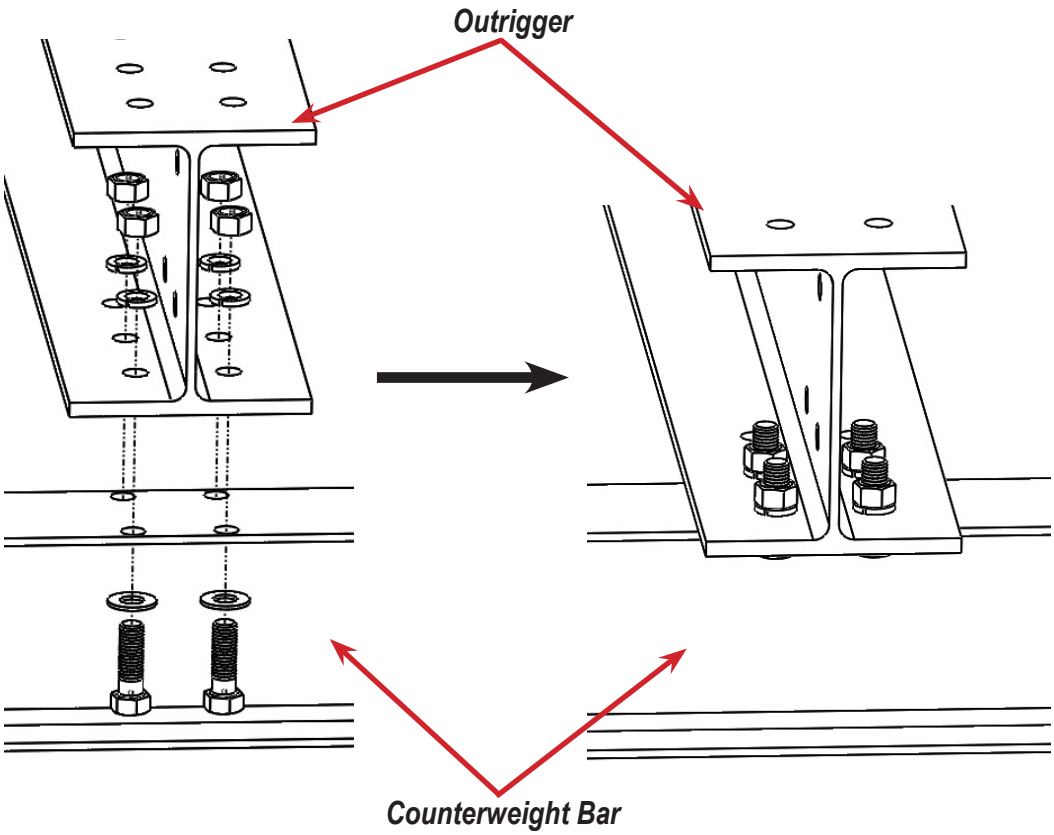


Figure: 3.7.2

The second method is when the counterweight bar is connected to the outrigger using the counterweight beam sling, H-plate, and eye-eye wire rope assembly. This is used when the outrigger is raised above the support structure and the counterweight bar is resting on the support structure.

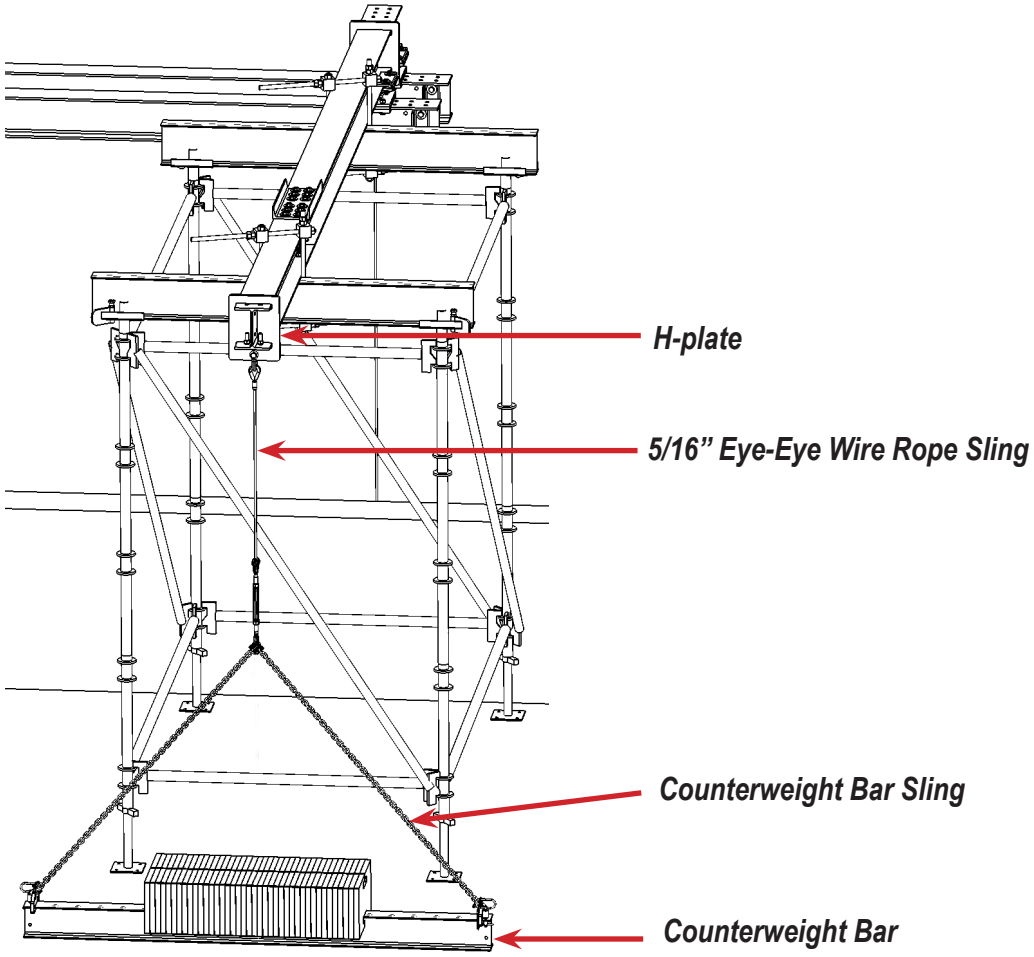


Figure: 3.7.3

The Eye-Eye wire rope assembly shall be minimum 5/16” diameter wire rope and minimum 6,000 lb (2,722 kg) breaking strength. Each eye shall use a thimble eye and either swage or fist grips capable of supporting minimum 80% breaking strength of the wire rope being used. Fist grips shall be installed and torqued per manufacturer’s recommendations.

The counterweights shall be centered and located equally on both sides of the counterweight bar.

The counterweight bar shall be centered and located directed below the H-plate.

The turnbuckle on provided on the counterweight sling shall be adjusted so than the sling chain and the eye-eye wire rope are taut.

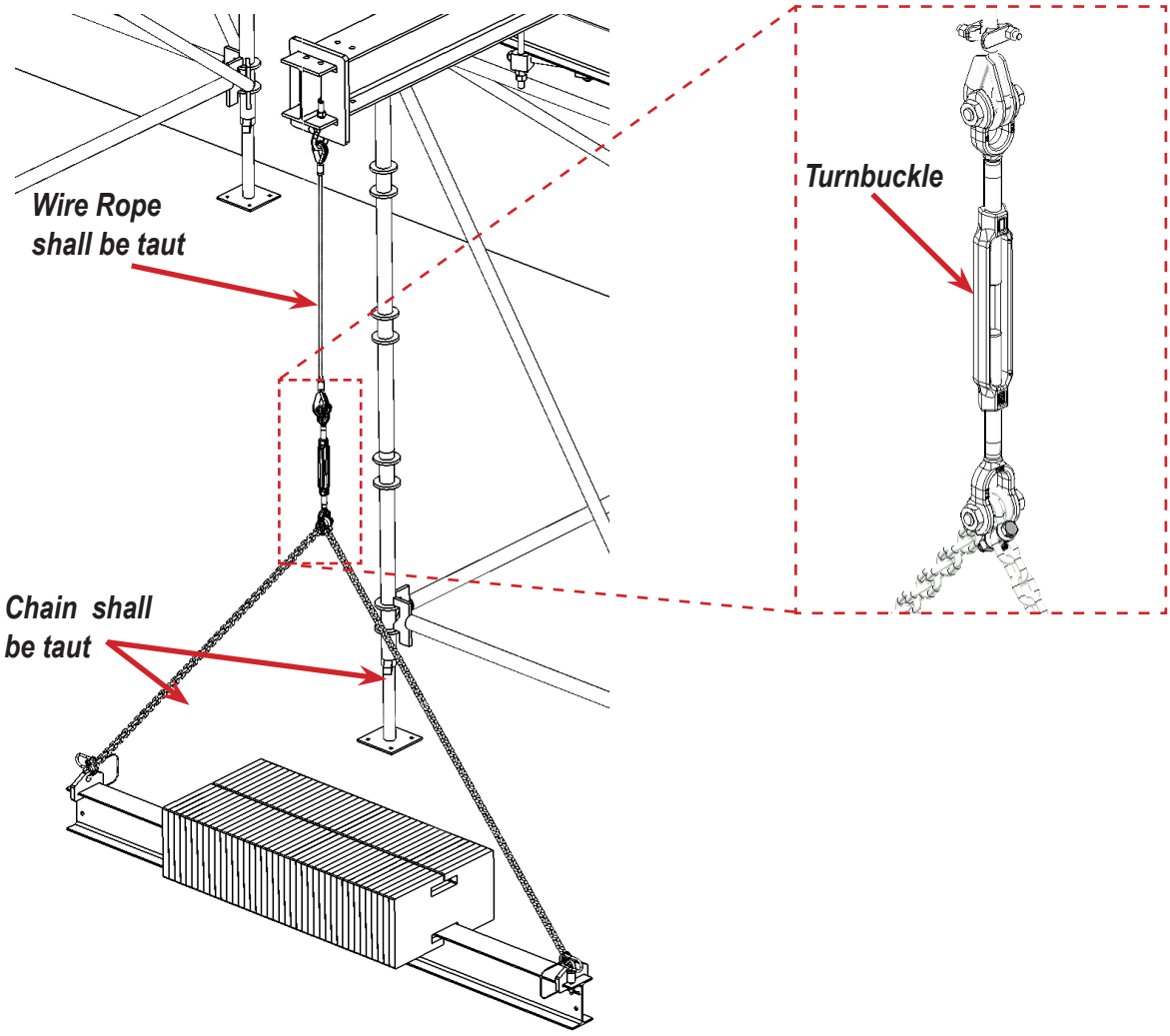


Figure: 3.7.4

3.8 BEAM TIE DOWN

When the outrigger is being supporting on a scaffold tower with ledger beams or on another structural beam, the outrigger shall be clamped to the supporting beam using the beam tie down assembly. The beam tie down assembly is provided with installation instructions on a tag and shall be installed in accordance with those instructions. The beam tie down is required on both the front and rear supporting ledger beams. When installed, the beam tie down blocks shall be bearing ONLY against the outrigger and ledger beam on both sides, NOT against the horizontal coil rods.

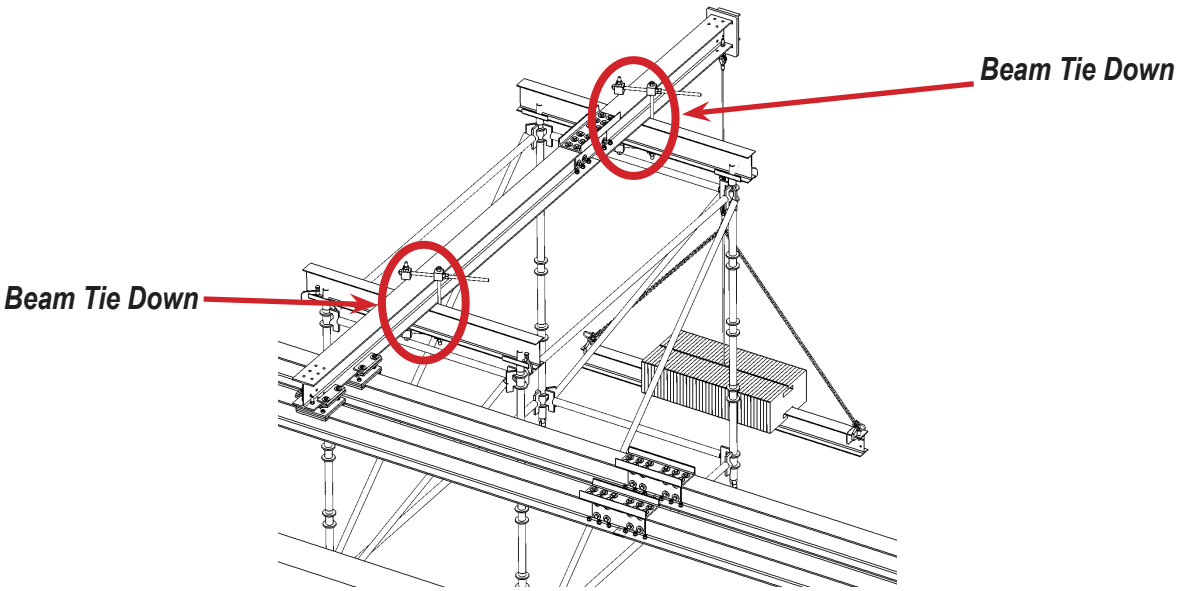


Figure: 3.8.1

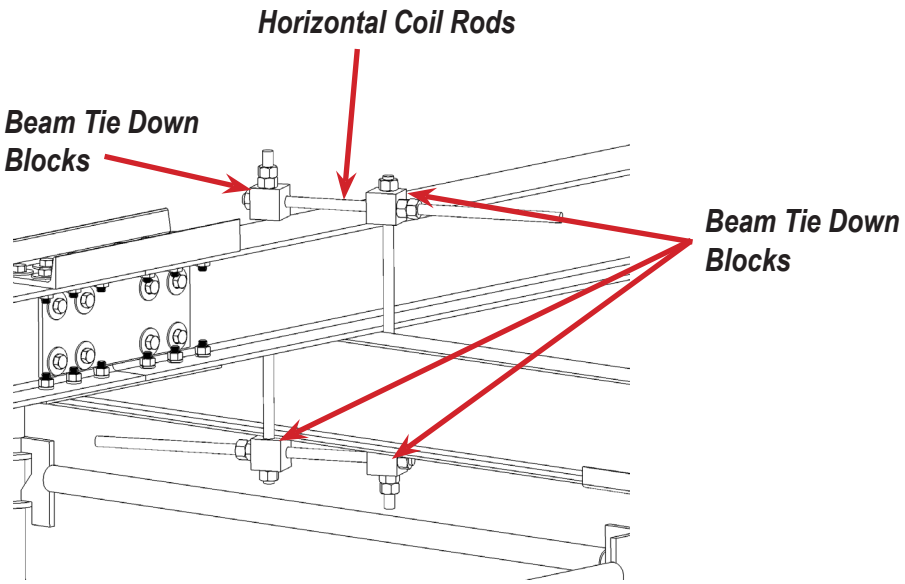


Figure: 3.8.2

4. MONORAIL BEAM INSTALLATION

Whether installing a single or dual monorail system, a ground rigged temporary suspended scaffold is assumed to be used to install the monorail beams.

4.1 SINGLE MONORAIL

Step 1:
The standard installation method for a single monorail system is to have the outriggers in place with the upper half of the hanger bracket installed on the outrigger with hardware loose to allow for adjustment. Also installed is the H-plate and suspension rope for the suspended scaffold.

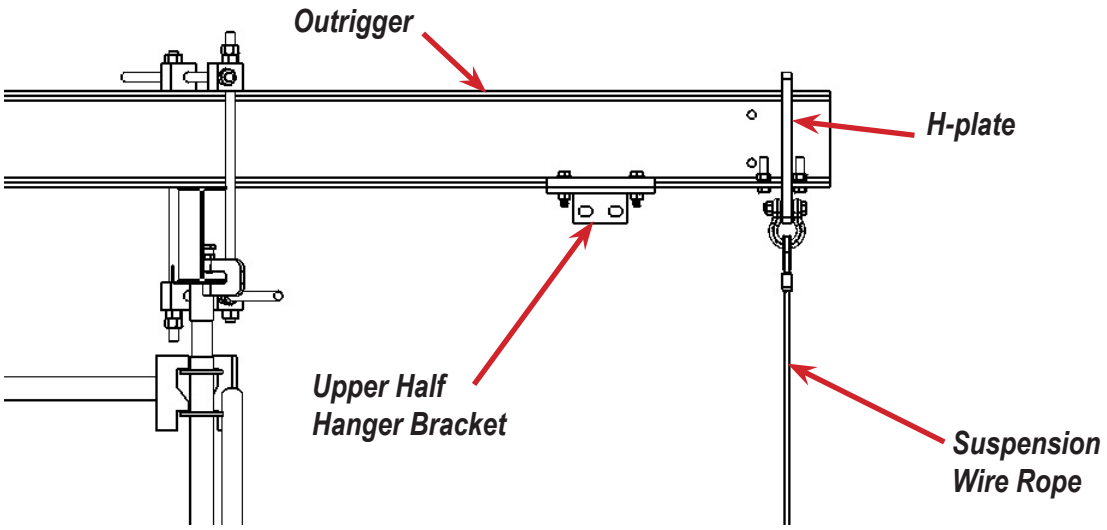


Figure: 4.1.1

Step 2:
The suspended scaffold is then ground rigged from the suspension wire rope and used to carry the monorail beam up in sections for installation. The monorail beam sections can have splices preinstalled depending on the length of platform being used and length of monorail beam section being installed. The bottom half of the hanger bracket may be preinstalled on the monorail beam in the approximate location with hardware loose to allow for adjustment.

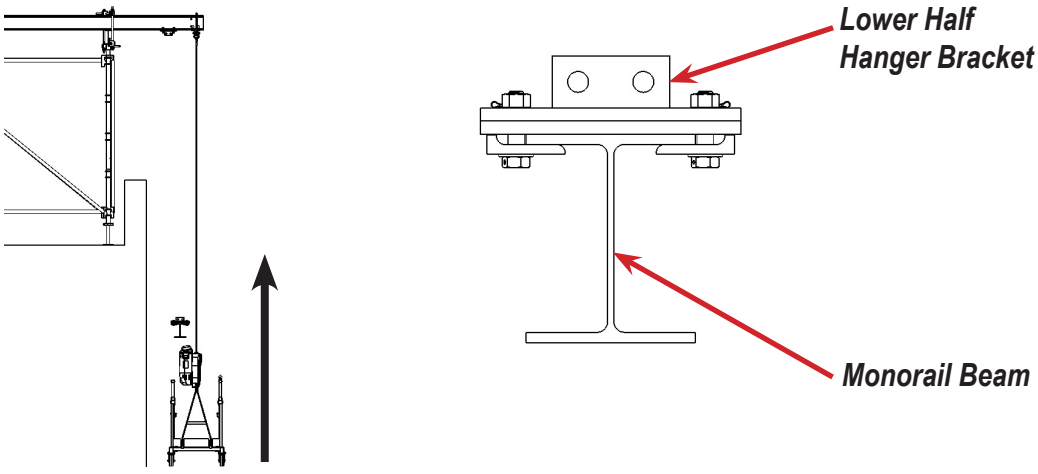


Figure: 4.1.2

Step 3:
The monorail beam is raised into place by personnel on the suspended scaffold. The upper and lower halves of the hanger bracket are connected with two hitch pins and secured with hair pins. Refer to section “3.3 HANGER BRACKET” on page 10 for more information. Once the hanger bracket pins are in place and any adjustments made to hanger bracket location, the hardware clamping the hanger bracket to the outrigger and monorail beam is torqued and secured per section 3.3. Ensure end stop hardware is installed per section “3.5 HANGER BRACKET HARDWARE STOP” on page 13.

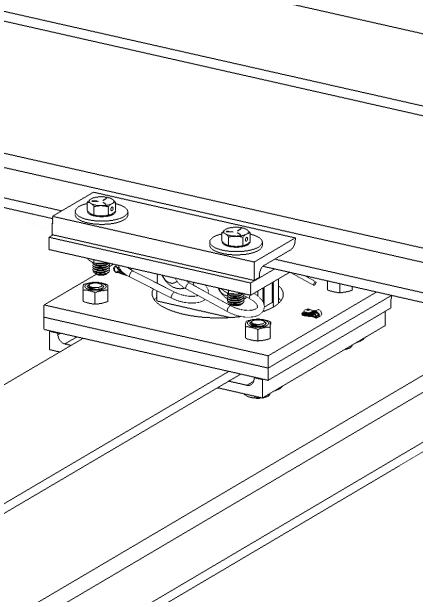


Figure: 4.1.3

Step 4:
The suspended scaffold is lowered to the ground and de-rigged. The suspension wire rope is removed or pulled up and out of the way of the monorail. The H-plate may be removed, or left in place for monorail removal.

4.2 DUAL MONORAIL

Step 1:
The standard installation method for a dual monorail system, is to have the outriggers in place with the upper half of the hanger brackets installed on the outrigger with hardware loose to allow for adjustment. Also installed is the H-plate and suspension rope for suspended scaffold.

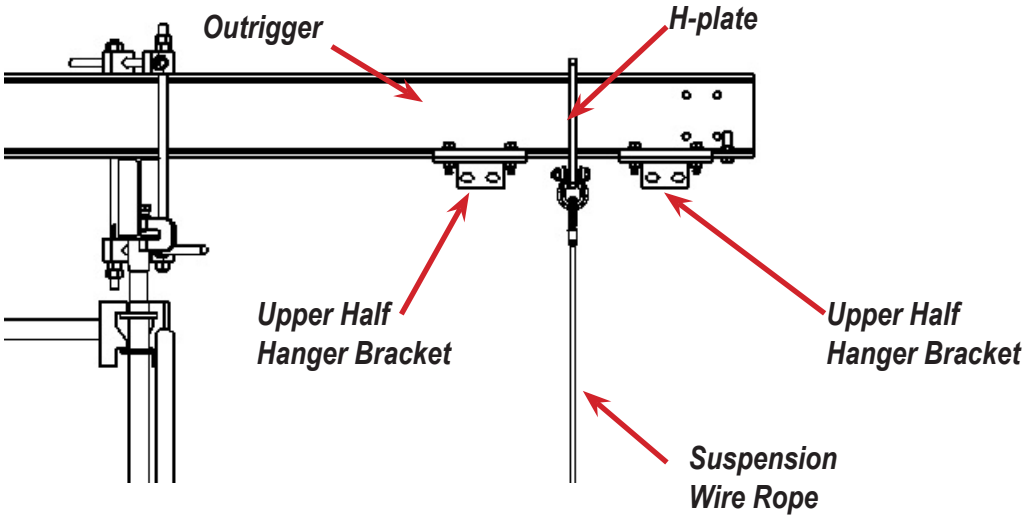


Figure: 4.2.1

Step 2:
The suspended scaffold is ground rigged from the suspension wire rope and used to carry the monorail beams up in sections for installation. The monorail beam sections can have splices preinstalled depending on the length of platform being used and length of monorail beam section being installed. The bottom half of the hanger bracket may be preinstalled on the monorail beam in its approximate location with hardware loose to allow for adjustment.

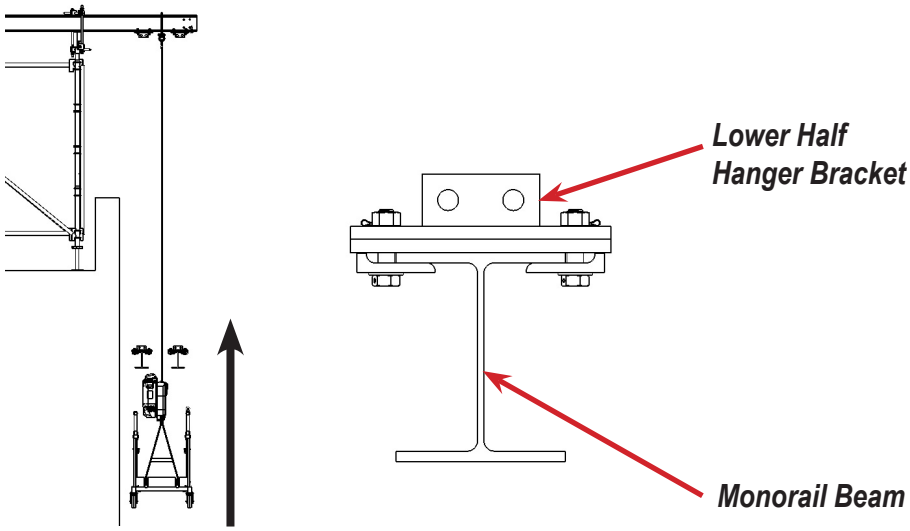


Figure: 4.2.2

Step 3:
The monorail beam is raised into place by personnel on the suspended scaffold. The upper and lower halves of the hanger bracket are connected with two hitch pins and secured with hair pins. Refer to section “3.3 HANGER BRACKET” on page 10 for more information. Once the hanger bracket pins are in place and any adjustments made to hanger bracket location, the hardware clamping the hanger bracket to the outrigger and monorail beam is torqued and secured per section 3.3. Ensure end stop hardware is installed per section “3.5 HANGER BRACKET HARDWARE STOP” on page 13.

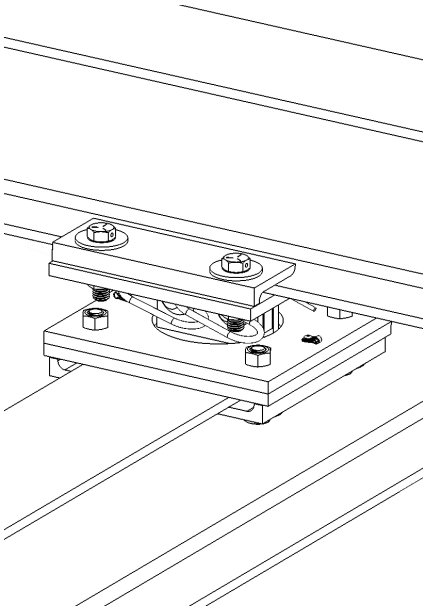


Figure: 4.2.3

Step 4:
The suspended scaffold is then lowered to the ground and de-rigged. The suspension wire rope is removed or pulled up and out of the way of the monorail. The H-plate is left in place for monorail removal.

5. OPERATION

5.1 DISCLAIMER

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ALL PERSONNEL SHALL BE PROVIDED WITH THE PROPER SAFETY EQUIPMENT AND INSTRUCTIONS TO ASSURE THAT EACH WORKER IS OPERATING IN A SAFE WORK ENVIRONMENT, WITHOUT EXCEPTION.

Taking precedence over any specific rule, however, is the most important rule of all:

"USE COMMON SENSE"

It is a responsibility of the system owner/user to establish programs to:

1. Train and designate operators, and
2. train and designate inspection and maintenance personnel.

NOTE:
LOAD ON SUSPENDED SCAFFOLDING PLATFORM SHALL BE UNIFORMLY DISTRIBUTED. PLATFORM SHALL REMAIN LEVEL. HOISTS SHALL BE OPERATED SIMULTANEOUSLY.

USE OF SUSPENDED SCAFFOLDING SHALL COMPLY WITH OSHA 29 CFR 1926.451(F) AND ANY APPLICABLE LOCAL REGULATIONS.

SUSPENDED SCAFFOLD RIGGING AND TIEBACKS SHALL COMPLY WITH OSHA 29 CFR 1926.451(A) AND 1926.451(D) AND ANY APPLICABLE LOCAL REGULATIONS.

ALL PERSONNEL ON SUSPENDED SCAFFOLDING SHALL HAVE AN INDEPENDENT FALL ARREST SYSTEM THAT COMPLIES WITH OSHA 29 CFR 1926.451(G) AND ANY APPLICABLE LOCAL REGULATIONS.

REFER TO BETA MAX OPERATORS MANUAL FOR INSTRUCTION INSTALLATION AND USAGE.

ALL TROLLEYS USED ON MONORAIL BEAMS SHALL BE MOVED SLOW AND SMOOTHLY.

HOIST OPERATORS AS WELL AS THE SUPPORT PERSONNEL INVOLVED IN THE LIFTING APPLICATION SHALL:

Have normal depth perception, field of vision, reaction time, manual dexterity, and coordination for the work to be performed.

NOT be subject to seizures, loss of physical control, physical defects, or emotional instability that could result in actions of the operator being a hazard to the operator or others.

NOT operate a hoist when under the influence of alcohol or drugs.

NOT operate a hoist when under the influence of medication that could result in actions of the operator being a hazard to the operator or others.

Material hoists are intended only for strictly vertical lifting service of freely suspended, unguided loads. Do not use a hoist to lift loads that are not lifted vertically, loads that are not freely-suspended, or loads that are guided. If such conditions exist, the operator should halt work immediately and contact the supervisor for instructions. Do not lift loads over people.

Do not walk under a suspended load.

Do not perform any work on a suspended load that requires a worker to be positioned under the suspended load.

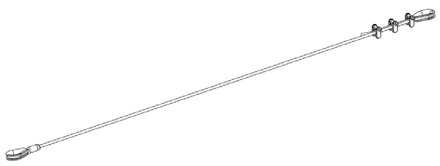
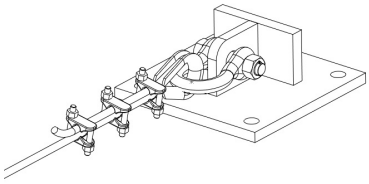
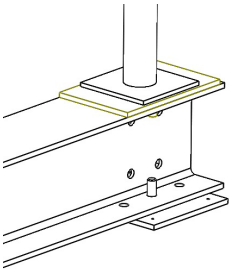
If it is essential that a worker be positioned under a suspended load to perform work on the suspended load; such work shall not be started or performed until other auxiliary supporting means are placed under the suspended load. Failure to use other auxiliary supporting means could result in serious bodily injury or death, and/or property damage.

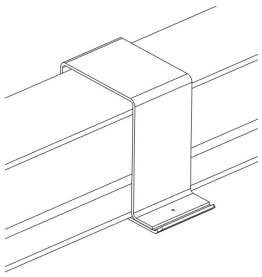
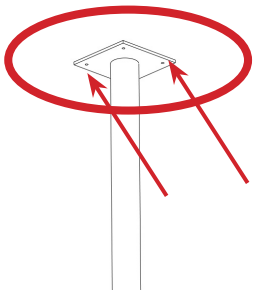
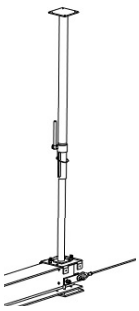
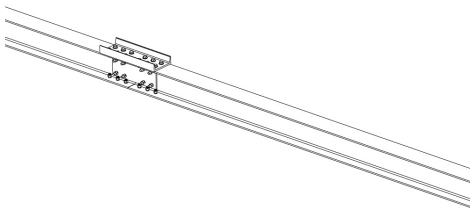
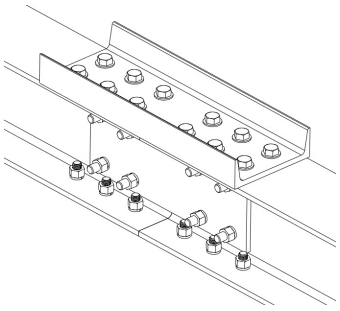
6. INSPECTION

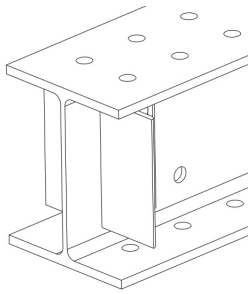
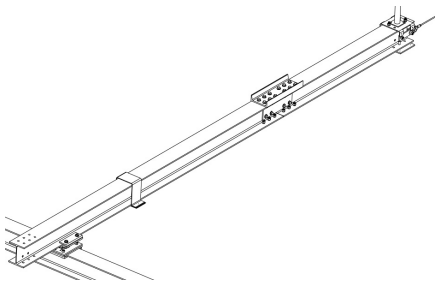
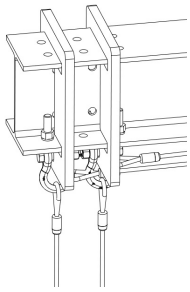
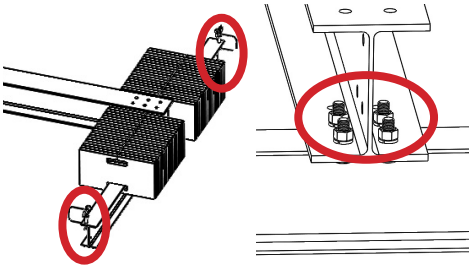
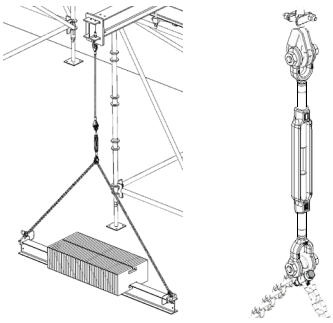
6.1 PRE-USE INSPECTION CHECKLIST MONORAIL SYSTEM

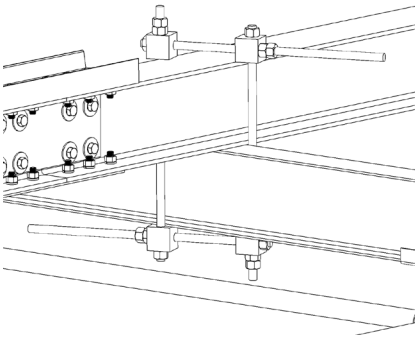
Prior to each start of work day equipment will be in use, or prior to starting work on any change of shift, the following inspection checklist shall be completed by an on site competent person. A minimum period of 14 days records of completed checklist shall be kept on site and available for review.

SITE NAME:	SITE ADDRESS:
DATE:	INSPECTING PERSON'S NAME (Print)
INSPECTING PERSON'S EMPLOYER:	

INSPECTION CRITERIA	ILLUSTRATION (Images are representative only Equipment may vary)	INITIAL
Visually inspect tieback cable to ensure there are no broken wires, burns, cuts, or other damage.		
Visually inspect tieback anchor to ensure concrete anchor hardware is tight and undamaged. Shackles shall have hardware secured and cotter pin in place. If fist grips are used, they shall be checked for correct torque value of 30 ft-lb.		
Visually inspect rear base beam bracket to ensure it is not damaged and hardware for anchorage to concrete are in place and not loose. Rear bracket uses four fasteners.		

INSPECTION CRITERIA	ILLUSTRATION (Images are representative only Equipment may vary)	INITIAL
Visually inspect front outrigger fulcrum bracket to ensure it is not damaged and hardware for anchorage to concrete are in place and not loose. Front bracket uses two fasteners.		
Visually inspect top of post shore to ensure fasteners for lateral support are in place and not loose. Minimum of two fasteners required.		
Visually inspect post shore to ensure that it is tight and plumb, with no signs of damaged, bent, or broken components.		
Visually inspect monorail beams to ensure beams are not bent, deformed, or damaged. Ensure beams are level.		
Visually inspect monorail splice assembly to ensure there are no signs of damaged, bent, or broken components and hardware is tight with lock washers collapsed.		

INSPECTION CRITERIA	ILLUSTRATION (Images are representative only Equipment may vary)	INITIAL
Visually inspect monorail end stops are installed and hardware is hardware is tight with lock washers collapsed.		
Visually inspect outrigger beams to ensure beams are not bent, deformed, or damaged. Ensure beams are level.		
Visually inspect H-plates and ensure they are not bent, deformed, or damaged. Ensure shackles have nut fully engaged and cotter pin in place. Ensure 5/8” hardware stops for positioning H-plates are in place. Ensure each H-plate used has it’s own tieback in place.		
If counterweight bar is directly connected to outrigger, visually inspect to ensure four sets of 5/8” hardware are in place and tight with split lock washer fully collapsed. Visually inspect to ensure counterweight bar hitch pins are in place with hair pins engaged.		
If counterweight bar is used with beam sling, visually inspect to ensure counterweight bar hitch pins are in place with hair pins engaged. Visually inspect to ensure turnbuckle is adjusted to that sling chain and wire rope are taut. If fist grips are used, inspect and torque per manufacturer’s recommendations.		

INSPECTION CRITERIA	ILLUSTRATION (Images are representative only Equipment may vary)	INITIAL
If outriggers are installed on ledger or support beams, visually inspect to ensure beam tie down blocks are bearing against the outrigger on both sides and against the ledger beam on both sides. They should not be bearing against the horizontal coil rods. Visually inspect to ensure coil rod is tight and coil rod nuts are double nutted.		

7. NOTES