

EXCEL MODULAR SCAFFOLD CUSTOM AND SPECIALTY COMPONENT TECHNICAL MANUAL



EMSLC-TSM-1001

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INTRODUCTION

This manual does not replace OSHA 1926/1910 or CAL/OSHA documents.

Compatibility of Excel Modular Scaffold

Excel Modular Scaffold is designed and engineered to be compatible with standard tube and clamp components (i.e., clamps, poles, ladders and ladder brackets) that are currently available within the scaffold industry. These tube and clamp components are generally used:

- As tie-offs when needed for seismic considerations.
- When needed to transition horizontally to get around obstacles.
- When needed to transition vertically to get around an interference.
- As ladders and ladder brackets for access to work platforms.
- As needed for structural bracing and reinforcement.

General Erection Criteria

Excel Modular Scaffold was designed and engineered to be constructed using the same requirements specified by OSHA and CAL/OSHA, that have been historically used with tube and clamp and other types of system scaffold.

Excel expects all users to be familiar with Federal, State and local regulations governing scaffold construction and use.

Excel expects all users to erect, modify or dismantle scaffolding using only qualified and competent personnel with adequate supervision.

Excel expects all users to provide competent and qualified supervision who can inspect and sign off on each scaffold before authorization is given for general use.

Excel expects all users to follow common safety guidelines, including: pre-job briefings, procedure compliance, tagging, flagging, wearing of proper PPE, weight-loading restrictions, vertical leg placement, use of diagonal bracing, horizontal wraps, proper use of handrails, mid-rails, toe boards, safety netting, screw jacks, ladders, metal or wood decking, etc.

Excel expects all users to utilize a registered professional engineer (licensed PE) to design and approve drawings, as required by OSHA, CAL-OSHA or any other regulatory agency.

Ensure all items containing locks or pins are secured before handling, transporting or passing these items to another worker.

Special Considerations

Use caution when working with components that telescope. Telescoping components can move/slide while being transported, handled and passed to other workers.

Many Excel scaffold components swivel, slide or hinge.

Use caution when passing to other workers, transporting, and installing these items.

Ensure all items containing locks or pins are secured before handling, transporting, or passing these items to another worker.

Shipping and Receiving:

(225) 777-4157 | yard.manager@excelscaffold.com

Engineering:

(443) 293-6352 | engineering@global-excel.com

Website: www.excelscaffold.com

All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.



INTENDED USE OF EXCEL MODULAR SCAFFOLD

1. Unless otherwise stated, all load data presented in this manual includes the OSHA (4:1) factor.
2. Unless otherwise stated, all load data presented in this manual is for downward or compressive loading only.
3. Excel's scaffold material, when constructed for normal use, is not designed to be up- or side-loaded in excess of OSHA and ANSI requirements. When conditions require special loading, extra design features must be added to ensure proper stability.
4. Once installed and completed, scaffolding should be considered part of the customer's
 - Excessive force is applied to the scaffold from abuse or accidental contact.
 - The material is modified in any way with a torch, saw or other equipment.
 - The material is affected from corrosive chemicals that remove the coating and/or damage the base metal.
 - The material is bent or otherwise damaged.
6. The end-user should ensure their competent and qualified individuals and scaffold erection personnel are trained and fully understand the above requirements.

This tech manual is provided as a reference for training. New users should examine the Excel Building Tips section at the end of the standard technical manual.

plant equipment. Abuse or mistreatment of the scaffold material should not be tolerated.

5. The scaffold material should be inspected for damage and replaced after any incident which could affect the integrity of the scaffold material, such as:
 - The scaffold comes into contact with any moving equipment, forklifts, trucks or trailers, and other types of mobile equipment.
 - The scaffold is affected by an unintended load, flanges or piping attached to a crane or come-along, objects dropped from above or swung in from the side, etc.
7. Field testing of scaffold components shall not be conducted. Testing will be performed only by the manufacturer.
8. All end-users must be trained in the proper use of Excel Modular Scaffold. This tech manual is provided as a reference for training. New users should examine the Excel Building Tips section at the end of the standard technical manual.
9. OSHA requires that inspections must be made by the scaffold builder and end-user.

All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

EXCEL MODULAR VERTICAL LEG HANGING BRACKET

Part Number	Description	Weight (lbs.)	Maximum Allowable Load (lbs.)
VLHB	Vertical Leg Hanging Bracket	15	7,500
VLC	Vertical Locking Clamp	9.5	2,400

The vertical leg hanging bracket allows the user to either hang a scaffold leg from the bottom of the bracket, or extend the scaffold up using the built-in coupling pin.

BUILD NOTES:

1. When suspending a scaffold, a vertical locking clamp shall be used and the load of the scaffold shall be taken into consideration when designing the scaffold.
2. Both the bottom and top bracket should always be installed when using the vertical leg hanging bracket.
3. Vertical leg hanging bracket spacers are used to fit beams that have a larger top flange and come in various sizes.
4. Flange minimum width is four (4) inches. Flange maximum width is seven (7) inches.

MATERIAL NOTE:

5. Spacer comes in three (3) sizes: one- (1) inch, two- (2) inch and four- (4) inch.

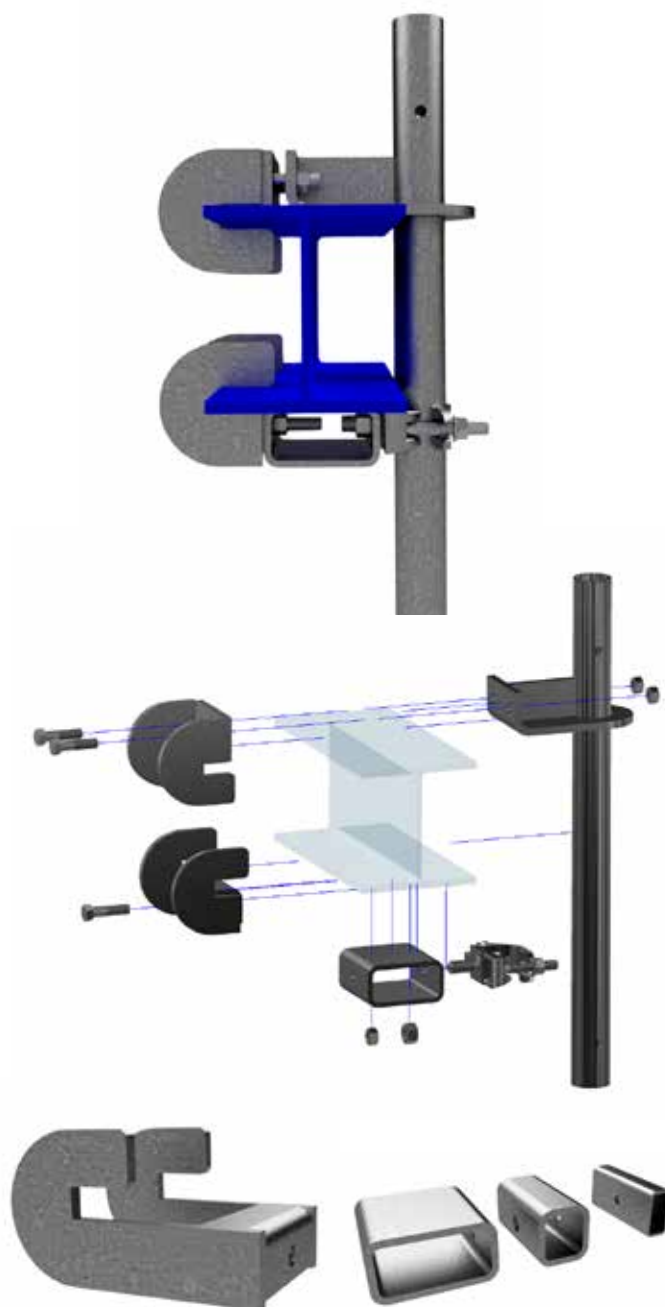


Clamp bolt tension greatly affects the slip loading.

Clamp bolts should be tightened between 40 and 65 lbs. tension. Overtightening could damage the threads, bolt or item the clamp is attached to. Undertightening could result in clamps slipping at lower than rated loads.



CAUTION: There is a pinch point located where beam sides are located on the clamp.



VERTICALS & ACCESSORIES

All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

EXCEL MODULAR ADJUSTABLE TUBE AND CLAMP ADAPTER

Part Number	Description	Weight Galvanized (lbs.)	Maximum Allowable Load (lbs.)
ATCA	Adjustable Tube and Clamp Adapter	12	5,000

VERTICALS & ACCESSORIES



The adjustable tube and clamp adapter allows the elevation of a board deck to be changed, so that the top portion of a scaffold can be aligned with a scaffold built on a separate structure.

The adjustable tube and clamp adapter enables the vertical cups of one scaffold to be aligned with another scaffold built at a different elevation.

The adjustable tube and clamp adapter may be placed on top of an existing Excel scaffold or tube and clamp scaffold.

BUILD NOTES:

1. There must be a wrap of horizontals (either Excel Modular or tube and clamp) attached to the verticals above and below the adjustable tube and clamp adapter.
2. There must always be a minimum of six (6) inches of thread inside the upper and lower vertical.
3. Only one (1) adjustable tube and clamp adapter may be used in any run of verticals.
4. Before use, inspect the adjustable tube and clamp adapter assembly to ensure there are no cracks in the wing nuts and verify that the three (3) tack welds are visibly in place.
5. The maximum spacing between the nuts is 12 inches.

All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

LIFTING AND MOVING EXCEL MODULAR SCAFFOLD STRUCTURES

Part Number	Description	Weight Galvanized (lbs.)	Maximum Allowable Load (lbs.)
LD1	Lifting Device	9	2,400
VPC	Vertical Locking Plates	7	7,500
VLC	Vertical Locking Clamp	9.5	2,400

The combination of the lifting device, vertical locking plates and vertical locking clamp enable fully-assembled Excel Modular Scaffold structures to be lifted and moved. A scaffold is assembled in a low-hazard area and can then moved into a high-hazard area, reducing employee exposure.

The lifting device attaches to the top of the vertical post, and accepts a shackle for a sling/ cable attachment. The vertical locking clamp and vertical locking plates provide added strength to the vertical post connection.

BUILD NOTES:

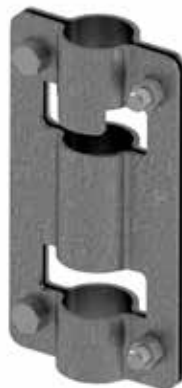
1. Either a vertical locking plates or vertical locking clamp must be installed on all vertical posts at the pin connection before lifting the scaffold.
2. All OSHA and plant safety regulations governing rigging and material handling must be followed.
3. All loose material must be removed from the scaffold before it is lifted.
4. Spreader beams must be used, so that the lifting load on all vertical posts is applied in an upward direction.
5. The scaffold must be properly braced to prevent deformation during movement.
6. Scaffold weight loads must be calculated to prevent the overloading of any scaffold or lifting component.
7. All scaffold components (deck boards, etc.) must be secured to the scaffold.



Clamp bolts should have between 40 and 65 lbs. tension. Overtightening could damage the threads, bolt or item the clamp is attached to.



Lifting Device



Vertical Locking Plates



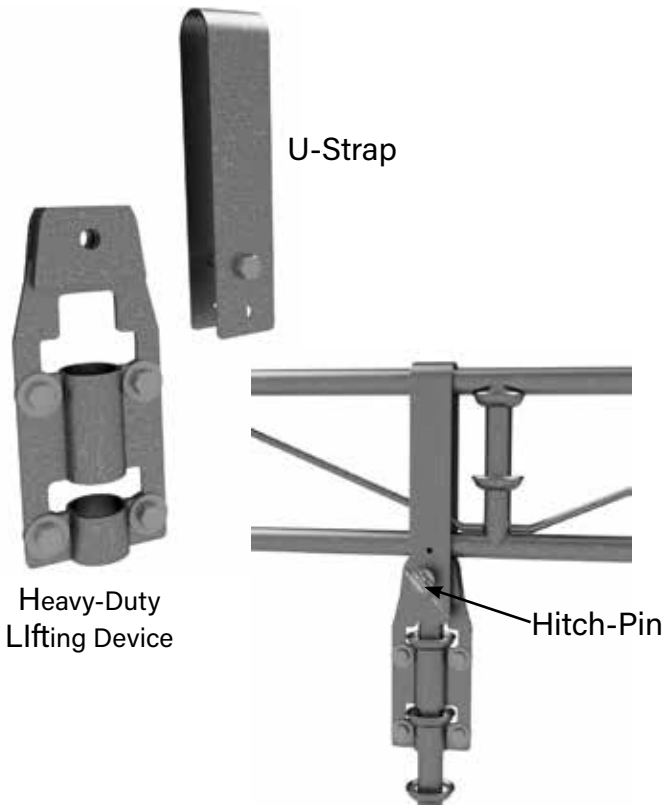
Vertical Locking Clamp

All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

EXCEL MODULAR HEAVY-DUTY LIFTING DEVICE WITH U-STRAP

Part Number	Description	Weight (lbs.)	Maximum Allowable Load (lbs.)
VLHD	Heavy-Duty Lifting Device	12	5,500
¾-inch Hitch-P	¾-inch Hitch Pin with Cable and Keeper Pin	1.5	5,500
VLHD-TS	Truss Strap for Use With Heavy-Duty Lifting Device	10	3,500
	Combined Components Used on Truss	22.5	3,500

Must be used as a set.



This component is to be used only on properly designed and engineered scaffolds that meet Excel's requirements.

BUILD NOTES:

1. When using the heavy-duty lifting device for lifting of scaffolds, all three (3) components shall be used.
2. ¾-inch x 5-inch grade 8 bolts with locking nut may be used in lieu of the ¾-inch hitch pin.
3. All OSHA and plant safety regulations governing suspended scaffolds must be followed.
4. No part of the newly added suspended scaffold should be used as a tie-off point until the scaffold is completed and verified for tie off by a competent person.
5. The heavy-duty lifting device can only be used with the provided U-strap to ensure proper loading.
6. The scaffold must be properly braced to prevent deformation.
7. Scaffold weight loads must be calculated to prevent the overloading of the heavy-duty lifting device component.
8. All scaffold components (deck boards, etc.) must be secured to the scaffold.
9. **Only use approved Excel connection pins that are supplied with the bracket.**

The heavy-duty lifting device is attached in the same manner as the lifting device (pg. 5), but has a higher load capacity for flying larger scaffolds. The heavy-duty lifting device with U-strap is used to shorten a scaffold bay along an Excel truss, and can be installed by attaching the U-strap over the truss with the supplied bolt. This can be done while standing on an existing deck and sliding it into place using a horizontal member, thereby reducing employee exposure to a fall hazard.

All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

EXCEL MODULAR HEAVY-DUTY LIFTING DEVICE WITH LUG

Part Number	Description	Weight (lbs.)	Maximum Allowable Load (lbs.)
VLHD	Heavy-Duty Lifting Device	12	5,500
3/4-inch Hitch-P	3/4-inch Hitch Pin with Cable and Keeper Pin	1.5	5,500
HD-LL	Heavy-Duty Lifting Lug for Use With Heavy-Duty Lifting Device	13.5	5,500
	Combined Components Used on Truss	26.5	5,500

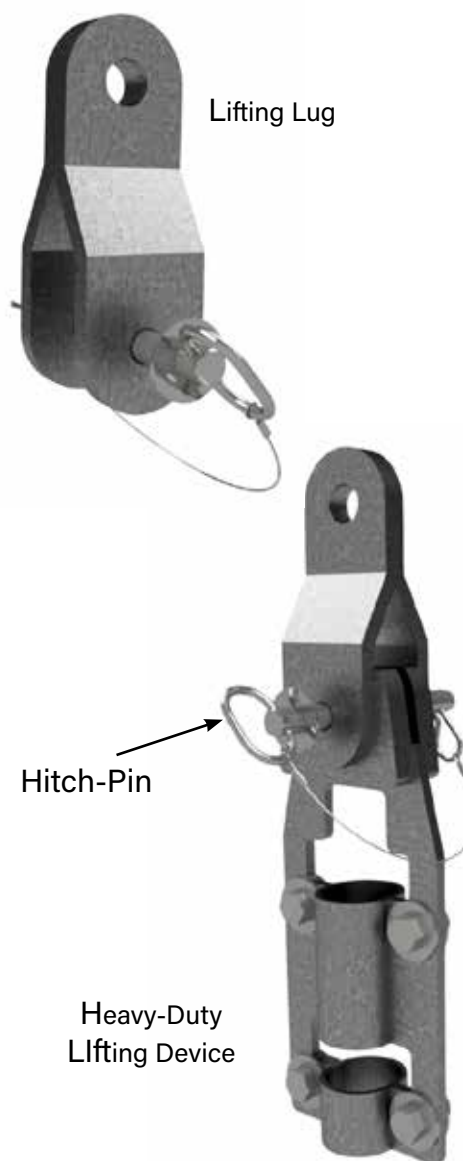
Must be used as a set.

The heavy-duty lifting device with lifting lug comes with a custom lug and bolt.

This component is to be used only on properly designed and engineered scaffolds that meet Excel's requirements.

BUILD NOTES:

1. When using the heavy-duty lifting device for lifting of scaffolds, all three (3) components shall be used.
2. 3/4-inch x 5-inch grade 8 bolts with locking nut may be used in lieu of the 3/4-inch hitch pin.
3. All OSHA and plant safety regulations governing suspended scaffolds must be followed.
4. No part of the newly added suspended scaffold should be used as a tie-off point until the scaffold is completed and verified for tie off by a competent person.
5. The heavy-duty lifting device can only be used with the provided U-strap to ensure proper loading.
6. The scaffold must be properly braced to prevent deformation.
7. Scaffold weight loads must be calculated to prevent the overloading of the heavy-duty lifting device component.
8. All scaffold components (deck boards, etc.) must be secured to the scaffold.
9. **Only use approved Excel connection pins that are supplied with the bracket.**

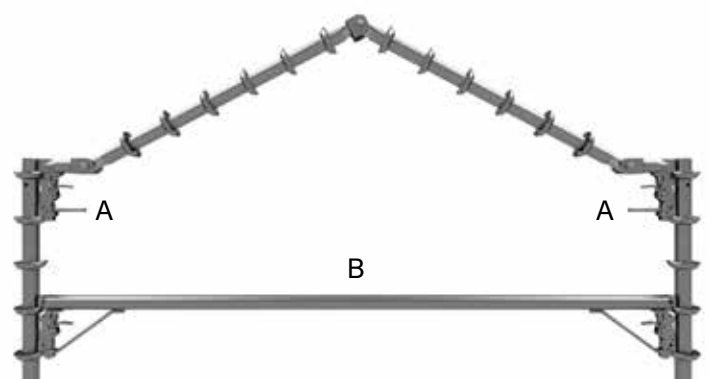


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EXCEL MODULAR ROOF ADAPTER

Part Number	Description	Weight (lbs.)	Maximum Allowable Load (ft. lbs.)
RA	Roof Adapter	5.8	1,000

VERTICALS & ACCESSORIES



Support must be added at point "A" or "B" to prevent the verticals from spreading apart.

The roof adapter is a leg connector which can be used to create a temporary shelter by adding a tarp over the top.

BUILD NOTES:

1. When covering scaffold with plastic, tarps or other types of solid material, the user must consider all wind and or snow loading.
2. **An Excel Engineer should be consulted to ensure proper bracing for the maximum expected wind or snow loads.**



CAUTION: There is a pinch point where the two pieces pivot.

Workers should not pass vertical legs with the roof adapters installed. They should be passed separately.

All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

EXCEL MODULAR COUNTERWEIGHT BASE PLATE

Part Number	Description	Weight Galvanized (lbs.)
CWBP	Counterweight Base Plate	80

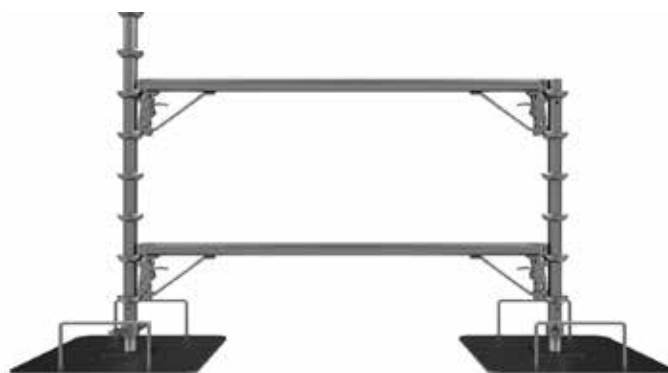
Counterweight base plates provide handrail protection for floor openings or other hazards where it is necessary to prevent access.

Counterweight base plates can be installed on roof tops that require working near a roof edge. They can also be used to help stabilize a scaffold where counterweights are required (i.e. lunch tents, outrigger scaffolds, etc.).

Counterweight base plates are rubber backed to prevent damage to the floor surface.

BUILD NOTES:

1. Counterweight base plates do not require tie offs to permanent plant components.
2. All guardrails must have a handrail and mid-rail, and should be installed at the same elevations, as required by scaffold handrails and mid-rails in accordance with CFR 29 1926 subpart "L."
3. Guardrail systems should always be installed and signed off on by a competent person before pulling any floor plugs or removing deck grating.
4. When installing a guardrail system on rooftops, personal fall protection must be used until the handrail system has been completely installed.
5. Leading-edge counterweight base plates must be set back a minimum of six (6) feet of the opening being protected.
6. The guardrail system must be inspected by the end-user before each and every use to ensure it has not been modified.
7. Counterweight base plates weigh 80 lbs. and should be handled by two (2) or more persons, or the proper lifting equipment.
8. Guardrail systems should never be used on dirt, gravel or other surfaces that could allow the base plate to sink or slide.

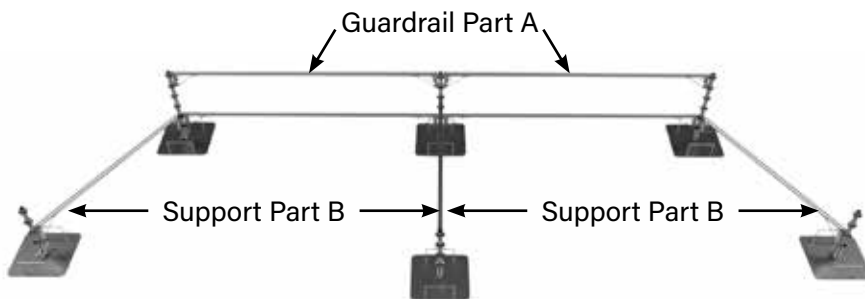
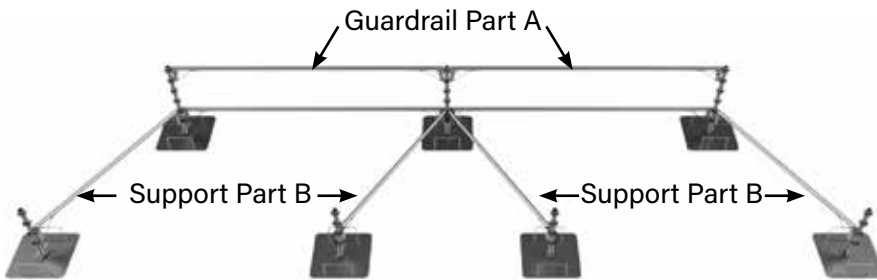
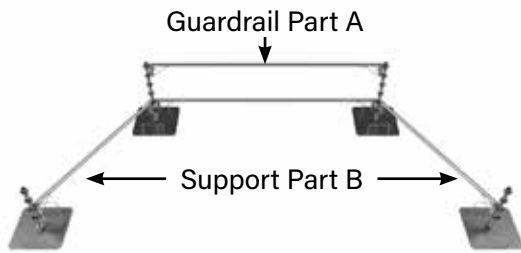


VERTICALS & ACCESSORIES

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EXCEL MODULAR COUNTERWEIGHT BASE PLATE (CONT'D)

Guardrail Part A (ft.)	Minimum Size of Support Part B (ft.)
10	7
9	7
8	6
7	6
6	6
5	5
4	5
3	5



Single guardrail sets must have a minimum of four (4) counterweight base plates installed and two (2) outriggers.

Multiple guardrail sets must have a minimum of one (1) counterweight base plate for each five (5) feet of handrail.

Setup required for multiple guardrail sets: Part "A" sizes six (6) to ten (10) feet in length.

Setup required for multiple guardrail sets: Part "B" sizes up to five (5) feet in length.

All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

EXCEL MODULAR BOILER COMPONENTS

Part Number	Description	Length (ft.)	Weight (lbs.)	Maximum Supported Load (lbs.)
Bbeam-HV	Heavy-Duty Boiler Beam*	6'-8"	152	7,500
Bbeam-LT	Light-Duty Boiler Beam*	6'-8"	120	3,750
Bchair	Boiler Ladder Chair		16.5	5,500
BL7	7' Boiler Ladder	7	39.6	7,500
BL3	3' Boiler Ladder	3	16.5	7,500
FBJ2 w/ U Head	Shoring Head for Boiler Ladders		1.5	7,500
BL-Start	Boiler Starter Ladder	1	24	7,500

*Third-party manufactured component. Data may vary.



Boiler Beam



Boiler Ladder Chair



Boiler beams are six (6) feet-eight (8) inches long and come in two (2) strengths depending on the weight that will be applied.

Boiler ladder chairs are attached to the boiler ladders and provide a level surface for the leveling jacks to rest.

Boiler ladders rest on the slope of the boiler tubes and the boiler beams.

BUILD NOTES:

1. All OSHA and plant regulations governing safety shall be followed, whichever is stricter.
2. The area supporting the boiler beams must be able to handle the required imposed loads.
3. Attached equipment (i.e. verticals, etc.) may be the load limiting factor.

All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

BOILER COMPONENTS

EXCEL MODULAR ALUMINUM PLANK

Part Number	Description	Weight (lbs.)	Uniform Load (lbs./ft.)	Center Load (lbs.)
AB7	7' x 19" Aluminum Plank	30.5	112	600
AB8	8' x 19" Aluminum Plank	37.5	112	600
AB10	10' x 19" Aluminum Plank	46.5	112	600

DECKING MATERIAL



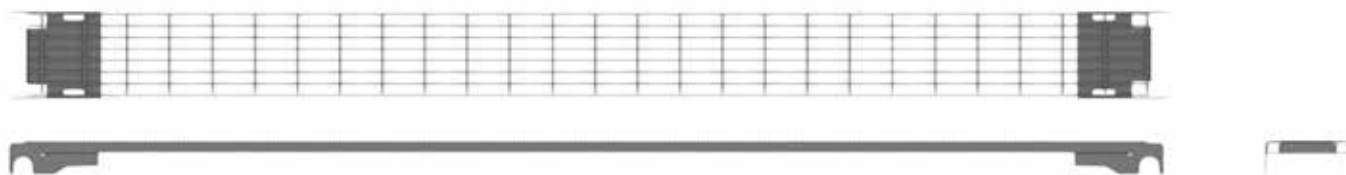
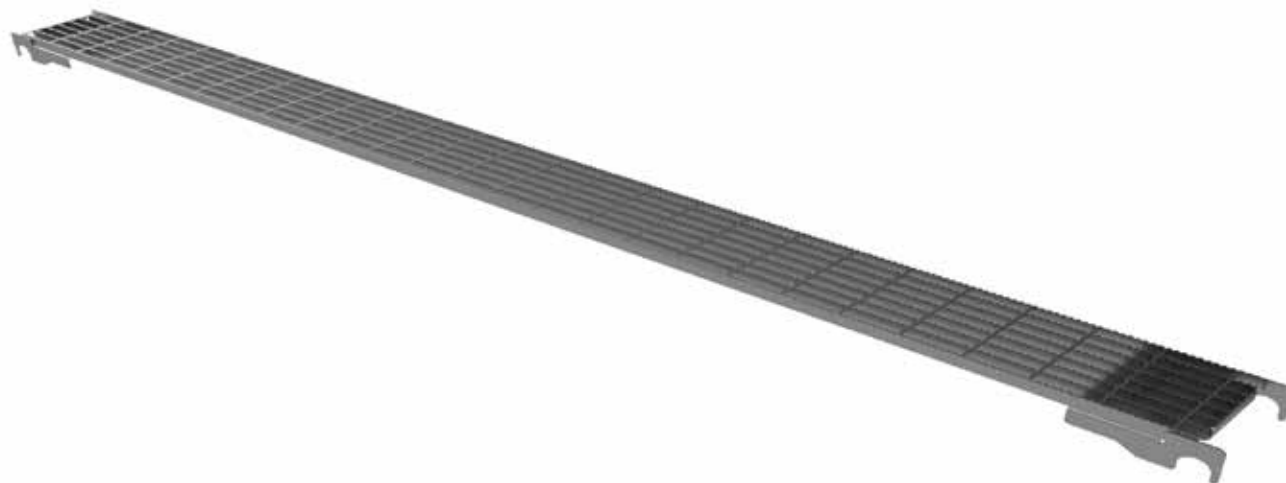
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Aluminum boards are for use in applications where the weight of standard metal boards are a concern, or when the use of aluminum may be preferred over galvanized metal decking.

BUILD NOTE:
Where a possibility of uplift could occur, all boards should be securely attached to the scaffold with #9 wire, tie wraps, toe boards, filler plates or other equivalent means.

EXCEL MODULAR GRATING PLANK

Part Number	Description	Width (inches)	Weight (lbs.)	Uniform Load (lbs./ft.)	Center Load (lbs.)
GP24	2' Grating Plank	9	30	548	600
GP32	32" Grating Plank	9	35	351	600
GP36	3' Grating Plank	9	37.5	244	600
GP42	42" Grating Plank	9	42	179	546
GP48	4' Grating Plank	9	45	137	520
GP60	5' Grating Plank	9	52.5	88	480
GP72	6' Grating Plank	9	60	61	388
GP84	7' Grating Plank	9	67.5	34	322



DECKING MATERIAL

Grating boards have standard 1 ¼-inch deck grating to fit standard scaffolds. This provides greater openings for debris and liquids when drainage is important.

All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

EXCEL MODULAR DUCKBILL PLANK

DECKING MATERIAL

Part Number	Description	Width (inches)	Weight (lbs.)	Uniform Load (lbs./ft.)	Center Load (lbs.)
DBP24	2' Duckbill Plank	9	12.5	271	600
DBP36	3' Duckbill Plank	9	17	271	600
DBP42	42" Duckbill Plank	9	19	232	546
DBP48	4' Duckbill Plank	9	19.8	213	520
DBP60	5' Duckbill Plank	9	24.5	185	480
DBP72	6' Duckbill Plank	9	29.5	105	388
DBP84	7' Duckbill Plank	9	31.5	100	322
DBP96	8' Duckbill Plank	9	38.5	93	284
DBP108	9' Duckbill Plank	9	42.5	69	250
DBP120	10' Duckbill Plank	9	47.5	58	233
6DBP24	6" x 2' Duckbill Plank	6	10.5	271	600
6DBP36	6" x 3' Duckbill Plank	6	12.9	271	600
6DBP42	6" x 42" Duckbill Plank	6	14.5	232	546
6DBP48	6" x 4' Duckbill Plank	6	16.1	213	520
6DBP60	6" x 5' Duckbill Plank	6	19.4	185	480
6DBP72	6" x 6' Duckbill Plank	6	22.6	105	388
6DBP84	6" x 7' Duckbill Plank	6	25.9	100	322
6DBP96	6" x 8' Duckbill Plank	6	27.7	93	284
6DBP108	6" x 9' Duckbill Plank	6	32.4	69	250
6DBP120	6" x 10' Duckbill Plank	6	35.6	58	233



Duckbill planks (overlapping steel planks) can be used to fill gaps in decks created by obstructions. They rest on the two (2) adjacent steel planks or steel planks and bearer, thereby reducing the need for wood planking.

Duckbill planks are attached to the planks they are resting on with #9 wire or self-tapping screws through the holes provided in the plank.

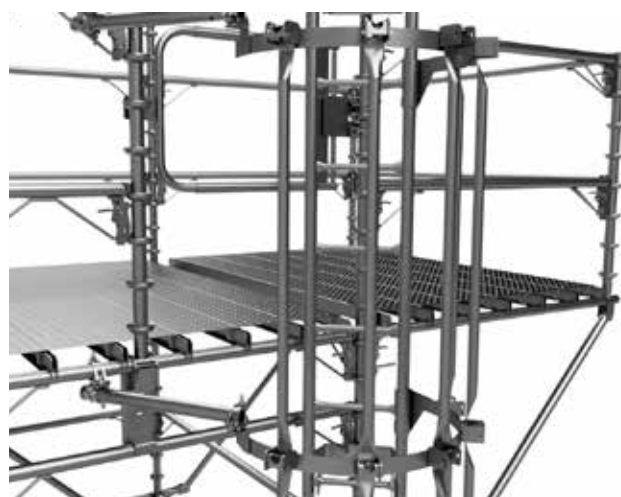
BUILD NOTE:

1. The loading of the duckbill plank and adjacent planks must be taken into consideration when designing the scaffold
2. There must be a minimum overlap of 5 inches at each end of the plank on the bearing surface to prevent slippage.

All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

EXCEL MODULAR LADDER CAGE

Part Number	Description	Weight (lbs.)
LC	Ladder Cage Hoop	10
SLC	Snow Ladder Cage Hoop	12
LC3/4-L	Ladder Cage 3/4 Hoop Left	9
LC3/4-R	Ladder Cage 3/4 Hoop Right	9
SLC3/4-L	Snow Ladder Cage 3/4 Hoop Left	11
SLC3/4-R	Snow Ladder Cage 3/4 Hoop Right	11
LCB4	Ladder Cage Brace 4'	3.5
LCB2	Ladder Cage Brace 2'	1.8



Excel Modular ladder cage accessories allow ladder cages to be added to most scaffold ladders.

BUILD NOTES:

1. The ladder cage should always be removed starting from the bottom towards the top to prevent the swinging of brace components while being dismantled.
2. Ladder cage 3/4 hoops are used to create an opening in the ladder cage to exit to different deck elevations.
3. Tube and clamp is used to provide a handrail at the opening and can be adjusted to fit any scaffold design.
4. Any combination of horizontals/tube and clamp can be used for the handrail.
5. The installer should ensure the cage extends down the ladder to a point not less than seven (7) feet and no more than eight (8) feet above the base of the ladder. It should also extend a minimum of 42 inches above the top of the landing, unless other acceptable protection is provided.

All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

EXCEL MODULAR RAPID ACCESS SYSTEM

ACCESS EQUIPMENT

Part Number	Description	Galvanized Weight (lbs.)
RAS-HRA	Rapid Access System Handrail Adapter	9
RAS-SGA	Rapid Access System Safety Gate Adapter	3
RAS-SLHL	Rapid Access System Ship Ladder Hook Left	1
RAS-SLHR	Rapid Access System Ship Ladder Hook Right	1
RAS-TPB	Rapid Access System Telescoping Plank Bearer	33
RAS-LA5	Rapid Access System Ladder 5'	35
RAS-LA6	Rapid Access System Ladder 6'	42
RAS-LA7	Rapid Access System Ladder 7'	49
RAS-LA8	Rapid Access System Ladder 8'	56
RAS-LA9	Rapid Access System Ladder 9'	63
RAS-LA10	Rapid Access System Ladder 10'	70



All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

The Excel rapid access system provides “stair-like” scaffold access in areas where there is not enough room for a scaffold stair tower. The rapid access system facilitates getting a worker onto work platforms safely and quickly.

EXCEL MODULAR RAPID ACCESS SYSTEM (CONT'D)



RAS Ship Ladder Brackets

Rapid access system ship ladder hooks are easily installed and are attached over the top of a horizontal to provide support for the ladder.

The rapid access system telescoping plank bearer is adjustable for scaffold widths from five (5) feet to nine (9) feet. It is used to provide support for the board deck and supplies a vertical pin connection that allows an eight- (8) cup vertical to be installed for the gate, mid-rail and handrail.

The rapid access system handrail adapter has an Excel end connector on one end and a clamp on the other. It connects a standard vertical to the middle of any horizontal. For the rapid access system, it is used as the handrail and mid-rail on the back side of the floor opening.

The rapid access system safety gate adapter connects between two (2) horizontals to provide a vertical post that can be used to attach the safety gate.

BUILD NOTES:

1. The safety gate must always open into the workspace, and closes against the vertical when it is completely closed.
2. Tube and clamp may be used instead of the rapid access system safety gate adapter.



Clamp bolts should have between 40 and 65 lbs. tension. Overtightening could damage the threads, bolt or item the clamp is attached to.



RAS Telescoping Plank Bearer



RAS Handrail Adapter



RAS Safety Gate Adapter



ACCESS EQUIPMENT

All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

EXCEL MODULAR RAPID ACCESS SYSTEM (CONT'D)

ACCESS EQUIPMENT



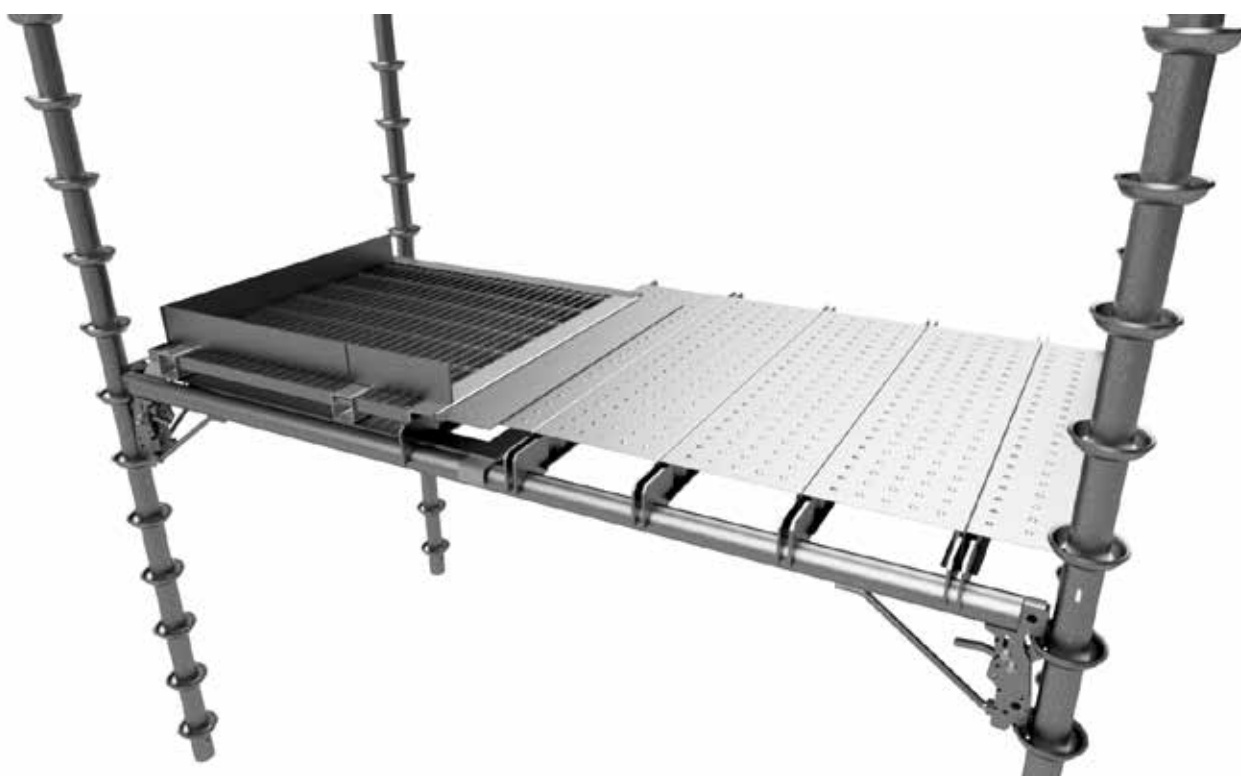
BUILD NOTES:

1. Workers climb the interior of the scaffold tower where the maximum fall is limited to the deck height.
2. The opening is a 36-inch square that accommodates workers and their tools.
3. The opening is handrailed to prevent accidental falls back into access.
4. The rapid access system uses a standard safety gate attached to the horizontal bar for stepping off of the ladder onto the work deck.
5. The top of the handrail has a pin that allows for the insertion of a standard eight- (8) cup vertical gate post in the middle of the board deck.
6. A telescoping plank bearer goes under the long deck boards, allowing the attachment of the shorter deck boards required for the opening.
7. The rapid access system can accommodate construction of tower sizes ranging from five (5) feet x six (6) feet up to seven (7) feet x ten (10) feet without major design changes.
8. Adjustable hooks allow the ladder to remain at a thirty-degree angle, which requires less effort to climb and reduces slip hazards.
9. The rapid access system will accept telescoping metal toe boards to secure deck boards to the bearers.
10. The rapid access system can be used with other modular scaffold systems with minor modifications.
11. The rapid access system does not require special tools for installation and only a minimal amount of in-service training.
12. The rapid access system is meant only for light-duty applications and is limited to a maximum loading of no more than 25 lbs./sq. ft.
13. For scaffolds greater than one (1) work deck high, the rapid access system entrances must be installed in opposite corners of the work platform. The rapid access system is not designed to allow ladder accesses to be placed on top of each other in the same corner.

All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

EXCEL MODULAR LANDING HATCHWAY

Part Number	Description	Weight (lbs.)	Opening Dimensions (inches)	Fits Bay Sizes (inches)	Max. Distributed Load on Hatch with All Boards Installed (lbs./sq. ft.)
LH	Landing Hatchway	32	28 x 28	36 to 60	36



ACCESS EQUIPMENT

In confined spaces, this hatchway is rated for use as a suitable work surface and allows for safe vertical travel between work platforms.

BUILD NOTES:

1. Always install hatches from the bottom, NEVER from above.
2. The load carrying ability of the decking boards may be the limiting factor.



WARNING: Never stand or place a load on a hatchway until all deck boards are properly installed.

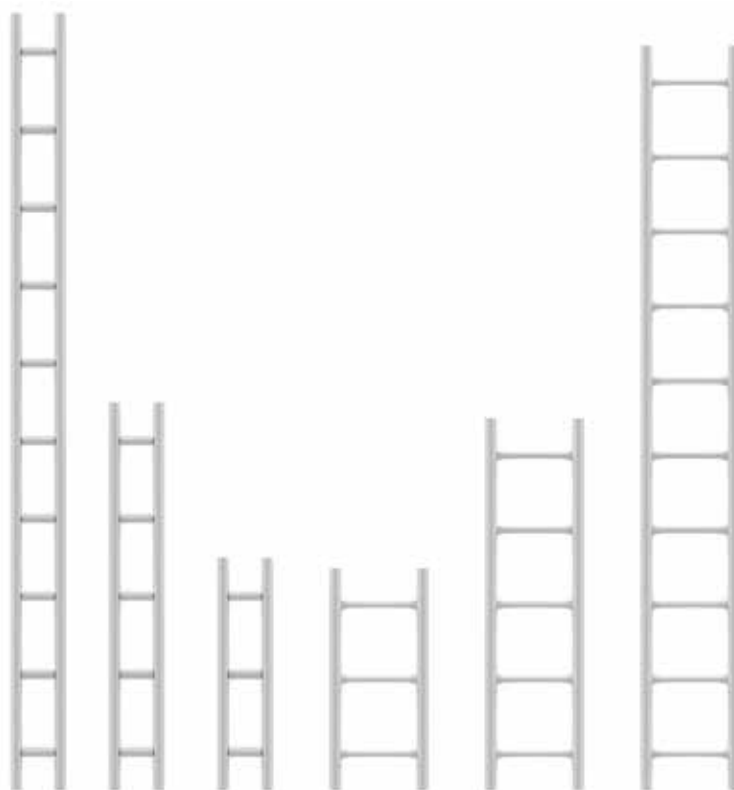
All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

EXCEL MODULAR ALUMINUM LADDER

ACCESS EQUIPMENT

Part Number	Description	Overall Length (inches)	Max. Total Vertical Load on Ladder (lbs.)	Max. Load on One Ladder Rung (lbs.)	Weight (lbs.)
ALA10	10' Aluminum Ladder	120	1,000	500	24
ALA5	5' Aluminum Ladder	60	1,500	500	12
ALA3	3' Aluminum Ladder	36	2,000	500	7
8-ALA10	8" Wide x 10' Aluminum Ladder	120	1,000	500	22
8-ALA5	8" Wide x 5' Aluminum Ladder	60	1,500	500	11
8-ALA3	8" Wide x 3' Aluminum Ladder	36	2,000	500	6.5
AEP	Expansion Pin*	7.5	NA	NA	2.5

*Third-party manufactured component. Data may vary.



BUILD NOTES:

1. When installing aluminum ladders, the expansion pin should always be securely tightened.
2. Ladders are not designed to support loads, such as walkways, pipe supports, pipe hangers, lifting rigs, etc.
3. Ladders should only be used for access.

All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

EXCEL MODULAR ALUMINUM STAIR SYSTEM

Part Number	Description	Weight (lbs.)
DIS42	Drop-In Aluminum Stair Unit 42" Bay	120

Aluminum stairs are built as a single drop-in unit.

BUILD NOTES:

1. All aluminum stair bays are rated with a light-duty rating of 25 lbs./sq. ft.
2. Excel diagonal swivel braces should be used with buttons compressed for stair handrails.
3. Aluminum stair bays can be used with universal steel stair stringers.
4. To transition from a universal stair stringer to a drop-in aluminum stair unit bay or vice versa, a three- (3) foot metal plank should be used with the universal stair stringer.
5. Stair systems are to be inspected prior to each shift. This includes treads, risers and handrails. The stairs should also be tied with #9 wire in heavy wind conditions.
6. Non-skid adhesive tape may be placed on the edge of the treads for better traction.

MATERIAL SPECS:

1. The unit is 34-inches wide and works with a 42-inch wide bay (using 42-inch horizontals as bearers) and used with 7-foot runners.
2. Completed bay size for the aluminum stair tower is 7-feet wide (comprised of two (2) 42-inch bays) x 7-feet long (using 7-foot horizontals as runners).



WARNING: Improper use of stairs could cause serious injury. Always use handrails and step in the center of the stair treads. Always walk down the stairs, do not run or skip treads.

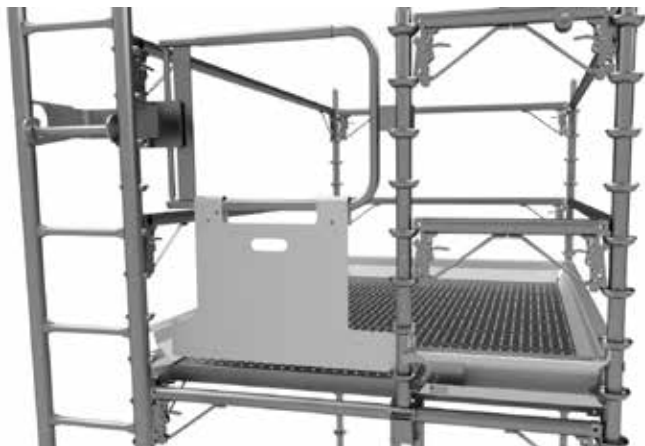


ACCESS EQUIPMENT

All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

EXCEL MODULAR ALUMINUM SAFETY GATE TOE BOARD

Part Number	Description	Load Capacity	Weight (lbs.)
SGTBL	40" Aluminum Safety Gate Toe Board (Long)	50	12
SGTBS	30" Aluminum Safety Gate Toe Board (Standard)	50	10



ACCESS EQUIPMENT

MATERIAL SPECS:

Aluminum safety gate toe boards come in two sizes: 30-inch (standard) and 40-inch (long).

BUILD NOTES:

1. Safety gate toe boards hang over the safety gate and are secured with two (2) bolts and locking nuts.
2. Bolts should not be overtightened as to deform the toe board, but snug plus a ¼ turn.
3. Bolts should be attached no more than ¼ inch above the deck as to meet OSHA requirements for toe boards.



CAUTION: There is a pinch point when installing the aluminum safety gate toe board.

All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

EXCEL MODULAR ELEVATOR STRUT ASSEMBLY

Part Number	Description	Load Capacity (lbs.)	Weight (lbs.)
H-Plate	H-Plate for Back of Beam at Vertical with Bolts	15,000	42
PAS	Telescoping Adjustable Power Strut	15,000	220
SAS	Welded Strut Attachment with Shoe	15,000	84
S-Beam	Beam with Strut Plates	15,000	N/A

BUILD NOTES:

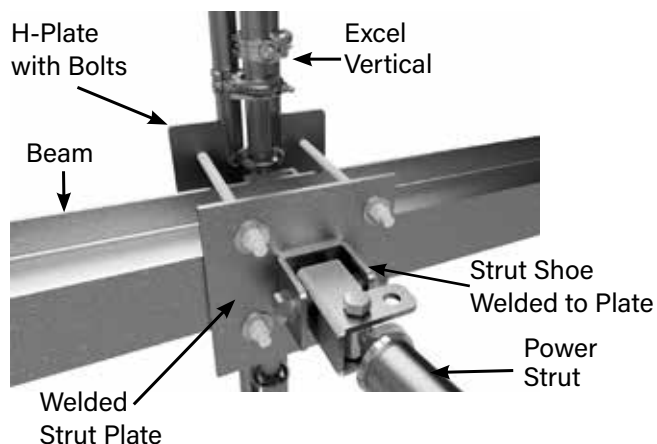
1. The elevator strut assembly shall only be used with Excel scaffolding equipment.
2. The elevator strut assembly shall be designed by a qualified Excel Engineer and have P.E. stamped drawings made prior to installation.
3. The elevator strut assembly is a custom system and must be designed for each application.
4. Only approved beams shall be used when installing the strut assembly.
5. The telescoping adjustable power strut has a maximum distance of 15 feet.



H-plate torque greatly affects the slip loading. Bolts attaching the plates to the vertical shall be tightened to 85 lbs. tension. Overtightening could damage the threads, bolts or items the assembly is attached to. Undertightening could result in the slipping at lower than rated loads.



CAUTION: There is a pinch point where the bolts clamp the plate and at the pivot point.



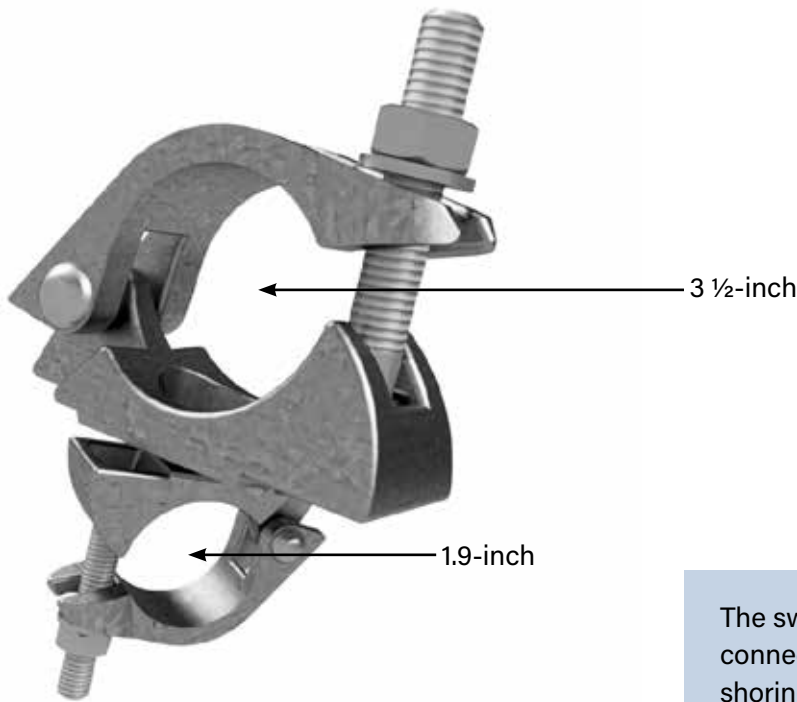
All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

EXCEL MODULAR BIG SWIVEL CLAMP


Part Number	Description	Maximum Slip Loading (lbs.)	Maximum Tension Loading (lbs.)	Weight Galvanized (lbs.)
BAC	3 ½" x 2" Big Swivel Clamp	1,750	1,750	8.5

*Third-party manufactured component. Data may vary. Consult with manufacturer for load rating.

CLAMPS



The swivel beam clamp is used to connect standard tube and clamp to Excel shoring legs for bracing. (See pg. 31)



Clamp bolt tension greatly affects the slip loading on the swivel beam clamp's 3 ½ inch portion.

Clamp bolts should be tightened between 40 and 65 lbs. tension. Overtightening could damage the threads, bolt or item the clamp is attached to. Undertightening could result in slipping at lower than rated loads.

All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

EXCEL MODULAR BIG BEAM CLAMP

Part Number	Description	Maximum Slip Loading (lbs.)	Maximum Tension Loading (lbs.)	Weight Galvanized (lbs.)
BBC1	Big Beam Clamp 1 (2 ½" Throat)	1,750	1,750	10.5
BBC2	Big Beam Clamp 2 (3 ¼" Throat)	1,750	1,750	12

Big beam clamps allow the user to brace scaffold and/or create tie points to beams that have very wide flanges.

The clamps attach to the flange of the I-beam and provide a clamp connection.

BUILD NOTES:

1. Big beam clamps should only be used for bracing. They should never be load bearing.
2. Backup clamps should be used where required to prevent slipping.
3. Multiple clamps should be used to reduce the loading when building a scaffold. Standard clamps should be used as backup clamps (to prevent slip) when a scaffold is installed in high-vibration areas or for extended periods of time.



All bolts should be inspected regularly before use.

Clamp bolts tension greatly affects slip loading.

Clamp bolts should be tightened between 40 and 65 lbs. tension. Overtightening could damage the threads, or item the clamp is attached to. Undertightening could result in clamps slipping at lower than rated loads.



CAUTION: There is a pinch point located where the beam sides are located on the clamp.



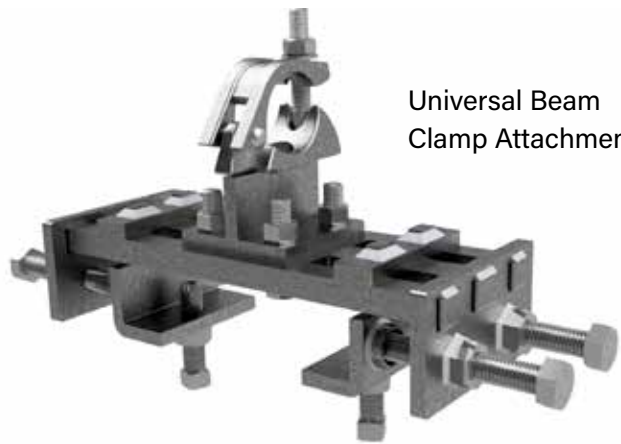
CLAMPS

All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

EXCEL MODULAR UNIVERSAL BEAM TUBE CLAMP

Part Number	Description	Max. Slip Loading (lbs.)	Max. Tension Loading (lbs.)	Weight Galvanized (lbs.)
UBTC-6	Universal Beam Tube Clamp 4"-6"	1,000	4,000	14
UBTC-8	Universal Beam Tube Clamp 6"- 8"	1,000	3,500	14.5
UBTC-10	Universal Beam Tube Clamp 8"-10"	1,000	3,250	15
UBTC-12	Universal Beam Tube Clamp 10"-12"	1,000	3,000	15.5
UBCA	Universal Beam Clamp Attachment	—	—	1
UBVA	Universal Beam Clamp Vertical Attachment	—	—	4

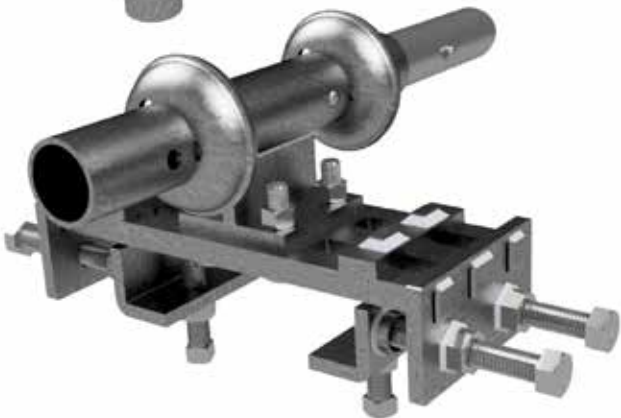
CLAMPS



Universal Beam Clamp Attachment



Universal Beam Clamp Vertical Attachment



Universal beam tube clamps allow the user to design and build scaffolding in locations where there are accessible, approved I-beams. Where a scaffold was once needed to be built from the ground, it can now be built from elevated beams or columns.

BUILD NOTES:

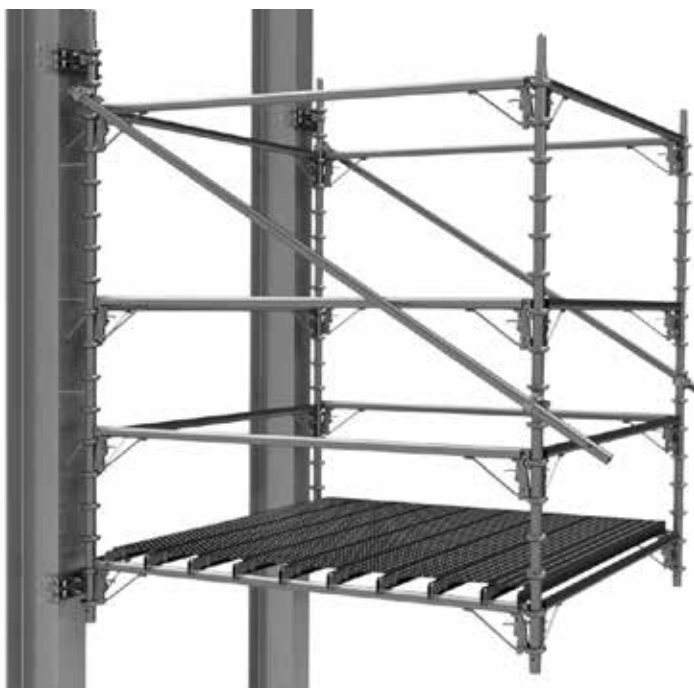
1. The clamps attach to the flange of the I-beam and can be rotated in any direction.
2. Used in conjunction with adjustable plank bearers and standard Excel components, universal beam tube clamps can save on time and material needed to build certain scaffolds.
3. Flange width is adaptable up to a 1-inch thick flange.



Clamp bolts should have between 40 and 65 lbs. tension. Overtightening could damage the threads, bolt or item the clamp is attached to.

All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

EXCEL MODULAR UNIVERSAL BEAM TUBE CLAMP (CONT'D)



CLAMPS

BUILD NOTES:

1. The scaffold should be designed for light-duty use and deck loading must not exceed 25 lbs./sq. ft.
2. The maximum horizontal used for the cantilever must not exceed five (5) feet.
3. **Each scaffold will require a minimum of six (6) points of attachment.**
4. Multiple clamps should be used to reduce the loading when building any scaffold. Standard beam clamps should be used as backup clamps (to prevent slip) when a scaffold is installed in high-vibration areas or for extended periods of time.



Clamp bolts should have between 40 and 65 lbs. tension. Overtightening could damage the threads, bolt or item the clamp is attached to.

ENGINEERING NOTES:

Tension loading is when the force tries to pull the clamp away from the I-Beam

Slip loading is when the force tries to slide the clamp along the beam (up or down in the picture below.)

Consult with a qualified person or engineer for loading criteria.

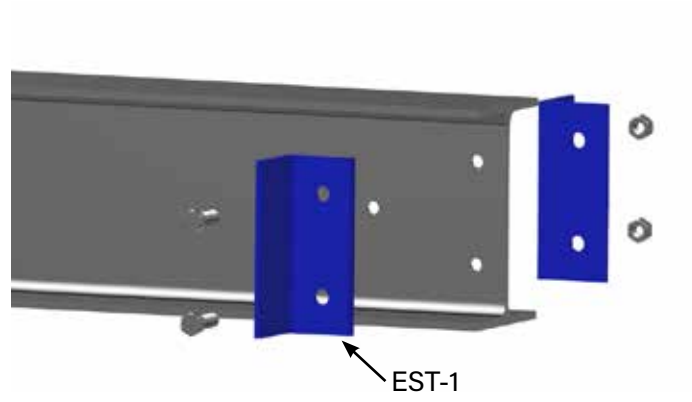
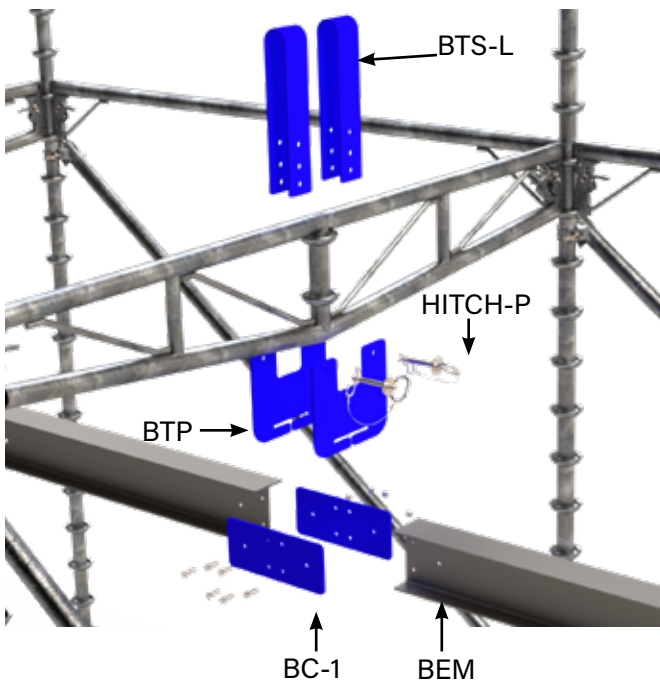
All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

EXCEL MODULAR TROLLEY SYSTEM

TROLLEY SYSTEM

Part Number	Description	Galvanized Weight (lbs.)	Length (ft.)
BTRLY	1.5 or 2 Ton Trolley*	48	—
BTS	Beam Trolley Strap	5	—
BTS-L	Beam Trolley Strap-Long	7	—
BTP	Beam Trolley Plate	5	—
HITCH-P	Hitch Pin*	1	—
BEM-20	20' I-Beam (W6x9)*	180	20
BEM-13	13' I-Beam (W6x9)*	117	13
BEM-11	11' I-Beam (W6x9)*	99	11
BEM-9	9' I-Beam (W6x9)*	81	9
BEM-8	8' I-Beam (W6x9)*	72	8
BEM-7	7' I-Beam (W6x9)*	63	7
BEM-5	5' I-Beam (W6x9)*	45	5
EST-1	End Stop with Fasteners	3	—
BC-1	Beam Connector with Fasteners	3	—

*Third-party manufactured component. Data may vary.



All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

ENGINEERING NOTES:

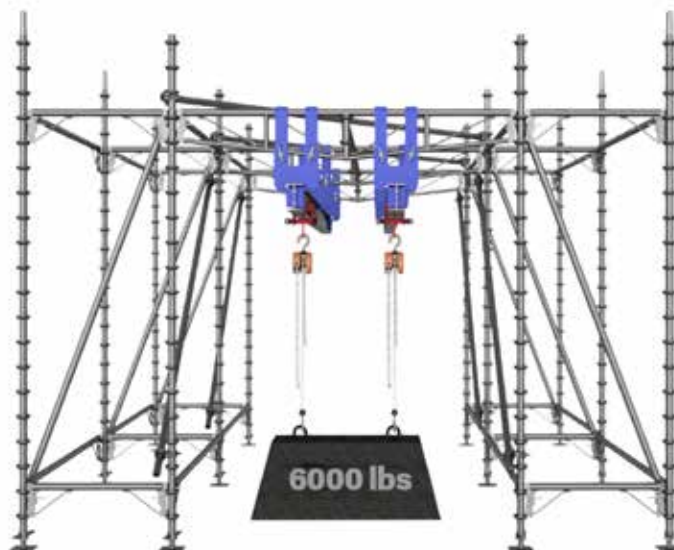
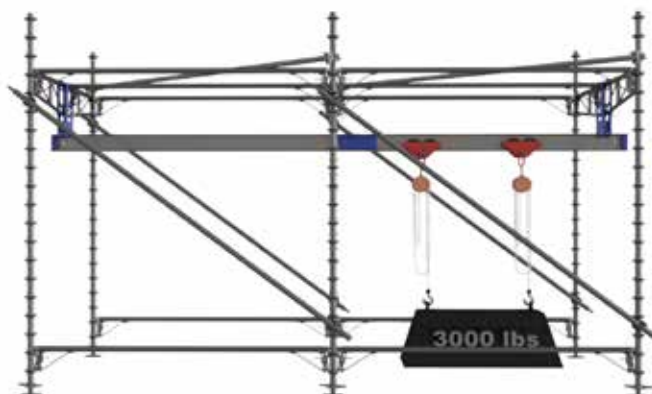
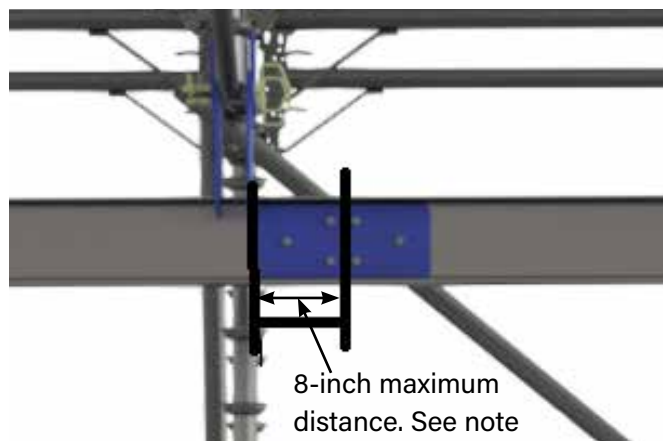
1. BTS works with old Excel trusses.
2. BTS-L works with both new and old Excel trusses.

EXCEL MODULAR TROLLEY SYSTEM (CONT'D)

The Excel trolley system is to be used with Excel trusses. When properly designed and installed, the system is capable of lifting a maximum of 3,000 pounds, allowing for the removal of loads within congested areas without overhead crane capabilities.

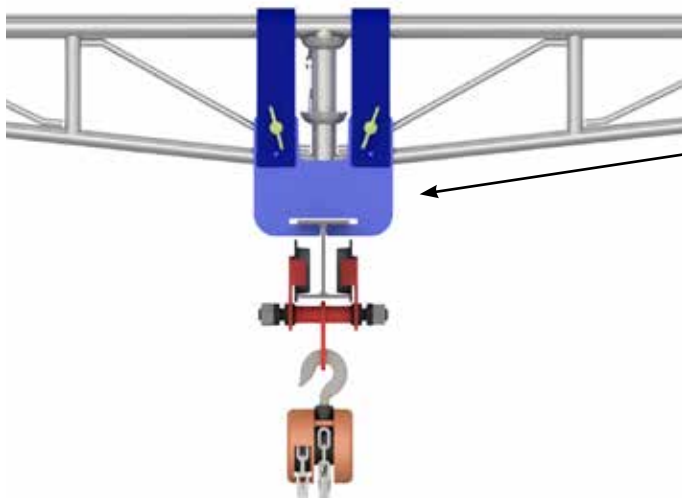
BUILD NOTES:

1. Maximum VERTICAL load of system is 3,000 lbs. System is not designed for side loads.
2. Use multiple beams to:
 - a.) improve handling/control of load.
 - b.) increase capacity to 6,000 lbs. when evenly distributed to each beam (6,000 lbs. when using four- (4), five- (5), eight- (8), nine- (9), 10- and 12-foot trusses.)
3. Use multiple trolleys to:
 - a.) stabilize unsteady loads of 3,000 lbs. or less.
 - b.) increase capacity to 6,000 lbs. when evenly distributed to each trolley. Trolley spaced no closer than max beam support spacing—seven (7) feet.
4. Frame considerations:
 - a.) Horizontal members spaced vertically, no greater than 6 feet–8.5 inches.
 - b.) Seven (7) feet max spacing between supports.
 - c.) Trolley, beam and assembly hang 27-29 inches below top of truss. Account for openings with additional rigging.
 - d.) Beam ends and splice locations must be within 8 inches of beam support at truss. Never splice in middle of supports.
 - e.) Verify ground can handle anticipated loads.
 - f.) Bracing and/or anchors are required for stability.
5. **Consult an engineer for each application.**



All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

EXCEL MODULAR TROLLEY SYSTEM (CONT'D)



Beam trolley plate must be installed **inside** the beam trolley straps.

EXAMPLE MATERIAL REQUIREMENTS:

	1 Bay	2 Bays	3 Bays
BTRLY	1	1	1
BTS	4	6	8
BTP	4	6	8
HITCH-P	4	6	8
BEM-5, -7, -9, -11, -13, -20	1	1	2
EST-1	2	2	2
BC-1	0	0	2

*Double quantity if double beams.
Conditions in this manual apply.

ENGINEERING:

1. Loads over 3,000 lbs. must be supported using adequate bracing and beam configuration. **An Excel Engineer must be consulted for proper configuration and required bracing prior to installing.**
2. All beam splices must be within eight (8) inches of a beam trolley strap and support truss. Beams may never be spliced in the middle of a run. $\frac{3}{8}$ x $1\frac{1}{8}$ inch, grade 5 or stronger bolts shall be used for splicing.

All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

BUILD NOTES:

1. The trusses supporting the trolley system should not be used to support a scaffold board deck.
2. The trolley must not be allowed to pass the outermost truss.
3. The vertical support for the trusses must be designed to support the required loads.
4. All end stops and connector plates must be installed before the trolley system is used.
5. The trolley beam must be level when installed.
6. Do not substitute other components for connectors, end stops, trolley straps, bolts, etc.
7. Extra bracing is required when installing a trolley system. Bracing should be added to prevent shifting in the direction of movement.
8. Mechanical means shall never be used to move the load.
9. Sudden starts and stops must be prevented.

MAINTENANCE:

1. The trolley should be periodically maintained.
2. If there are grease points, they should be filled with white lithium grease (ST-80 High-Performance Grease or equivalent).
3. Trolleys without grease points should be lubed with a 10-weight oil or consult manufacturing specifications.
4. WD-40 can be used before application of grease or oil to loosen old grease and remove any rust buildup.
5. Unless a special beam is used or the maximum load decreased, regardless of the beam length, each trolley system beam must be supported with a beam trolley strap kit every seven (7) feet.
6. Consult your rigging department for maintenance recommendations.

EXCEL MODULAR SHORING POSTS

Part Number	Description	Effective Length (inches)	Overall Length (inches)	Galvanized Weight (lbs.)
SHP2	2-Cup Shoring Post	11.5	18.5	26
SHP4	4-Cup Shoring Post	23	30	30
SHP6	6-Cup Shoring Post	34.5	41.5	41.3
SHP8	8-Cup Shoring Post	46	53	52.6
SHP10	10-Cup Shoring Post	57.5	64.5	52.6
LSH	Large Shoring Head	46	60	94
LHJ	Large Shoring Jack	46	60	93
BAC	Big Swivel Clamp (3.5" x 2")	—	—	6.7
LSJW	Shoring Wrench	—	—	10



BUILD NOTES:

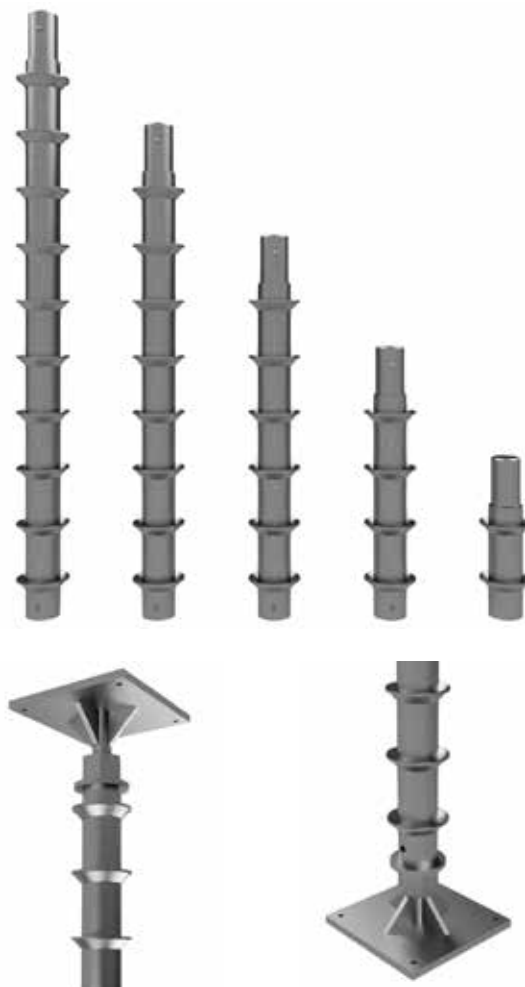
1. Cup spacing is 5.75 inches, the same as standard Excel verticals.
2. Shoring posts are 100% compatible with standard Excel material and may be intermixed to provide the best design.
3. Due to the diameter of the Excel shoring verticals, standard length pans will not fit between the spacing of the horizontals. This is due to increased spacing of 1 2¹/₃₂ inches.
4. **All shoring must be approved by an Excel Engineer and P.E.**

MATERIAL SPECS:

1. The pin material is made out of 3.0 OD 1/4-inch wall DOM tubing.
2. The shoring post material is made out of standard 3.5 inch OD schedule 40 material.



CAUTION: There are pinch points located where the screw jack meets the verticals.



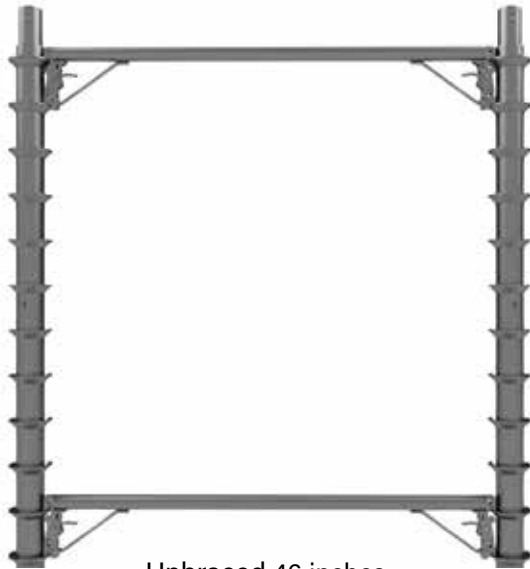
All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

SHORING MATERIAL

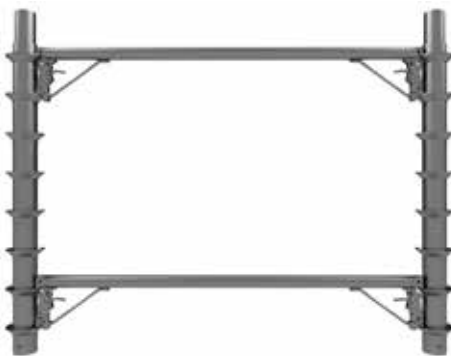
EXCEL MODULAR SHORING POSTS (CONT'D)

Unbraced Post Length (inches)	Maximum Allowable Compressive Load When Rated for Scaffold Use (lbs.)	Maximum Allowable Compressive Load When Rated for Shoring Use (lbs.)
46	25,000	35,000
23	27,500	37,500

SHORING MATERIAL



Unbraced 46 inches



Unbraced 23 inches

BUILD NOTES:

1. Shoring posts are 100% compatible with Excel standard horizontals and trusses and may be intermixed to provide the best design.
2. Diagonal bracing is comprised of standard 1.9-inch tube and 3.5- x 1.9-inch swivel clamps (See pg. 24).

ENGINEERING:

1. Allowable loads when rated for scaffold use, include OSHA (4:1) factor.
2. Allowable loads when rated for shoring use, include OSHA (2.5:1) factor.
3. **All shoring applications shall have a drawing provided by an Excel Engineer and require a P.E. stamp.**



CAUTION: There are pinch points located where the screw jack meets the verticals.

All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

EXCEL MODULAR SHORING HEADS AND JACKS

Unbraced Post Length (inches)	Maximum Allowable Compressive Load When Rated for Scaffold Use (lbs.)	Maximum Allowable Compressive Load When Rated for Shoring Use (lbs.)
46	25,000	35,000
23	27,500	37,500

BUILD NOTES:

1. Shoring heads and jacks are 100% compatible with Excel standard horizontals and trusses and may be intermixed to provide the best design.
2. Diagonal bracing is comprised of standard pipe and 3.5- x 2-inch swivel clamps.

ENGINEERING:

1. Allowable loads when rated for scaffold use, include OSHA (4:1) factor. When designing scaffolds with unique configurations or special loading conditions, drawings must be provided by an Excel Engineer, as well as the drawing be P.E. stamped.
2. Allowable loads when rated for shoring use, include OSHA (2.5:1) factor. All shoring applications shall have a drawing provided by an Excel Engineer and require a P.E. stamp.
3. **All shoring designs must be approved by a professional engineer.**



CAUTION: There are pinch points located where the screw jack meets the verticals.

Shoring jacks telescope causing pinch points. Use caution when loading, carrying and installing jacks.



Shoring Head



Shoring Jack

SHORING MATERIAL

All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

DESIGN OF SEISMIC SCAFFOLDING

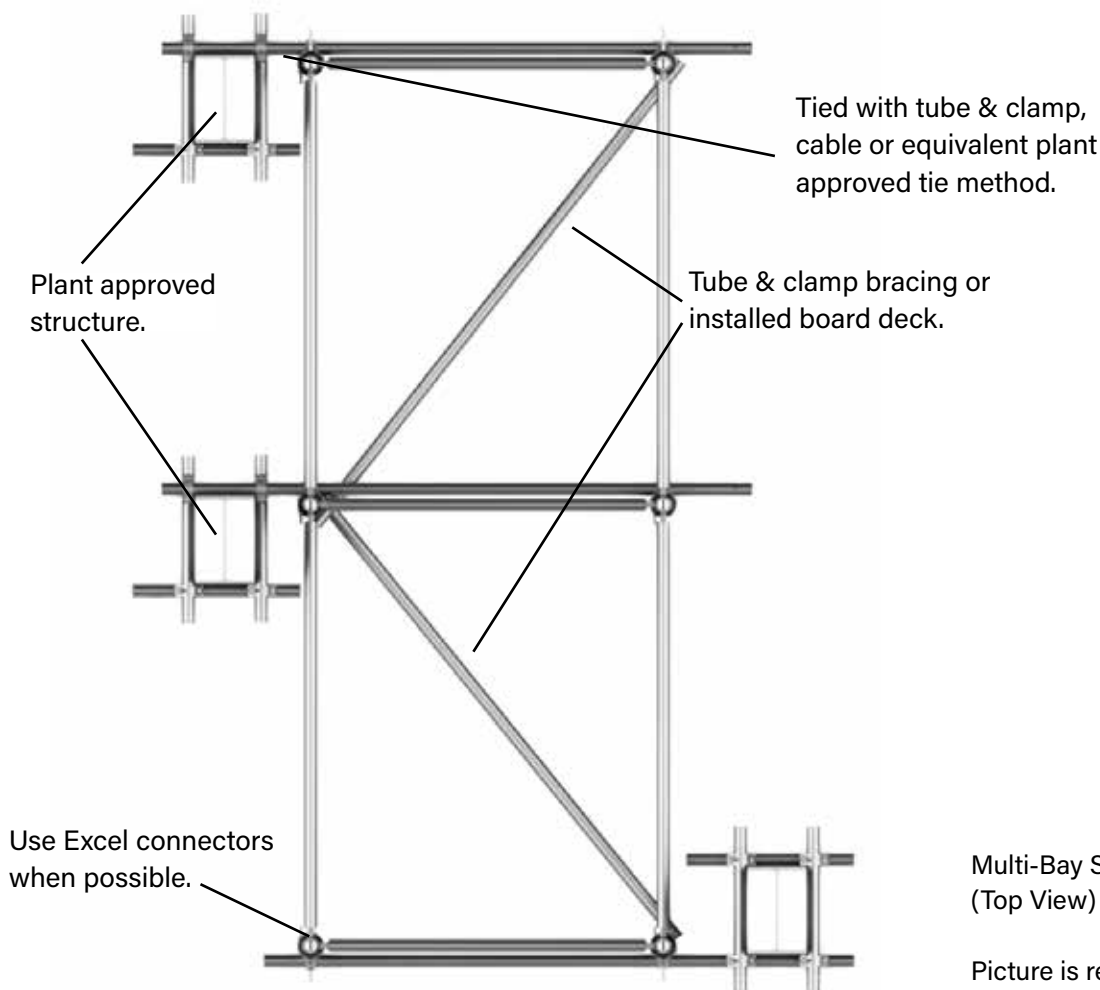
Design and construction of scaffolding in safety-related areas (near rotating equipment, instrument tubing, trip-sensitive equipment, control panels, regulated areas, etc.) requires additional precautions. These guidelines are not intended to be all-inclusive and are for those companies, plants, and clients that do not already have policies, procedures and conditions in place for regulated safety areas and those requiring seismic designed scaffolding. The client's engineering department should be consulted for exact guidelines, procedures, policies, and any site-specific requirements the plant may already have in place to work in these areas.

For clients that do not have design procedures, policies, and conditions in place, the primary concern associated with scaffold installation in safety-related areas involves damage that could be caused to sensitive equipment if the scaffold should slide, change shape, collapse or overturn. In order to prevent any scaffold material from coming into contact with safety-related system equipment, the following guidelines should be observed. The words *shall* and *must* require that the conditions be followed without variance as it is written.

1. The scaffold shall be designed to meet all Federal, State, local and plant safety regulations.
2. The height of the scaffold should not exceed three (3) times the smallest dimension.
3. The scaffold should be fastened at the verticals or horizontals with tube and clamp or equivalent to plant approved structural steel components (i.e. I-beams, handrails, grating, etc.) at the top, middle and base of the scaffold. Diagonal bracing, cantilevered brackets, and side brackets must not be used to secure the scaffold.
4. To prevent movement, the scaffold should be secured at two (2) separate locations, on opposite corners (see sample bracing diagrams). Scaffolds with more than one (1) bay should be secured at as many outside verticals as possible, (see sample multi-bay scaffold diagram (pg. 35).
5. All scaffolds installed near or around safety-related equipment must be secured at as many outside verticals as possible.
6. The scaffold must have an installed board deck or should be braced to prevent the scaffold from changing shape (see sample bracing diagrams on pg. 35).
7. All pins connecting verticals and horizontals must be securely fastened.
8. No unnecessary items or scaffold material should be left unsecured on the scaffold at any time.
9. The scaffold should not be left unattended at any time, until it is braced and/or tied adequately with any loose tools secured prior to leaving.
10. The scaffold should be provided with screens, mesh or other suitable means to prevent materials from being dropped on safety-related equipment. Tying off equipment and tools is acceptable.
11. Material or equipment should not be left unattended on any scaffold when the scaffold is not in use.
12. Diagonal braces must be installed on all possible sides. Diagonal braces with Excel trigger end connectors must be tie-wired with one (1) strand of #9 wire or equivalent at the ends. When possible all braces should be wire-tied with one (1) strand of #9 wire or equivalent in the center. Diagonal braces that use ½ clamps, and tube and clamp diagonal bracing do not require #9 wire at the attachment points.
13. Horizontal wraps should be placed at 3.5 feet intervals.
14. A scaffold with wooden parts, including decking, should be free from holes, saw cuts, splits, and gaps.
15. Decking should be placed with no holes or missing boards to help maintain a square and ridged scaffold.
16. All platform decking must be secured (i.e. #9 wire or equivalent means) to the horizontal ledgers that are used for support
17. The scaffold must be designed to allow access to safety-related equipment at all times.
18. Scaffold should be removed upon job completion.
19. All Excel scaffold components, including ladders, gates, folding side brackets, side brackets, toe boards, telescoping braces, etc., can be used when constructing an Excel scaffold structure, as long as those components were installed properly in accordance with the Excel Standard Component Technical Manual specifications, and also in accordance with the plant's existing seismic procedure guideline criteria enforced at each facility for erecting scaffolding in safety-related areas.

All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

DESIGN OF SEISMIC SCAFFOLDING (CONT'D)



Multi-Bay Scaffold
(Top View)

Picture is representative. Tie types and plant approved structures may vary.

BUILD NOTES:

1. All methods of securing may not be available. Allow a minimum of two (2) methods of bracing, on opposite sides at the top, center, and the base.
2. For scaffolds above 15 feet in height, bracing should be repeated at seven (7) foot intervals. Individual plant procedures may vary.
3. Use Excel scaffold system connections whenever possible, since they do not loosen during a seismic event.

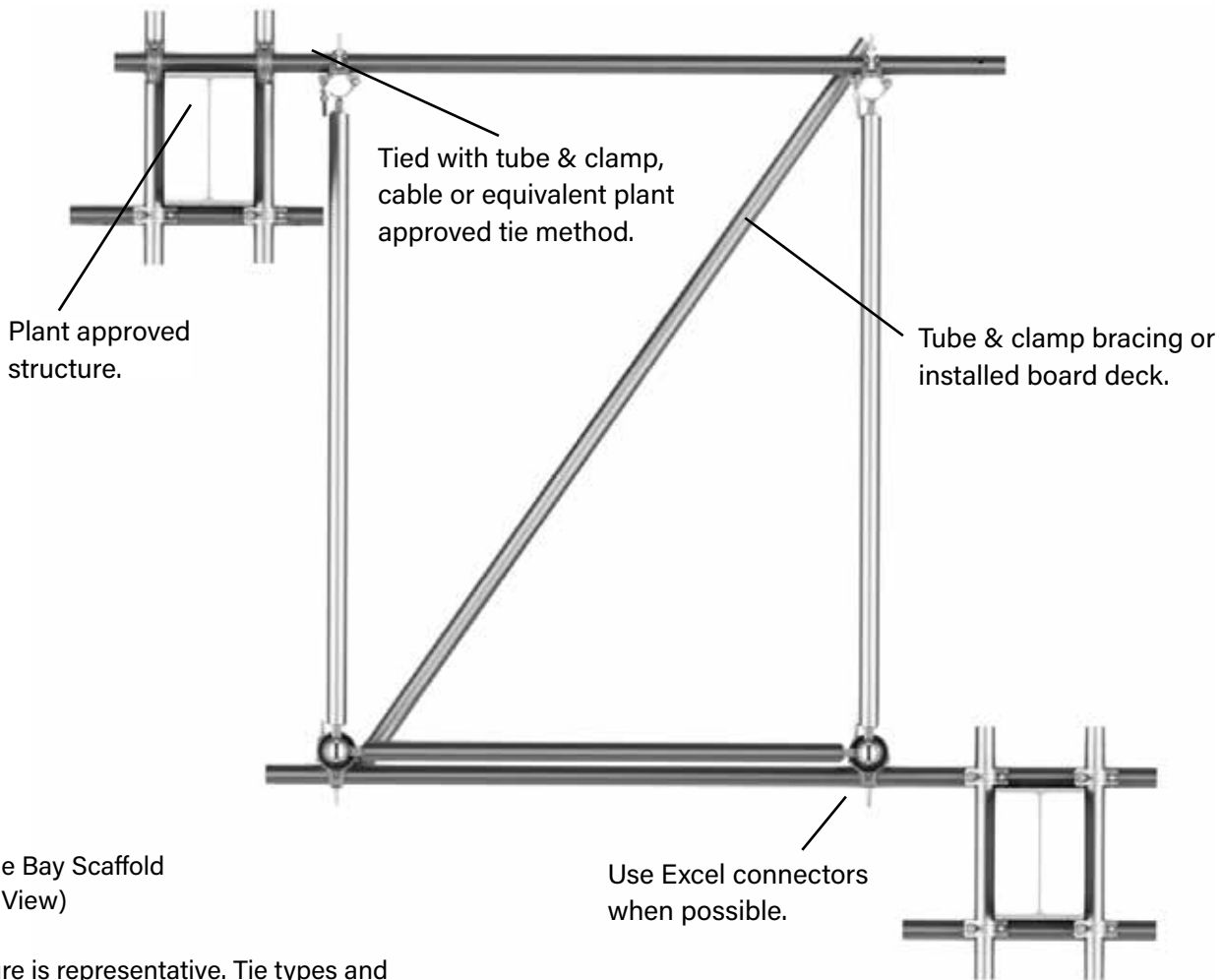


All clamp connections must be checked for tightness after any seismic event.



All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

DESIGN OF SEISMIC SCAFFOLDING (CONT'D)



Single Bay Scaffold
(Top View)

Picture is representative. Tie types and plant approved structures may vary.



BUILD NOTES:

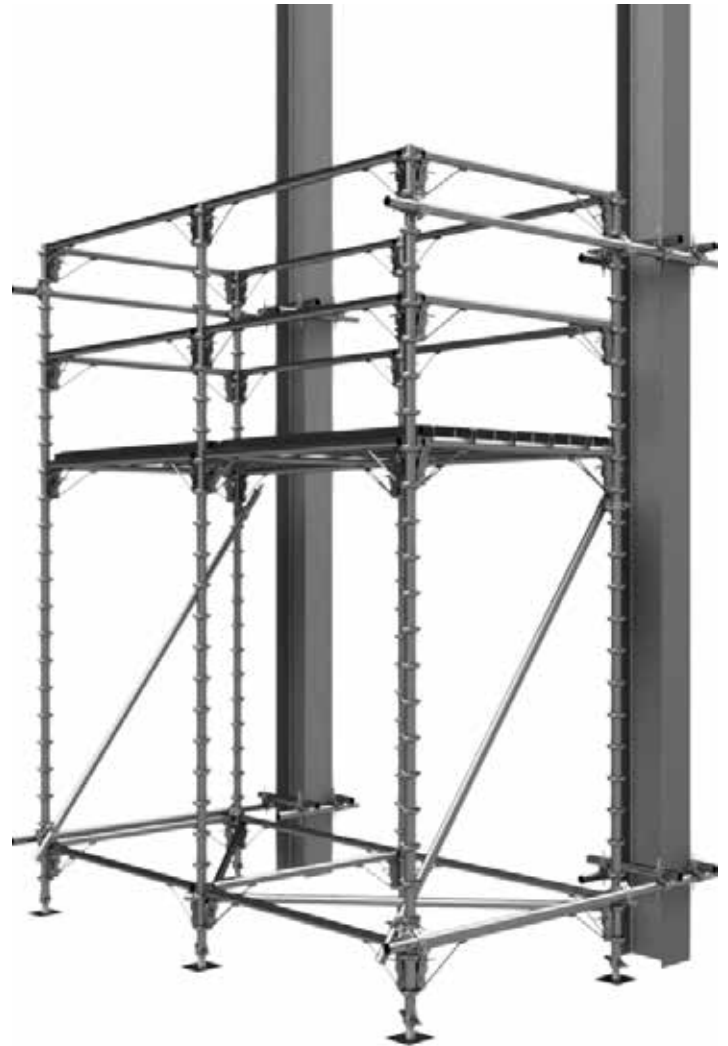
1. All methods of securing may not be available. Allow a minimum of two (2) methods of bracing, on opposite sides at the top, center, and the base.
2. For scaffolds above 15 feet in height, bracing should be repeated at seven (7) foot intervals. Individual plant procedures may vary.
3. Use Excel scaffold system connections whenever possible since they do not loosen during a seismic event.



All clamp connections must be checked for tightness after any seismic event.

All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

DESIGN OF SEISMIC SCAFFOLDING (CONT'D)



BUILD NOTES:

1. All methods of securing may not be available. Allow a minimum of two (2) methods of bracing, on opposite sides at the top, center, and the base.
2. For scaffolds above fifteen (15) feet in height, bracing should be repeated at seven (7) foot intervals. Individual plant procedures may vary.
3. Use Excel scaffold system connections whenever possible since they do not loosen during a seismic event.



All clamp connections must be checked for tightness after any seismic event.

All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

EXCEL MODULAR SKID PANS

Part Number	Description	Bottom Length (ft.)	Full Length (ft.)	Empty Weight Galvanized (lbs.)	Maximum Allowable Total Load (lbs.)
Skid-8	8' Long Skid Pan	6	8	900	3,000
Skid-10	10' Long Skid Pan	8	10	1,050	3,000

Maximum allowable loads shown includes the weight of the skid pan plus the pan's contents.

*Third-party manufactured component. Data may vary.

Skid pans are used to move scaffold material from ground level closer to the location the material is required. This may be a higher elevation or across obstructions, such as fences, roads, streams, etc.

The following guidelines must be followed, regardless of the type of skid pan used:

1. All skid pans, cables, shackles and associated lifting equipment must be thoroughly inspected by the designated person when first delivered to the jobsite. The inspection must meet the requirements as defined in ASME B30.20-1-3.
 - a) A visual inspection must be performed by a qualified person making records of the apparent external condition to provide the basis for a continuing evaluation.
 - b) The inspection must be documented, dated and signed by the person performing the inspection.
2. For all equipment, inspect:
 - a) Structural members for deformation, cracks or excessive wear.
 - b) Loose or missing guards, fasteners, covers, stops or name plates.
 - c) All functional operating mechanisms for mis-adjustments interfering with operation.
 - d) Deformation—Any bending or twisting exceeding 10 degrees (or as recommended by the manufacturer) from the normal plane.
 - e) Throat opening—Any distortion causing an increase in the throat opening exceeding 15% (or as recommended by the manufacturer).
 - f) Wear—Any wear exceeding 10% (or as recommended by the manufacturer) of the original section dimensions.
3. Frequent visual examinations shall be performed weekly (or more frequently if recommended by the designated person) while the equipment is in service. No records required.
4. A documented thorough inspection shall be performed any time there is reason to believe part of the lifting equipment may have been damaged during use.
5. A skid pan shall not be used if it does not contain a label plate that lists the manufacturer, a serial number and the rated load.
6. When not in use, the skid pan and all lifting components shall be stored to protect the life of the equipment.



All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

EXCEL MODULAR TIE-OFF LUG

Part Number	Description	Maximum Load (lbs.)	Weight (lbs.)
TOL	Tie-Off Lug	5,000	2.5



FALL ARREST

BUILD NOTES:

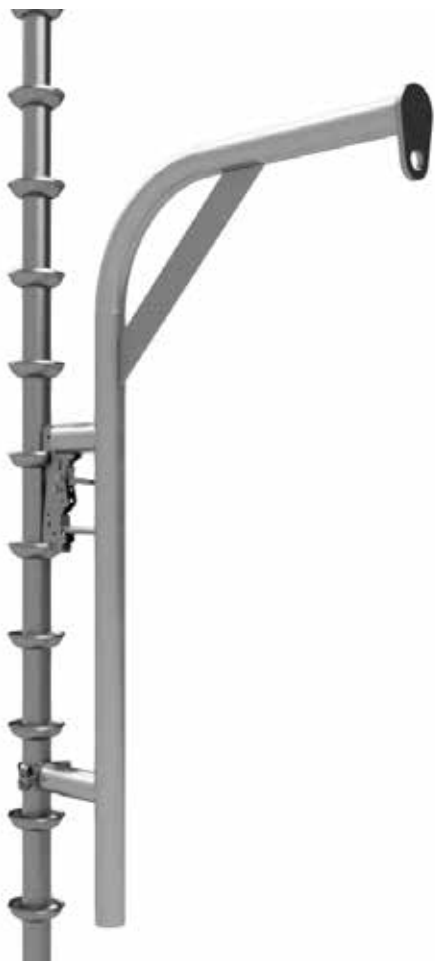
1. The tie-off lug is to be used with Excel scaffold only.
2. The tie-off lug is to be placed over an existing coupling pin and slid down to sit firmly against the vertical post.
3. Tie-off lugs can be used with either standard lanyards or SRL devices.
4. A maximum of one (1) tie-off lug and one (1) person can be tied off to a vertical post at one time.
5. If a fall occurs, the tie-off lug and related fall protection components shall be immediately removed from service and given to a supervisor or manager. Excel's Safety Department should be notified immediately.

All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

EXCEL MODULAR DAVIT ARM

Part Number	Description	Load Capacity (lbs.)	Galvanized Weight (lbs.)
DAVIT-1	Davit Arm Tie-off Bracket	5,000	21

FALL ARREST



The davit arm is used with a retractable lifeline, or lifeline, rope grab and standard lanyard.

Davit arm can also be used for lifting.

BUILD NOTES:

1. The davit arm is to be used with Excel scaffold components only.
2. The davit arm is to have its top connection at the same elevation as the top full wrap of the scaffold.
3. A maximum of one (1) person can be tied off to the davit arm at one time.
4. Consult an engineer prior to using the davit arm for lifting. Additional tying and bracing may be required.
5. Only hand-operated systems shall be used (chainfall, come-along, rope and pulley).
6. No electric or mechanical lifting devices shall be used.



Clamp bolts tension greatly affects slip loading.

Clamp bolts should be tightened between 40 and 65 lbs. tension. Overtightening could damage the threads, or item the clamp is attached to. Undertightening could result in clamps slipping at lower than rated loads.



CAUTION: There is a pinch point located at the trigger.

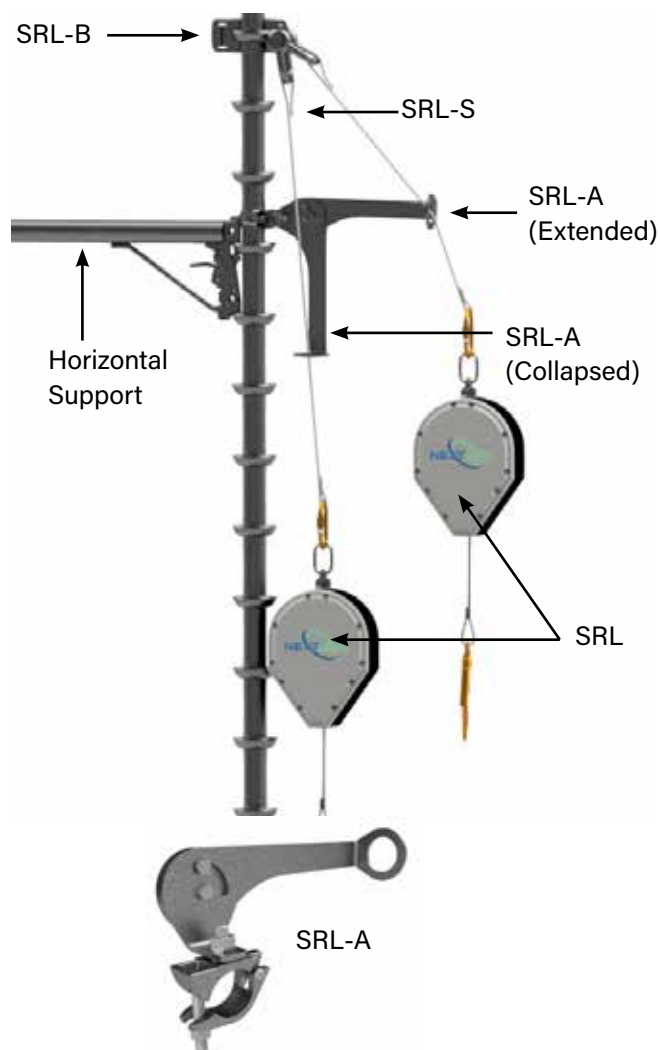
All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

EXCEL MODULAR SRL ADAPTER

Part Number	Description	Weight Galvanized (lbs.)
SRL-A	SRL Adapter	2
SRL-B	SRL Adapter Clamp	1
SRL-C	SRL Choker	1
SRL-S	SRL Shackle	1
SRL	Self-Retracting Lanyard	6

BUILD NOTES:

1. The cable supporting the SRL adapter must be secured to a vertical at least four (4) cups above the top of the ladder at the base of the adapter. The adapter must also have a horizontal support at both the adapter and adapter clamp at the same elevations. There should be three (3) cups between the adapter and adapter clamp as shown in the drawing.
2. The swivel bolt on the SRL adapter must not be overtightened.
3. The SRL adapter must be set at the alignment marks, so that cable supporting the end of the adapter is one (1) inch below the center of the adapter.
4. The SRL adapter is never intended to carry a load. It aligns the SRL or other safety device with the ladder access.
5. As a load is applied to the SRL adapter, it will retract bringing the SRL or other ladder safety device and load toward the scaffold and ladder, allowing the vertical post to absorb the downward load.
6. The SRL must be fastened high enough above the ladder that it is not possible for the person climbing the ladder to come in contact with it.
7. The SRL or other ladder safety device will drop approximately four (4) inches as the SRL adapter retracts.
8. The tension bolts must be torqued to the minimum level required to support the weight of the SRL or other safety device.
9. The SRL adapter clamp or other approved means can be used to attach the SRL cable to the vertical.

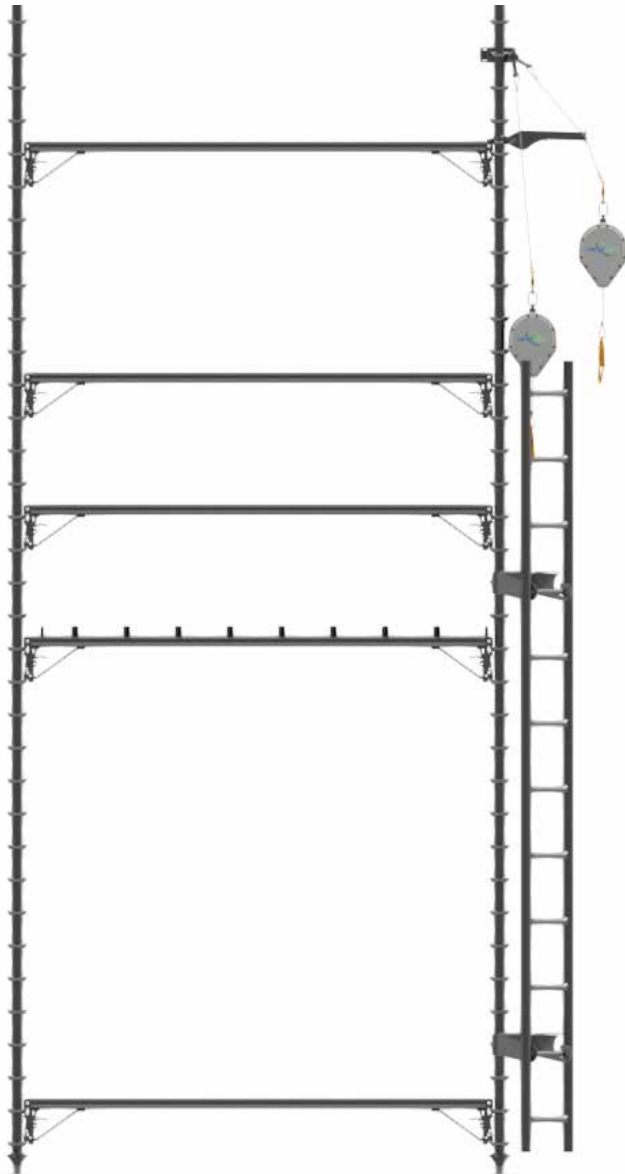


The SRL adapter provides support and ladder clearance when using a retractable SRL device to protect workers on the scaffold ladder access.

All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

EXCEL MODULAR SRL ADAPTER (CONT'D)

FALL ARREST



Sample of SRL adapter installation (other designs are possible).

BUILD NOTES:

1. Do not overtighten the tension bolts. The SRL adapter must be allowed to move to prevent bending the vertical post.
2. The SRL or other safety device must be installed, so that the end of the SRL adapter clears the top of the SRL in the down position.
3. The end supporting the cable must be installed one (1) inch below the center bolt of the SRL adapter.
4. The cable used to secure the SRL must move freely in the SRL adapter. Use 1/4- or 5/16-inch cable only.
5. When used, the SRL adapter clamp must be securely latched and bolted.
6. All cable connections must be double-cable clamped or use approved cable chokers.
7. The SRL system is designed for a maximum load of 5,000 lbs.



Clamp bolts should have between 40 and 65 lbs. tension. Overtightening could damage the threads, bolt or item the clamp is attached to.



CAUTION: There is a pinch point located where the beam sides are located on the clamp.

All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

SCAFFOLD INSPECTION GUIDELINES

During manufacture, Excel Modular Scaffold material goes through a very intensive inspection program. Each part is handled and inspected two (2) times. Items are then randomly selected for non-destructive testing and a final inspection is performed. Further visual inspection is performed as the material is loaded for shipment to any jobsite.

Even with this intensive inspection system, it is still the responsibility of the end-user to ensure each piece of scaffold material installed is free of defects.

Scaffolds are usually built by one craft group and then work is performed on and around the scaffold by many different craft groups. During normal use, it is possible that scaffold components will become damaged. The following are general guidelines to aid the end-user in identifying potential problems with Excel Modular Scaffold material. This list is by no means all-inclusive, and is provided only as a general guide.

All components must be checked every time they are used, prior to installation or removal, for any visible damage, missing or broken welds, deformed or dented parts that may affect the strength of the item, saw marks, welding burn marks, excessive rust or chemical damage.



WARNING: Material must be removed from service any time rust or chemical damage has affected the strength or fit of the material. This is especially critical with the trigger and spring assembly.

End-users should immediately contact Excel Modular Scaffold and Leasing Corporation at (225) 777-4157 regarding any abnormal issues or concerns.

1. Boiler equipment must be free of any visible damage, missing or broken welds. The tubing and beams must be free of any saw marks, welding

burn marks, large dents or other damage. Special attention must be placed on the shoring beams and ladders to ensure they are undamaged.

- 2. Lifting devices** must be inspected before use. They must be free of any visible damage, saw marks, welding burn marks, large dents or other damage. The bolts must be tightened and free of defects. The vertical the lifting device is attached to must be inspected, and all vertical locking clamps installed at the joints of the vertical.
- 3. Rapid access equipment** must be free of any visible damage, saw marks, welding burn marks, large dents or other damage. The clamp rivets must be examined for wear or bending and the bolt threads must be free of defects. Special attention must be given to the ladder hooks to ensure they are unbent and free of damage.
- 4. Roof adapters** must be free of any visible damage or missing or broken welds. Special attention must be placed on inspecting the end connector where it fits into the cup and the trigger to ensure it fits snugly onto the vertical cups and that there is no visible damage or bending.

Inspection guidelines for scaffold material not listed here can be found on page 112 of the Excel Modular Scaffold Standard Technical Manual.

All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

SCAFFOLD INSPECTION GUIDELINES

5. **SRL adapter parts** must be inspected daily before use. They must be free of any visible damage. The clamp rivet must be examined for wear or bending and the bolt threads must be free of defects. The adapter clamp must be free of any bending (it must be discarded if used to prevent a fall or damaged), the bolts must free of defects. The wire rope must be inspected as required by OSHA. Wire rope shall be replaced if the rope has any physical damage which impairs its function and strength—six (6) randomly distributed broken wires in one rope lay or three (3) broken wires in one strand in one rope lay, abrasion, corrosion, scrubbing, flattening or peening causing loss of more than one-third ($\frac{1}{3}$) of the original diameter of the outside wires, evidence of any heat damage resulting from a torch or any damage caused by contact with electrical wires.

6. **Trolley beams** must be free of any visible damage. They must not contain saw marks, welding burn marks, large dents or other damage which may affect the strength of the member. The bottom web, which supports the trolley, must be free of dents or bends.

7. **Vertical locking clamp** must be inspected before use. They must be free of any visible damage, saw marks, welding burn marks, large dents or other damage. The clamp rivets must be examined for wear or bending and the bolt threads must be free of defects.

All components must be checked every time they are used, prior to installation or removal, for any visible damage, missing or broken welds, deformed or dented parts that may affect the strength of the item, saw marks, welding burn marks, excessive rust or chemical damage.

All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

REPAIR GUIDELINES THAT MUST BE FOLLOWED BY EXCEL END-USERS

Repairs and maintenance activities that are authorized to be performed in the field:

1. Replacement of trigger assembly in Excel components (i.e., trusses, horizontal bars, side brackets, etc.).
— Must order replacement triggers in advance from Excel.
2. Replacement of spring assembly in Excel components (i.e., trusses, horizontal bars, side brackets, etc.).
—Must order replacement springs in advance from Excel.
3. Replacement of nuts and bolts that hold springs and triggers in Excel components.
—Must order replacement nuts and bolts in advance from Excel.
4. Replacement of vertical pins in vertical legs and side brackets.
—Must order replacement vertical pins in advance from Excel.
5. Replacement of snap buttons in vertical pins, stair stringers or other components.
—Must order replacement snap buttons in advance from Excel.
6. Replacement of coupling pin snap buttons in vertical legs and side brackets.
—Must order replacement vertical pins in advance from Excel.
7. Replacement of locking pins in diagonal braces components.
—Must order replacement locking pins in advance from Excel.
8. Minor bending/straightening of the ladder bracket.
—Ladder brackets can become bent in or out so that they will not correctly fit the ladders. Ladder brackets may be bent straight if the bend required is less than ½ inch.

Repairs and maintenance activities that are NOT authorized to be performed in the field:

1. ANY modification to Excel System Scaffold.
2. Re-galvanizing Excel components that have been corroded or sand blasted.
3. Straightening vertical leg assemblies that have been bent.
4. Shortening vertical leg assemblies by cutting.
5. Straightening horizontal bar assemblies that have been bent.
6. Shortening horizontal bar assemblies by cutting.
7. Any repairs to trolley movement system components.
8. Any repairs to truss components.
9. Any repairs to metal deck board components.
10. Any repairs to stair stringer components. (With the exception of replacing the snap button in the tread lock down).
11. Any repairs to rope pulley hoist components.
12. Any welding to any component.

All material that is NOT authorized to be repaired in the field must be returned back to the manufacturer as damaged material.

All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

SCAFFOLD MATERIAL LOADING AND SHIPPING GUIDELINES

These are Excel's company goals regarding the shipment and receipt of Excel scaffold material. Clients are requested to comply with these common sense requirements when they are preparing scaffold shipments for return to Excel.

1. Upon completion of the project, Excel requires all scaffold material be properly segregated and racked by individual component. Prior to being released for transport, customers must have completed the following actions to correctly prepare the scaffold material for shipment back to Excel:
 - a.) Material must be properly segregated into racks or baskets by size and component.
 - b.) Material must be banded to the rack to ensure it will not shift or break loose while in transit.
 - c.) When loading requires any other racks, baskets or bundled material that are not the same length to be stacked, cribbing must be used between the racks, baskets or material to ensure it is level and will not shift during transport or unloading.
 - d.) Never load racks of steel planks or toe boards on the back of the truck, as they can come out easily.
 - d.) Material must be properly counted and a shipping ticket completed for each truckload.
 - e.) Advanced copies of shipping tickets must be sent to Excel.
 - f.) Shipments must be coordinated in advance with our Excel warehouse.
 - g.) Do not schedule material for shipment until all items have been completed.
2. Have proper client authorization request and release paperwork listing material.
 - a.) Computer load calculations are completed for total weight verification prior to loading material.
 - b.) Complete initial pre-loading diagrams to ensure how and where material will be placed on truck.
 - c.) Complete all shipment, tractor, trailer and driver inspection paperwork.
 - d.) You should always have material pulled and staged prior to truck arrival.
 - e.) For safety reasons, always use a two-man team when loading scaffold material shipments.
3. Material loading:
 - a.) Do not load trucks early in the morning or late at night and in instances where there is not enough light to properly and safely see.
 - b.) Do not let the tractor operator/driver get in the way while you are loading scaffold material.
 - c.) Require driver to wear hard hat when forklifts are operating during loading and unloading.
4. Prior to loading/releasing incoming or outgoing shipments:
 - a.) Take pictures of all incoming and outgoing shipments.
 - b.) Use a dry erase board or other means to show date, time, ticket number, etc.
 - c.) Ensure both the truck and trailer have current registration tags before loading.
 - d.) Ensure the truck driver has a valid driver's license before loading.
 - e.) Trailer and tractor should have good tires (not bald) on all axles before loading.
 - f.) Ensure the truck driver has all of the required insurance paperwork before loading.
 - g.) Driver should be observed for any obvious FFD impairment problems.
 - h.) If all conditions cannot be properly met, do not load the truck.
 - i.) Once material is loaded onto the trailer, make sure it is properly secured by the driver.

All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

Material must be counted, properly segregated into racks or baskets by size and component and banded prior to loading on truck.

SCAFFOLD MATERIAL LOADING AND SHIPPING GUIDELINES

- j.) Ensure the correct scaffold material components and sizes are actually on the trailer.
 - k.) Ensure the driver has been given copies of all shipping paperwork before he is released.
 - l.) Ensure the driver fully understands where he is going and when he is expected to arrive.
 - m.) When required, instruct the driver to weigh his truck at the nearest scales to determine if he is overloaded.
5. When loading requires horizontal racks that are not the same length to be stacked (see picture), the following additional guidelines MUST be met:
 - a.) The rack with the longest horizontals must be placed on the truck first.
 - b.) The rack with the shortest horizontals must be placed on top, so that one set of rack feet sit on top of the lower rack's post.
 - c.) Cribbing must be placed on top of the horizontals, under the other set of rack feet.
 - d.) The cribbing must be secured from movement by using cleats, banding or other means.
 - e.) The two racks must be banded together to prevent the top rack from dislodging.
 - f.) If all of the above conditions cannot be properly met, do not load or ship the material.
 6. Have an independent (two (2) different people) double-check to verify the following:
 - a.) Ensure the truck is not overweight.
 - b.) Maximum material loaded height above the ground must not exceed 13.5 feet.
 - c.) Material loaded must not extend beyond the width of trailer.
 7. Notify the receiving organization that the material has departed and is in transit.
 - a.) Ensure the load will arrive at the designated location during normal working hours/days.
 - b.) Fax a copy of exactly what material is being shipped to Excel.
 - c.) Verify the location is aware that the shipment is en route and that someone will be there to receive and unload it.
 8. Charges for return of Excel material not properly sorted and racked.

The goal is for all Excel material to be returned in the same manner in which it was shipped. Properly prepared Excel shipments make it easier, safer, quicker and more accurate for all involved parties in the physical inventory and return process. If for any reason the Excel material is not returned as requested, Excel will take the following corrective actions:

- a.) Breaking down of any racks or baskets of material that were improperly loaded.
- b.) Properly re-racking as required by our quality assurance program.
- c.) Tracking all of the additional man-hours/handling charges associated with re-racking material in order to store the components long term, awaiting future client orders and shipment.
- d.) Excel will invoice the customer for the additional charges incurred with correcting the shipment.
- e.) Excel will also invoice the customer for any fees and/or penalties related to improperly loaded or overloaded return shipments assessed to and paid by Excel.



All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

SCAFFOLD MATERIAL LOADING AND SHIPPING GUIDELINES

9. Excel material quantity disputes and final inventory reconciliation.
- a.) Material shipped from Excel warehouse facilities undergoes stringent quantity verification in accordance with Excel's ISO 9001 program. All outgoing and incoming transactions are subject to two independent verification counts. If needed, a third independent count is performed to reconcile any discrepancies before final shipping or receipt.
 - b.) All shipments should be verified immediately upon receipt of the material. Any discrepancies must be reported to the Excel warehouse facility immediately, before any material is utilized. Excel will have 24 hours after receiving a discrepancy notice to make arrangements for an independent verification, or to submit pertinent information.

During this period the material must be segregated, not moved or utilized for erection, allowing Excel the ability to respond.

Material will not be subjected to rent during this period. At the end of this period, if Excel does not independently verify the counts, the material may be used and the quantities reported by the client will be utilized in the inventory.

- c.) Upon receipt of the material at the Excel warehouse facility, the scaffold material is again subjected to two (2) independent verification counts, and if needed a third reconciling count. Any discrepancies between the counts and the quantity reflected on the client-prepared shipping ticket faxed to the Excel warehouse facility will be reported to the client immediately. The client will have 24 hours after receiving a discrepancy notice to make arrangements for an independent verification. Excel will segregate and hold the material awaiting the client's decision. After this period, if the client does not independently verify the counts, the material will be returned to stock and the Excel counts will be utilized in the inventory.

- d.) At the end of the project, all concerned parties will review the final inventory status, which is based on each shipping ticket (inbound and outbound). Excel will invoice the client for any material shortages or damages which would be included as part of the final closeout invoice.

All material must be inspected prior to use! See inspection guidelines on page 43 of this manual.

Always call Excel in advance of shipping if you have any questions on any of these guidelines.

The Walker, LA phone number is (225) 777-4157.