

Suspended Access Systems and Fall Protection

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Standards in the United States and Canada require a building to provide certified anchorages capable of supporting the required loads before any suspended maintenance work is performed.

Davit Overview

Davits are often used in addition to roof and wall safety/tie-back anchors to provide a suspension point that will:

- Clear non-load bearing parapets of a building or other architectural feature that may be easily damaged.
- · Access areas beyond these features which are hard to reach. Such features may include:
- · Glass or other finished parapets
- Decorative railings
- · Overhangs and cornices
- Sloped glazing

Davit pedestal bases are permanently mounted above the intended suspension locations. Portable davit arms are moved manually to each location when needed. The mast and boom components of the davit arms may be dismantled for easy transportation. Assembled davits may be rotated 360 degrees to provide a range of access options to maintenance workers to service a building's façade.

Davits can be used alone or in pairs:

- Davits may be used singly when supporting one-man rope descent systems (RDS) or a single-point suspension scaffold.
- Davits are used in pairs when they will be used to suspend a powered platform with hoists mounted at each end. Davits may be ground-rigged or roof-rigged:
- Ground-rigged davits provide a suspension point for suspending a platform situated on a lower level (e.g. sidewalk below). They only need to be tall enough for the boom to clear the parapet, making them easier to handle and erect than roof-rigged davits.
- Roof-rigged davits enable workers to initially rig and board a powered platform on the roof, which will then be launched outboard of the parapet and suspended along the building face. Consideration needs to be given to providing sufficient landing surface on the rooftop for the platform and a suitable load bearing surface for safely rolling it on the roof to successive drop locations. Clearance to tip up and down davit arm is required around each davit base to allow for set-up and dismantling.





Introduction to Davit Layout Requirements

Each maintenance worker's lifeline is required to be attached to an independent anchorage on the roof. Davit spacing should take into consideration the length of the powered platform that will be used by workers in the future. The diagrams below illustrate a sample davit layouts.

Notes:

- Davit spacing may vary depending on roof conditions; however, spacing should be kept as consistent as possible to allow for standard powered platform.
- 2. Each worker must be independently tied to an anchor on the roof.
- 3. Placement of davits and roof anchors shall allow cables suspending the powered platform to hang parallel and in plane or slightly angulated with the building when in use to allow the platform to press firmly against the building during its vertical travel.

Fall Protection Zones

1) RED ZONE: Work performed less than 6 feet from the roof edge.

Employer must ensure each employee is ensured from falling by a (1) Guardrail system; (2) Safety net system; (3) Travel restraint system; or (4) Personal fall arrest system.

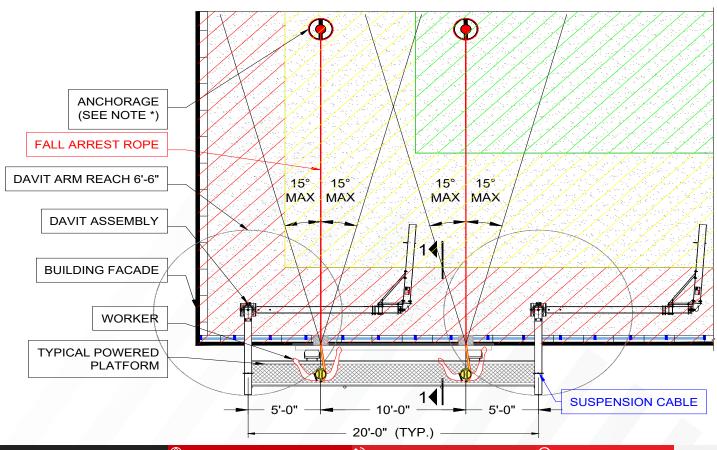
YELLOW ZONE: Work performed more than 6 feet but less than 15 feet from the roof edge.

Employer must ensure each employee is ensured from falling by either (1)(2)(3) or (4) of the above mentioned systems. However, for work that is both (a) infrequent and (b) temporary OSHA allows employers to use a Designated Area*.

3) GREEN ZONE: Work performed 15 feet or more from the roof edge.

Employer must ensure each employee is ensured from falling by either (1)(2)(3) or (4) of the above mentioned systems or a Designated Area*. OSHA requires employers to use a Designated Area* and implementation and enforce a work rule prohibiting employees from going within 15 feet of the roof edge without using fall protection. Also, the employer is not required to provide any fall protection, provided work is both (a) infrequent and (b) temporary.

*DESIGNATED AREA IS DELINEATED AREA WITH WARNING LINE. SEE OSHA SUBPART D FOR MORE INFORMATION ON THE PROPER SET-UP AND USE OF WARNING LINES.



Fall Protection for Workers on Platforms

(*) SUBPART D WALKING AND WORKING SURFACES 1910.140 PERSONAL FALL PROTECTION SYSTEMS OSHA Subpart D - (d, 1, ii), System Criteria

Personal fall arrest systems are rigged in such manner that the employee cannot free fall more than 6 feet (1.8m) or contact a lower level. A free fall may be more than 6 feet (1.8m) provided the employer can demonstrate the manufacter designed the system to allow a free fall or more than 6 feet and tested the system to ensure a maximum arresting force of 1,800 pounds (8kN) is not exceeded.

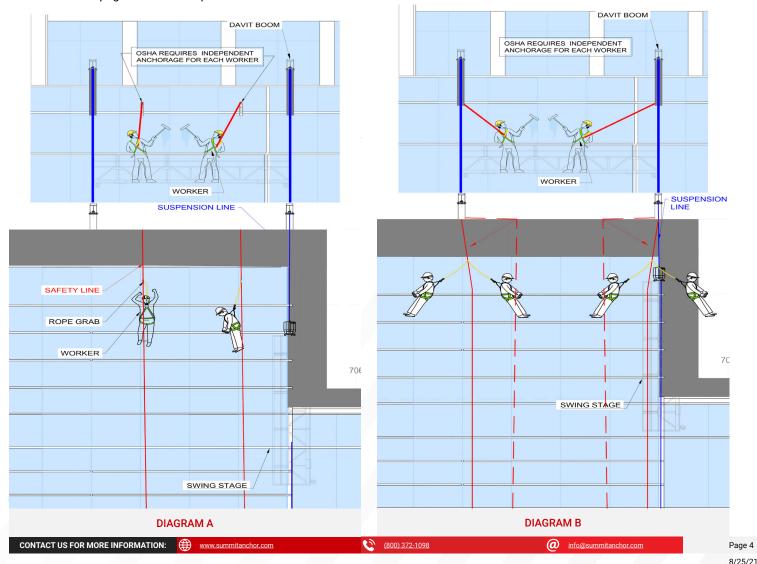
OSHA Subpart D - (n) Free fall considerations. Employers and employees should always be aware that a system's maximum arresting force is evaluated under normal use conditions established by the manufacturer. OSHA requires that personal fall arrest systems be rigged so an employee cannot free fallin excess of 6 feet (1.8 m). Even a few additional feet of free fall can significantly increase the arresting force on the employee, possibly to the point of causing injury and possibly exceeding the strength of the system. Because of this, the free fall distance should be kept to a minimum, and, as required by§1910.140(d)(2), must never be greater than 6 feet (1.8 m). To assure this, the tie-off attachment point to the lifeline or anchor should be located ator above the connection point of the fall arrest equipment to the harness.

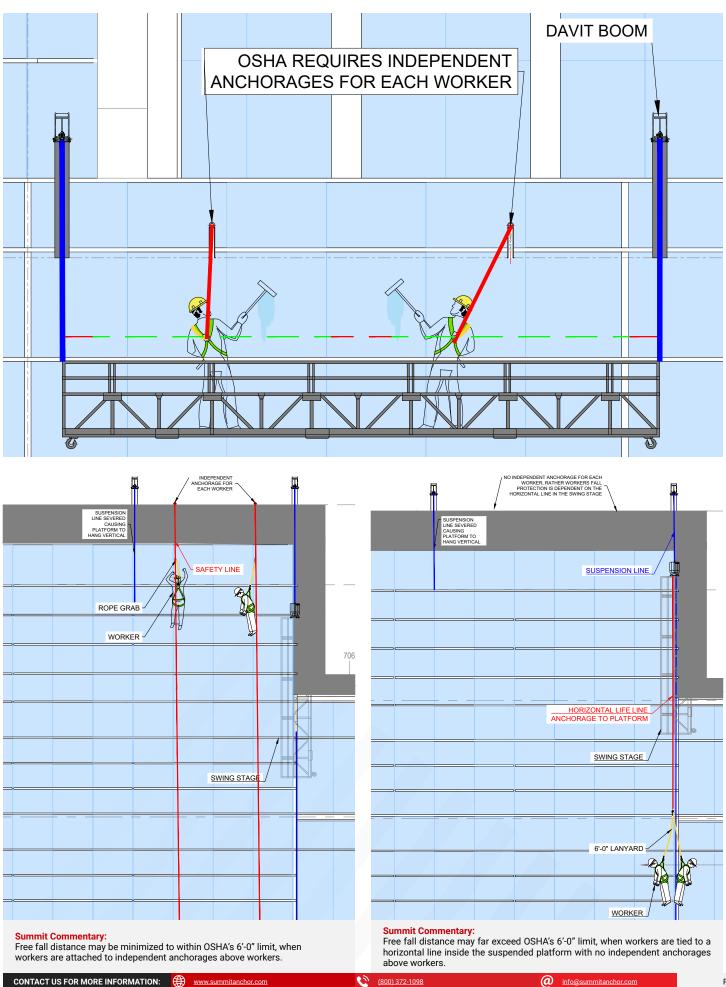
OSHA Subpart D - (p) Obstruction considerations. In selecting a location for tie-off, employers and employees should consider obstructions in the potentialpath of the employee. Tie-offs that minimize the possibilities of exaggerated swinging should be consider.

Commentary from Summit:

Anchorages located off center from the above the worker means that the potential free fall distance is greater, potentially increasing the fall arrest impact to the workers body.

Anchorages located off center from above the worker also increases the potential swing hazard, potentially creating a sawing action on the workers lifelineafter arresting the fall. This sawing action may sever the workers lifeline after a fall arrest. **SEE DIAGRAM B** For these reasons OSHA says that the "anchor should be located at or above the connection point of the fall arrest equipment to the harness." **SEE-DIAGRAM A** See page 74 OSHA Subpart D.

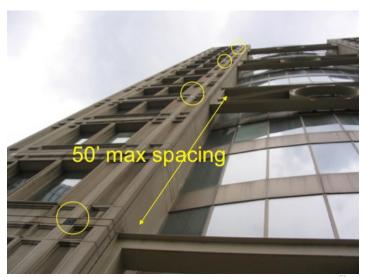




What are OSHA's requirements for stabilization systems for use with davits?

Typically, ISAs will be installed in pairs at the top of the building in-line with the support system above, e.g.: davit bases, rigging sleeves, and outriggers. The location can be either between the platform or just outside the suspension ropes, but, not both outside and inside the suspension ropes. The maximum vertical spacing for intermittent stabilization is 3 floors or 50 feet, whichever is less. See OSHA's requirement for ISA systems below:

- "Intermittent stabilization system. The system shall keep the equipment in continuous contact with the building facade and shall prevent sudden horizontal movement of the platform. The system may be used together with continuous positive building guide systems using tie-in guides on the same building, provided the requirements for each system are met." (OSHA 1910.66(e)(2)(iii)(A)(1)
- "The maximum vertical interval between building anchors shall be three floors or 50 feet (15.3 m), whichever is less." (OSHA 1910.66(e)(2)(iii)(A)(1))



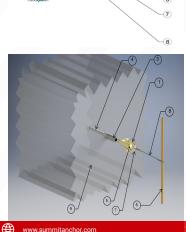
Single Intermittent Stabilization System with **Anchor in Curtain Wall Mullion**

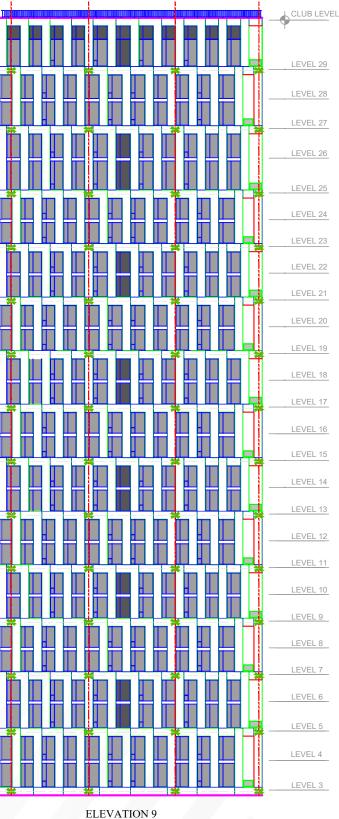
- Glazing
- Permanent I.S.A. mounting block
- 3. Push button to detent the lock balls and remove/insert eve
- Stage suspension cable
- Connect lanyard from this eye to stage suspension cable
- Lanyard lenght adjuster
- Lanyard used to attach to the suspension should not configured to snag or bind
- Removable eye/pin

Single Intermittent Stabilization System with Anchor Cast in Place

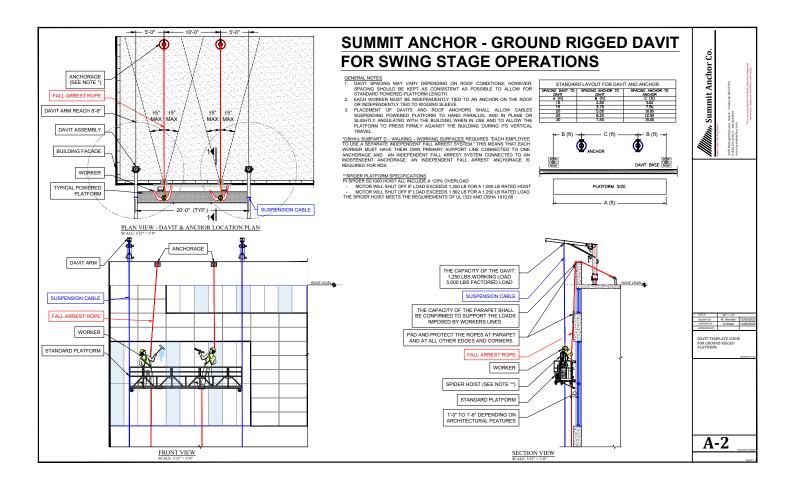
- Eye for insert into I.S.A. anchor
- Soft plastic cap plug for debris protection
- Permanent I.S.A. anchor
- C.I.P. mount
- Push button to detent the lock balls and remove/insert eye
- Stage suspension cable
- Connect lanyard from this eye to
- stage suspension cable
- Building concrete

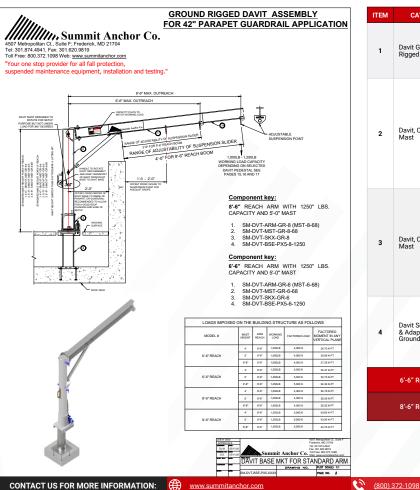




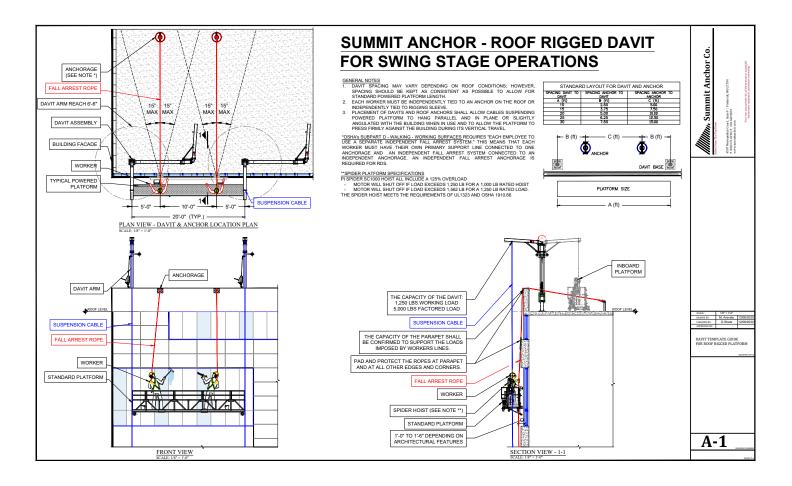


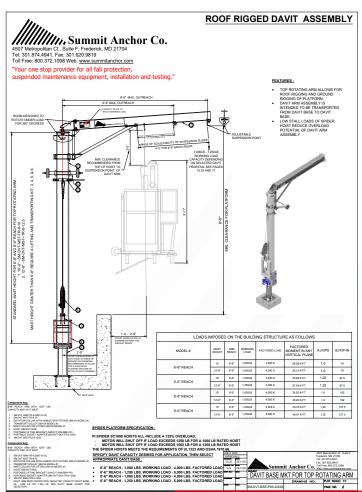
- INTERMITTENT STABILIZATION ANCHOR LOCATIONS



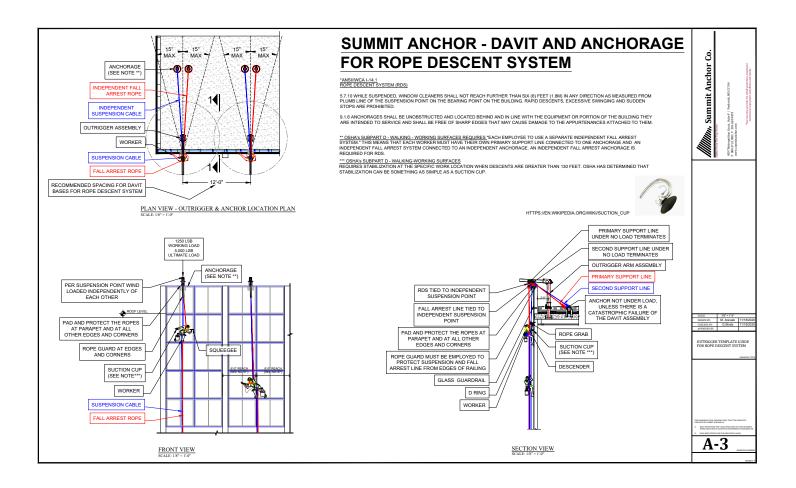


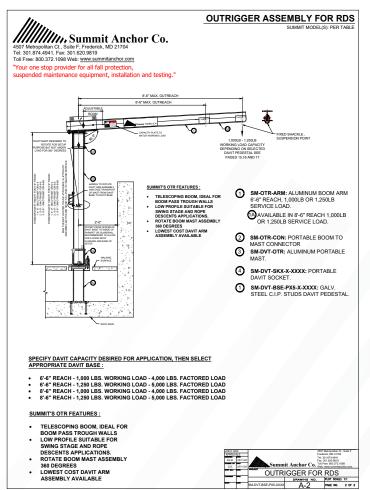
ITEM	CATEGORY	MODEL NUMBER	DESCRIPTION	WEIGHT
	Davit Ground	SM-DVT-ARM-GR-6 (MST- GR-6-5)	Davit Arm, 6'-6" reach, Mast-5' height for roof launch, w/slider, FED OSHA	
1	Rigged Arm/Mast	SM:SM-DVT-ARM-GR-8 (MST-GR-8-5)	Davit Arm, 8'-6" reach, Mast -5' height for ground-launch, w/suspension slider, FED	
		SM:SM-DVT-MST-GR-6-4	Davit Mast, Aluminum 6-5/8" Dia. X 4'-0" Tall, for mating with SM-DVT- ARM-GR-6	
2	Davit, Component; Mast	SM:SM-DVT-MST-GR-6-5	Davit Mast, Aluminum 6-5/8" Dia. X 5'-0" Tall, for mating with SM-DVT- ARM-GR-6	
		SM:SM-DVT-MST-GR-6-6	Davit Mast, Aluminum 6-5/8" Dia. X 6'-8" Tall, for mating with SM-DVT- ARM-GR-6	
	3 Davit, Component; Mast	SM:SM-DVT-MST-GR-8-4	Davit Mast, Aluminum 8-5/8" Dia. X 4'-0" Tall, for mating with SM-DVT- ARM-GR-8	
3		SM:SM-DVT-MST-GR-8-5	Davit Mast, Aluminum 8-5/8" Dia. X 5'-0" Tall, for mating with SM-DVT-ARM-GR-8	
		SM:SM-DVT-MST-GR-8-6	Davit Mast, Aluminum 8-5/8" Dia. X 6'-8" Tall, for mating with SM-DVT-ARM-GR-8	
	Davit Sockets & Adaptors for Ground Rigged t	SM:SM-DVT-SKX-GR-6	Davit Portable Adapter: for socked and mast, gound launch, 6'-6" reach, 1,250#, or 6'-6" reach 1,000# FED, galv (Mates W/Socket)	
4		SM:SM-DVT-SKX-GR-8	Davit Portable Socket: for adaptor and mast, ground launch, 8'-6" reach, 1,250#, or 8'-6" reach 1,000# FED, galv (Mates W/Adaptor)	
	6'-6" Reach Boom with 5'-0" Mast Height		TOTAL PER ARM ASSEMBLY: includes 5'-0" Mast and Socket	
	8'-6" Reach Boom w	ith 5'-0" Mast Height	TOTAL PER ARM ASSEMBLY With 5'-0' Mast includes 5'-0" Mast and Socket	



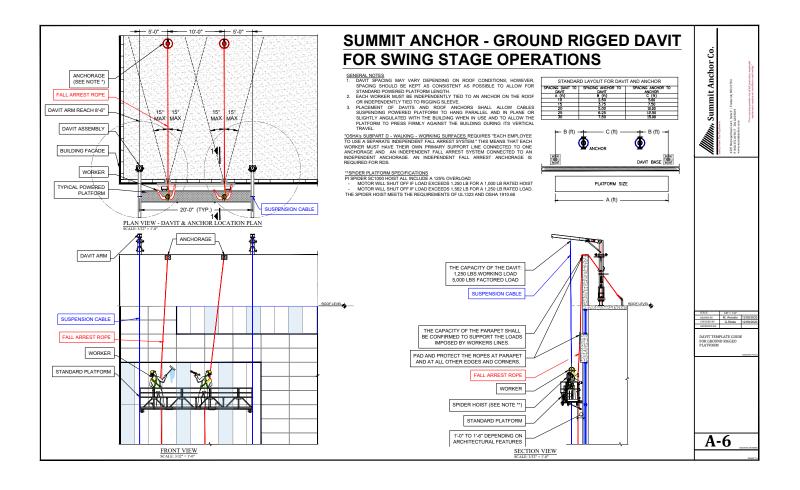


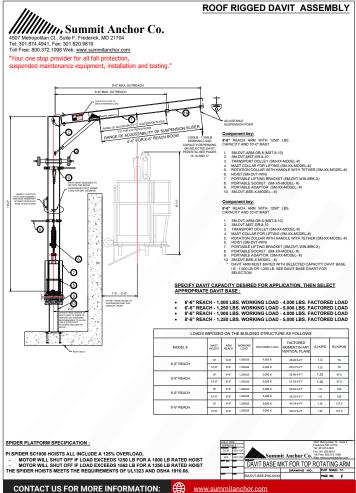
ITEM	CATEGORY	MODEL NUMBER	DESCRIPTION	WEIGHT
1	T. D. H.	SM-DVT-ARM-TR-6 (MST-TR-8-10)	Davit Arm, 6'-6" reach, Mast-10' top-ro- tating for roof launch, 1,000#, w/slider, FED OSHA	
,	1 Top Rotating Arm	SM:SM-DVT-ARM-TR-8 (MST-TR-8-10)	Davit Arm, 8'-6" reach, Mast-10' top-rotat- ing for roof launch, 1,000#, w/slider, FED	115 lbs
	Davit, Component;	SM:SM-DVT-MST- TR-8-10	Davit Mast, Aluminum 8-5/8" Dia. X 10'-0" Tall, for mating with SM-DVT-ARM-8-1250	140 lbs
2	Masť	SM:SM-DVT-MST- TR-8-12.5	Davit Mast, Aluminum 8-5/8" Dia. X 12'-6" Tall, for mating with SM-DVT-ARM-8-1250	
3	Davit, Rotation Equipment	SM:SM-DVT-RCO-8	Davit; Lifting and leverage Collar with Handle for ground rigged and top-rotating arm, galv.	
4	Davit, Transport Equipment	SM:SM-DVT-DOL-8	Davit; Dolley with casters for transport of ground rigged and top-rotating arm, galv.	
5	Davit, Lifting Equipment	SM:SM-DVT-WIN	Davit Winch: to raise/lower top-rotating arm, Tractel Model# T-17 requires lifting bracket	
6	Davit, Lifting Equipment	SM:SM-DVT-WIN- BRK-TR	Davit Winch Attachment Bracket; for pedestal socket and top-rotating arm, galv.	
	Davit Sockets	SM:SM-DVT-SKX- TR-6-1250	Davit Portable Adapter: for socked and mast, roof launch, 6'-6" reach, 1,250#, or 6'-6" reach 1,000# FED, galv (Mates W/ Socket)	
7	& Adaptors for Ground Rigged	SM:SM-DVT-SKX- TR-8-1250	Davit Portable Adaptor: for socket and mast, roof launch, 8'-6" reach, 1,250#, or 8'-6" reach 1,000# FED, galv (Mates W/ Socket)	
6'	-6" Reach Boom with	10'-0" Mast Height	TOTAL PER ARM ASSEMBLY:	
8	8'-6" Reach Boom with 10'-0" Mast Height		includes 10'-0" Mast, Socked, and lifting kit.	



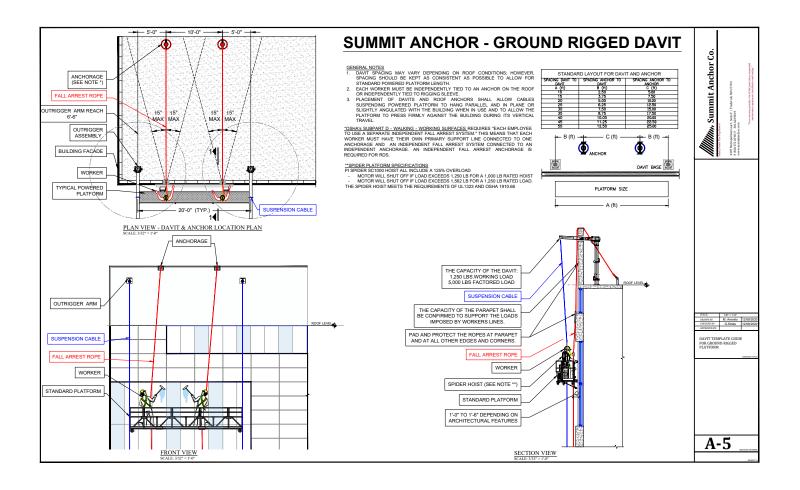


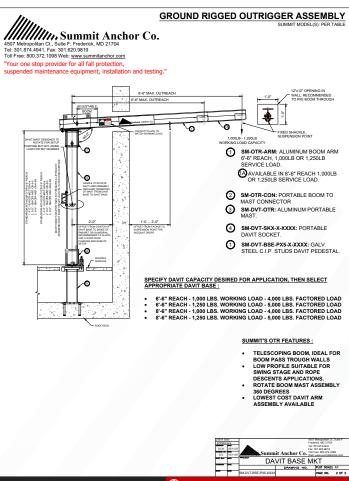
ITEM	CATEGORY	MODEL NUMBER	DESCRIPTION	WEIGHT
1	Davit Telescoping Ground Rigged Arm/ Mast	SM-ORT-ARM-GR-6 (MST-6-5)	Telescoping Davit Arm, 6'-6" reach, Mast -5' height for ground-launch, w/ suspension slider, FED	
		SM-ORT-ARM-GR-8 (MST-8-5)	Telescoping Davit Arm, 8'-6" reach, Mast -5' height for ground-launch, w/ suspension slider, FED	
	Davit, Component; Mast	SM-ORT-MAST-6-4	Davit Mast, Aluminum 6-5/8" Dia. X 4'-0" Tall, for mating with SM-ORT-GR-8	
2		SM-ORT-MST-6-5	Davit Mast, Aluminum 6-5/8" Dia. X 5'-0" Tall, for mating with SM-ORT-GR-8	
		SM-ORT-MST-6-6	Davit Mast, Aluminum 6-5/8" Dia. X 8'-0" Tall, for mating with SM-ORT-GR-8	
	Davit, Component; Mast	SM-ORT-MST-8-4	Davit Mast, Aluminum 8-5/8" Dia. X 4'-0" Tall, for mating with SM-ORT-GR-8	
3		SM-ORT-MST-8-5	Davit Mast, Aluminum 8-5/8" Dia. X 5'-0" Tall, for mating with SM-ORT-GR-8	
		SM-ORT-MST-8-86	Davit Mast, Aluminum 8-5/8" Dia. X 8'-0" Tall, for mating with SM-ORT-GR-8	
4	Davit Sockets & Adaptors for Ground Rigged	SM-DVT-SKX-6-1250	Davit Portable Socket: for adaptor and mast, ground launch, 6'-6" reach, or 6'-6" reach 1,000# FED, galv (Mates W/ Adaptor)	
4		SM-DVT-SKX-8-1250	Davit Portable Socket: for adaptor and mast, ground launch, 8'-6' reach, or 8'-6" reach 1,000# FED, galv (Mates W/ Adaptor)	
6'-6" Reach Boom with 5'-0" Mast Height		TOTAL DED ADM ACCEMENT		
8'-6" Reach Boom with 5'-0" Mast Height			TOTAL PER ARM ASSEMBLY includes 5-0" Mast and Socket	



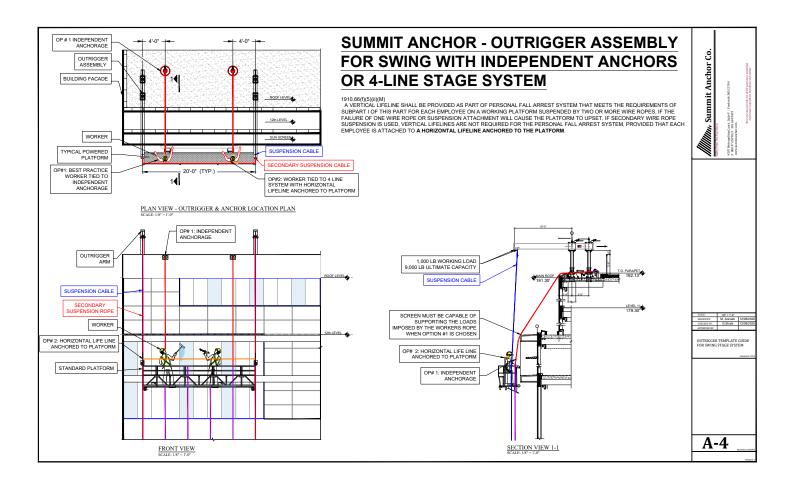


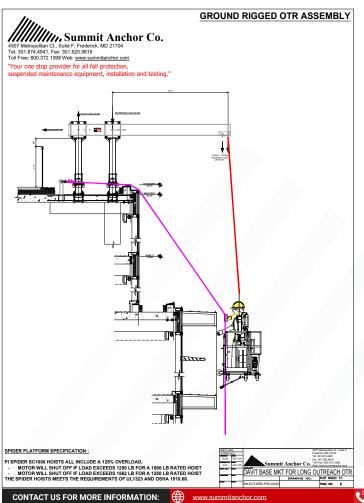
ITEM	CATEGORY	MODEL NUMBER	DESCRIPTION	WEIGHT
1	Davit Ground Rigged	SM-DVT-ARM-GR-6 (MST-8-10)	Davit Arm, 6'-6" reach, Mast -10' top-ro- taiting for roof launch, 1,000#, w/slider, FED OSHA	
	AIII/MdSt	SM-DVT-ARM-GR-8 (MST-8-10)	Davit Arm, 8'-6" reach, Mast -10' height for ground-launch, 1,250#, w/slider, FED	
2	Davit, Component; Mast	SM:SM-DVT-MST- TR-8-10	Davit Mast, Aluminum 8-5/8" Dia. X 10'-0" Tall, for mating with SM-DVT-ARM-8-1250	
3/5	Davit, Rotation Equipment	SM:SM-DVT-RCO-8	Davit; Rotation Collar with Handle for ground rigged and top-rotating arm, galv.	
4	Davit, Transport Equipment	SM:SM-DVT-DOL-8	Davit; Dolley with casters for transport of ground rigged and top-rotating arm, galv.	
6	Davit, Lifting Equipment	SM:SM-DVT-WIN	Davit Winch: to raise/lower top-rotating arm, Tractel Model# T-17 requires lifting bracket	
7	Davit, Lifting Equipment	SM:SM-DVT-WIN- BRK-GR	Davit Winch Attachment Bracket; for pedestal socket and top-rotating arm, galv.	
_	Davit Sockets &	SM-DVT-ADP-R-8	Davit Portable Socket: for adaptor and mast, ground launch, 6'-6' reach, 1,250#, or 6'-6' reach 1,000# FED, galv (Mates W/Adaptor)	
8	Adaptors for Ground Rigged	SM-DVT-SKP-P-1000	Davit Portable Adaptor: for socket and mast, ground launch, 8'-6' reach, 1,250#, or 8'-6' reach 1,000# FED, galv (Mates W/Socket)	
6	6'-6" Reach Boom with 10'-0" Mast Height		TOTAL PER ARM ASSEMBLY: includes 10'-0' Mast and Socket	
8	8'-6" Reach Boom with 10'-0" Mast Height		TOTAL PER ARM ASSEMBLY With 5'-0" Mast includes 10'-0" Mast and Socket	



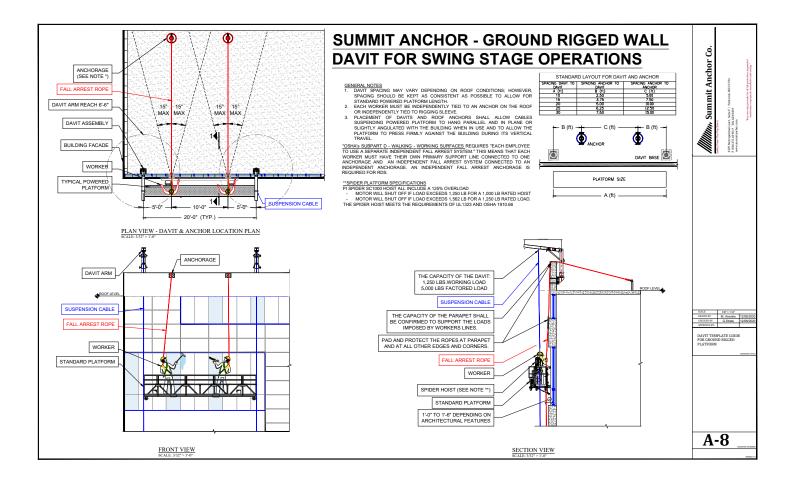


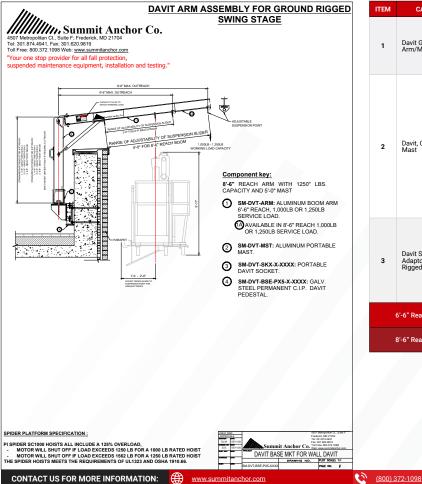
TEM	CATEGORY	MODEL NUMBER	DESCRIPTION	WEIGHT
1	Davit Telescoping Ground Rigged Arm/Mast	SM-OTR-ARM-GR-6 (MST-6-5)	Telescoping Davit Arm, 6'-6" reach, Mast -5' height for ground-launch, 1,250#, w/suspen- sion slider, FED	
		SM-OTR-ARM-GR-8 (MST-8-5)	Telescoping Davit Arm, 8'-6" reach, Mast -5' height for ground-launch, 1,250#, w/suspension slider, FED	
2 Davit, Mast		SM:SM-OTR- MAST-8-4	Davit Mast, Aluminum 8-5/8" Dia. X 4'-0" Tall, for mating with SM-DVT-ARM-8-1250	
	Davit, Component; Mast	SM:SM-OTR- MAST-8-5	Davit Mast, Aluminum 8-5/8" Dia. X 5'-0" Tall, for mating with SM-DVT-ARM-8-1250	
		SM:SM-OTR- MAST-8-86	Davit Mast, Aluminum 8-5/8" Dia. X 8'-0" Tall, for mating with SM-DVT-ARM-8-1250	
3	Davit Sockets & Adaptors for Ground Rigged	SM:SM-DVT- SKX-6-1000	Davit Portable Socket: for adaptor and mast, ground launch, 6'-6" reach, 1,250#, or 6'-6" reach 1,000# FED, galv (Mates W/Adaptor)	
		SM:SM-DVT- SKX-8-1250	Davit Portable Socket: for adaptor and mast, ground launch, 8'-6" reach, 1,250#, or 8'-6" reach 1,000# FED, galv (Mates W/Adaptor)	
6'-6" Reach Boom with 10'-0" Mast Height		10'-0" Mast Height	TOTAL PER ARM ASSEMBLY	
8'-6" Reach Boom with 10'-0" Mast Height			includes 10'-0" Mast and Socket	



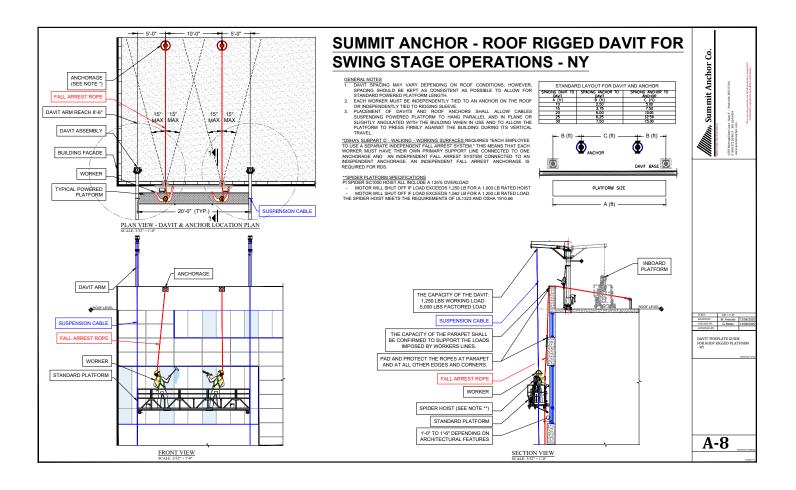


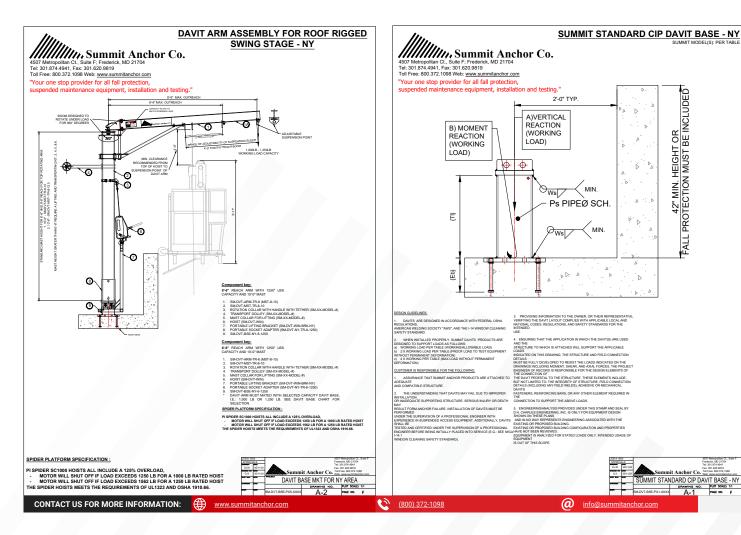






ITEM	CATEGORY	MODEL NUMBER	DESCRIPTION	WEIGHT
1 Davit G	Davit Ground Rigged	SM-DVT-ARM-GR-6 (MST-6-5)	Davit Arm, 6'-6" reach, Mast -5' height for ground-launch, 1,250#, w/suspension slider, FED	
·	Arm/Mast	SM-DVT-ARM-GR-8 (MST-8-5)	Davit Arm, 8'-6" reach, Mast -5' height for ground-launch, 1,250#, w/suspension slider, FED	
		SM:SM-DVT- MAST-8-4	Davit Mast, Aluminum 8-5/8" Dia. X 4'-0" Tall, for mating with SM-DVT-ARM-8-1250	
2	Davit, Component; Mast	SM:SM-DVT- MAST-8-5	Davit Mast, Aluminum 8-5/8" Dia. X 5'-0" Tall, for mating with SM-DVT-ARM-8-1250	
		SM:SM-DVT- MAST-8-86	Davit Mast, Aluminum 8-5/8" Dia. X 8'-0" Tall, for mating with SM-DVT-ARM-8-1250	
3	Davit Sockets & Adaptors for Ground Rigged	SM:SM-DVT- SKT-W-6-1250	Davit Portable Socket: for adaptor and mast, ground launch, 6'-6" reach, 1,250#, or 6'-6" reach 1,000# FED, galv (Mates W/Adaptor)	
3		SM:SM-DVT- SKT-W-8-1250	Davit Portable Socket: for adaptor and mast, ground launch, 8'-6" reach, 1,250#, or 8'-6" reach 1,000# FED, galv (Mates W/Adaptor)	
	6'-6" Reach Boom with 5'-0" Mast Height			
	8'-6" Reach Boom with 5	'-0" Mast Height	TOTAL PER ARM ASSEMBLY	





Davit Pedestal Introduction

Summit's davit pedestal my be used interchangeably as recessed under walking surfaces such as roof pavers or extended above the roof surface. A davit cap (SM-CAP-DVT) is placed over a square hole in the deck or paver. A davit base may be mounted to a structurally adequate wall to avoid penetrating the roof.

Davit pedestal bases are permanently secured to the building's structure. Summit Anchor Company's davit pedestal bases can be secured to concrete slabs or steel beams using various methods:

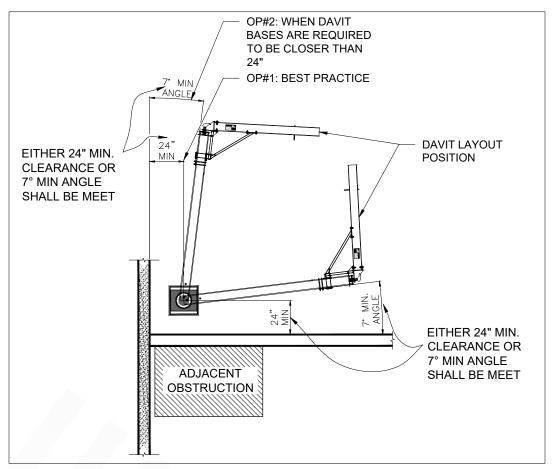
- · cast in place base
- · cast in place davit cages
- welding to steel beams
- · bolting through concrete





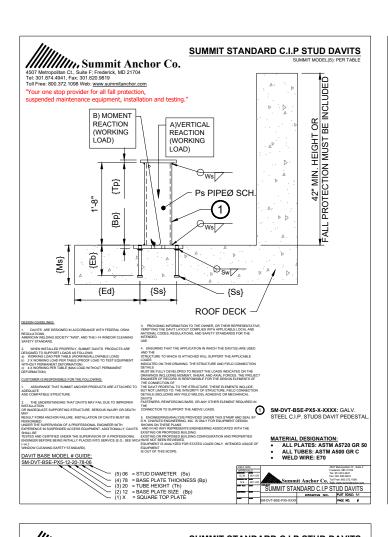


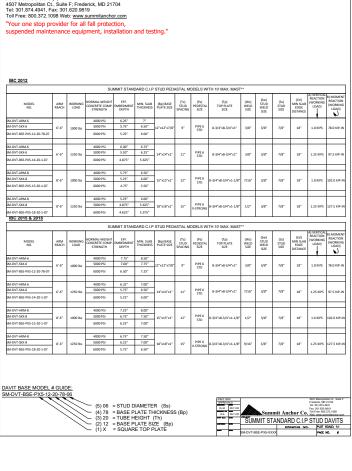






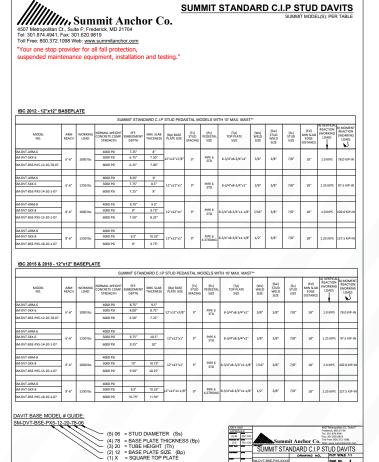




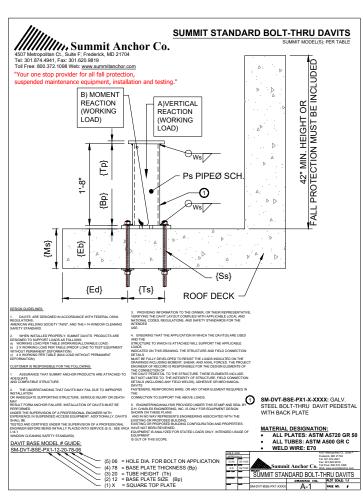


Summit Anchor Co.

SUMMIT STANDARD C.I.P STUD DAVITS

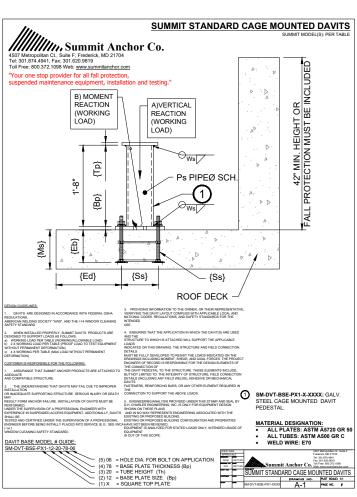


SUMMIT STANDARD C.I.P STUD DAVITS





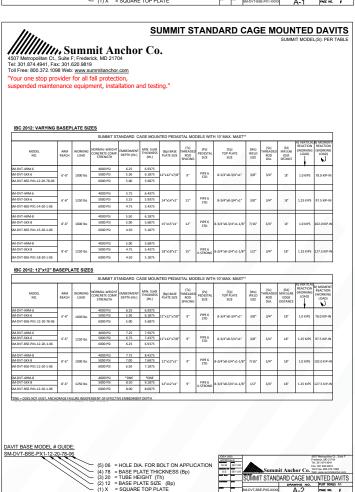


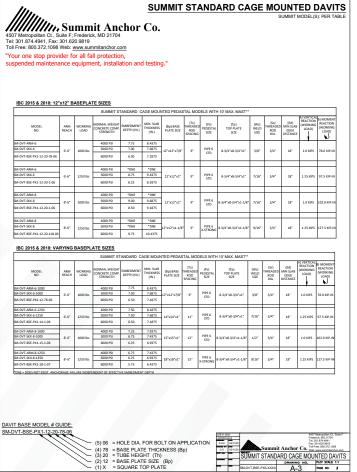


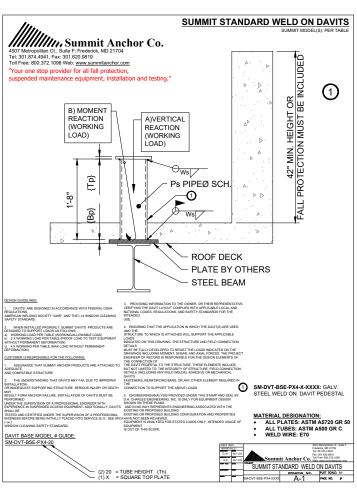


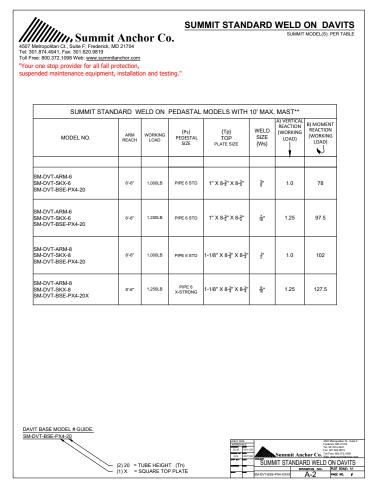
SM-DVT-CGE: Davit cage before and after pouring of concrete slab

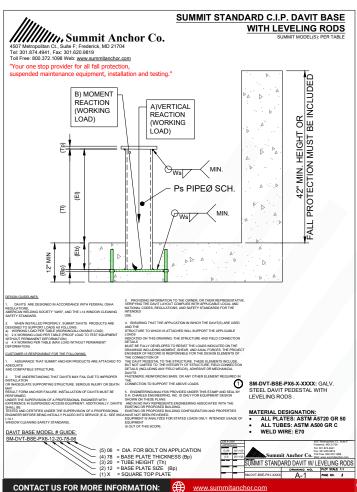


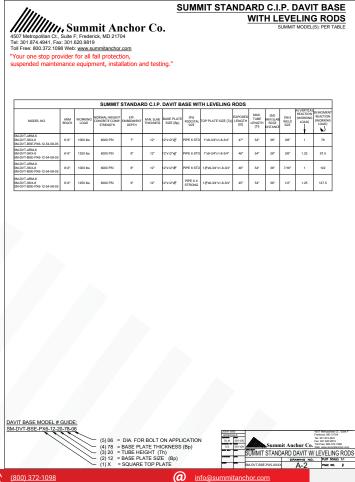


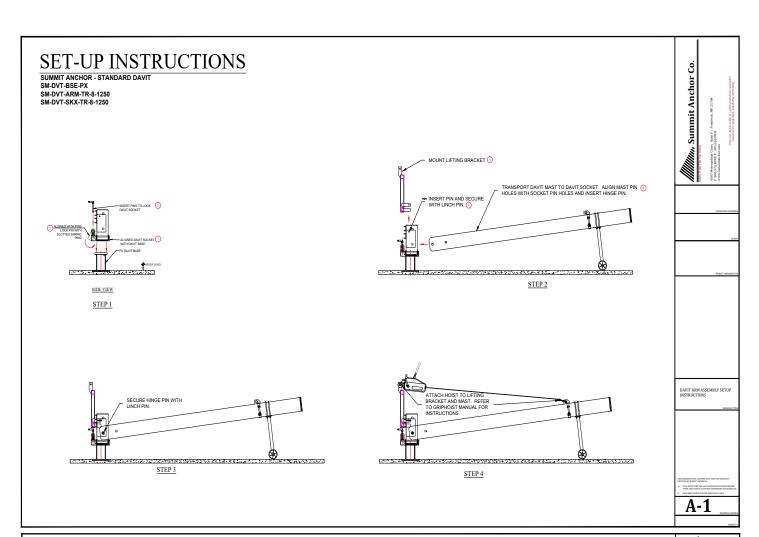


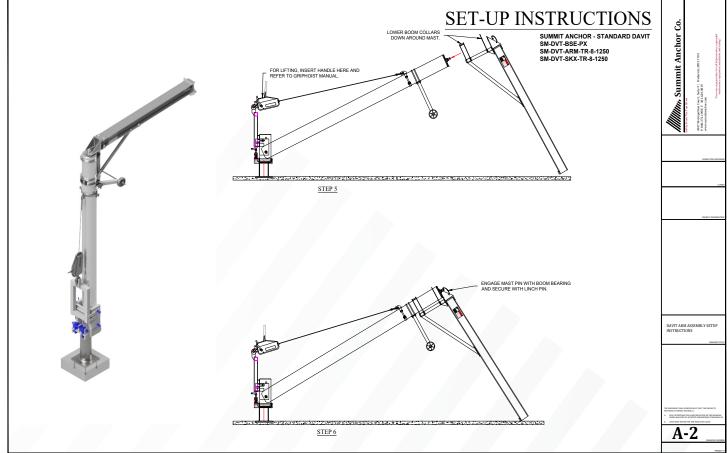


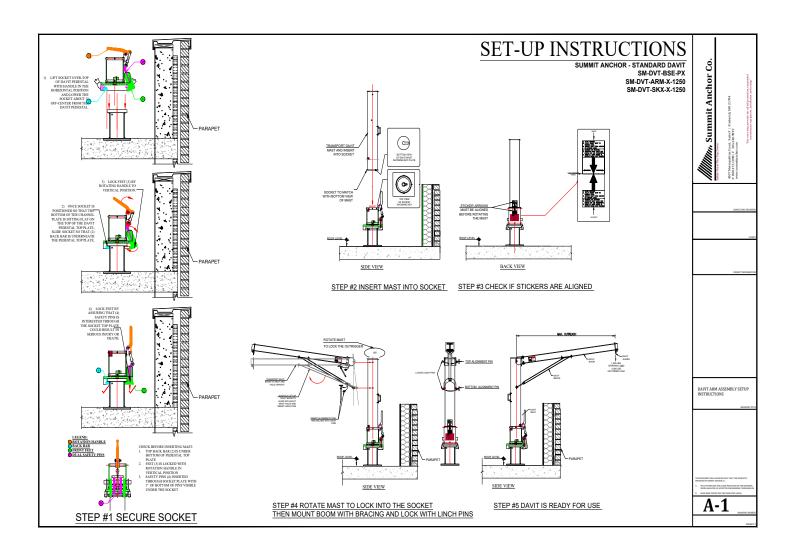


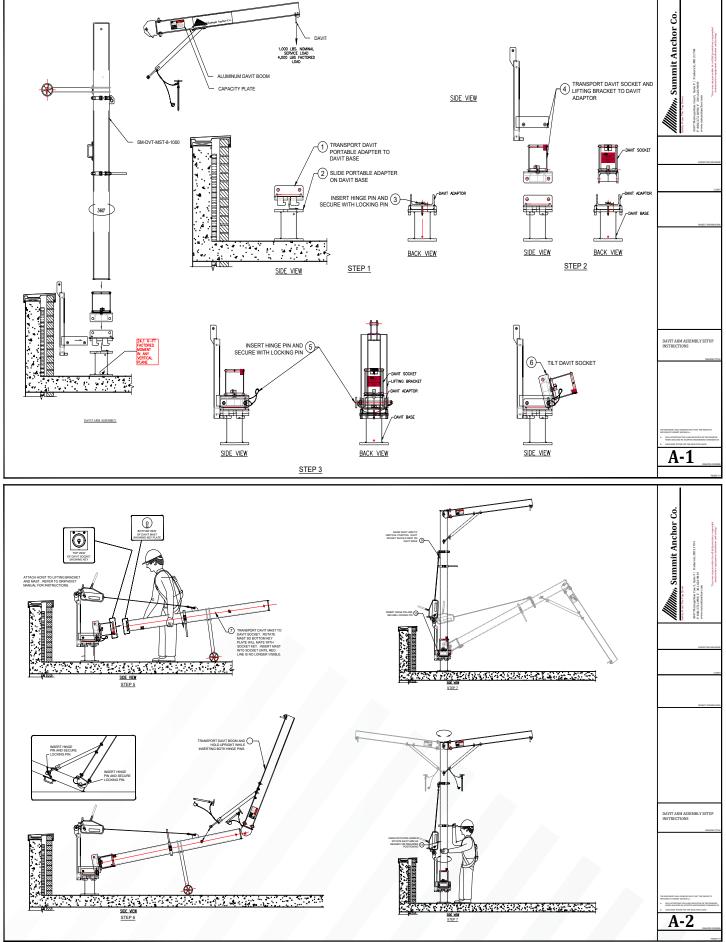












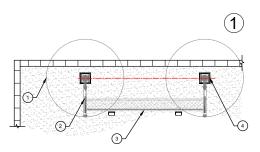
SUMMIT ANCHOR - PLATFORM SET-UP

Summit Anchor Company Inc. 4507 Metropolitan Ct., Suite F

Frederick, MD 21704

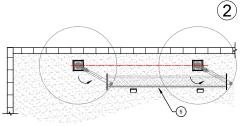
Tel: 301.874.4941, Fax: 301.620.9819

Toll Free: 800.372.1098 Web: www.summitanchor.com



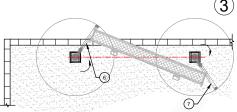
STEP - 1 - IN BOARD PLATFORM

- DAVIT OUT REACH DAVIT ARM ASSEMBLY STANDARD PLATFORM DAVIT BASE



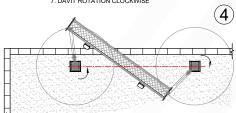
STEP - 2 - IN BOARD PLATFORM

5. ROTATE BOTH DAVIT ARMS TO APROX. 45°

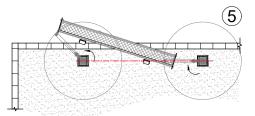


STEP - 3 - IN BOARD PLATFORM

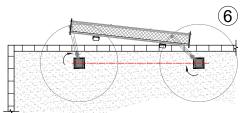
6. DAVIT ROTATION COUNTER CLOCKWISE 7. DAVIT ROTATION CLOCKWISE



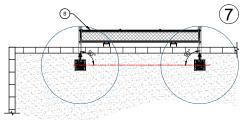
STEP - 4 - IN BOARD PLATFORM



STEP - 5 - IN BOARD PLATFORM

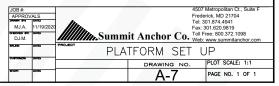


STEP - 6 - OUT BOARD PLATFORM



STEP - 7 - OUT BOARD PLATFORM

8. ALL SET OUT BOARD PLATFORM



Electric Requirements for Powered Platforms

OSHA - 1910.66(e)(11)

Electrical requirements.

The following electrical requirements apply to buildings which utilize working platforms for building maintenance.

- (i) General building electrical installations shall comply with §§1910.302 through 1910.308 of this part, unless otherwise specified in this section;
- (ii) Building electrical wiring shall be of such capacity that when full load is applied to the equipment power circuit not more than a five percent drop from building service-vault voltage shall occur at any power circuit outlet used by equipment regulated by this section:
- (iii) The equipment power circuit shall be an independent electrical circuit that shall remain separate from all other equipment within or on the building, other than power circuits used for hand tools that will be used in conjunction with the equipment. If the building is provided with an emergency power system, the equipment power circuit may also be connected to this system;
- (iv) The power circuit shall be provided with a disconnect switch that can be locked in the "OFF" and "ON" positions. The switch shall be conveniently located with respect to the primary operating area of the equipment to allow the operators of the equipment access to the switch;
- (v) The disconnect switch for the power circuit shall be locked in the "ON" position when the equipment is in use; and

ASME A120.1-2008 - Safety Requirements for Powered Platforms and Traveling Ladders and Gantries for Building Maintenance

2 Building Design Requirements

- 2.3.6 Electrical Requirements The electrical design shall be in accordance with the following:
- (a) General design shall be in accordance with the applicable requirements of the National Electrical Code edition in effect at the time of making the design, e.g., grounding, wire size, motors, controls and control wiring, and enclosures.
- (b) When full load is applied to the circuit, building conductors shall be of such capacity that not more than a 3% voltage drop from nominal equipment requirements shall occur at each building outlet.
- (c) Communications and power connections shall be weatherproof and provided with locking type connectors. They shall be protected from damage and abrasion.
- (d) Each communication and power outlet shall be provided with an adjacent strain relief anchor to prevent force from being applied to the outlet or to the conduit leading to the outlet by movement of the equipment.
- (e) The equipment power supply shall be from an independent electrical circuit that shall remain separate from all other equipment within or on the building, except hand tools used in conjunction with the equipment. If the building is provided with an emergency power system, the equipment circuit may be designed so it may be connected to the emergency circuit.

- (f) The power circuit shall be provided with a cutoff switch that can be locked in the "OFF" position. To allow the equipment operators access to the switch, it shall be conveniently located relative to the primary operating area of the equipment.
- (g) Power and communication outlets shall be located at the approximate elevation of the primary equipment operating area. The outlets should be located so that no more than 100 ft (30.38 m) of supply cable need be used for the horizontal area being traversed.
- (h) The power circuit shall contain a separate equipment electrical grounding conductor.
- (i) Carriage track systems shall be electrically connected ti an earth ground.
- (j) Communication Facilities. A two-way voice communication system shall be provided between the equipment operators and manned station while the working platform is in use. The communication facility shall be operable and manned at all times when the equipments is being used.

3.11 Control, Power Circuits, and Components

Power and control circuits shall operate by hydraulic, pneumatic, electrical, or other suitable means that provide at least the minimum safety requirements as set forth in this Standard.

3.11.1 Electrical Grounding.

All exposed noncurrebt-carrying metal parts shall be grounded. The equipment grounding shall be done by means of a grounding conductor included in the power cable used for connecting the equipment to the supply. The grounding conductor shall be bonded to the equipment metal frame at one end and terminated in the grounding contact of an approved grounding-type attachment plug at the supply end. All exposed noncurrebt-carrying metal parts of the equipment shall be considered grounded if secured to and in metal contact with the grounded equipment frame. Suspended equipment, if not directly connected to the supply, shall either be grounded by a grounding conductor in the cable used to carry control or power and communications between the suspended equipment and the carriage or may be grounded by the steel support ropes, provided that the steel ropes are properly bonded to both the suspended equipment and the grounded carriage to ensure a good arounding connection.

Any track system used in conjunction with traversing of equipment shall be electrically grounded.

3.11.2 Electrical Wiring and Components

3.11.2.1 General Requirements.

Electrical wiring and components shall conform to the requirements of the standards adopted by the National Fire Protection Association (National Electrical Code) or the JIC Electrical Standards for General Purpose Machine Tools (EGP 1-67), except as modified by this Standard.

- (b) Runway Conductor System. Electrical runway conductor system shall be of a type designed for use in exterior locations and shall be located so they are not subject to contact with accumulated snow or water. The conductors, collectors, and disconnecting means shall be in accordance with the applicable requirements of the National Electrical Code, as stated in para. 2.3.6.
- (c) Power Supply for Maintenance Tools. Electrical power may be provided to outlets on the carriage and on the suspended or supported unit for operation of maintenance tools.

3.11.2.6 Traveling Cable

- (a) Traveling Cable Provisions. Conductors for control, power, communication, signal circuits, and grounding connection may be run in the same traveling cable, provided that all conductors are insulated for not less than 600 V and all live parts of the equipment are insulated from ground for this voltage.
- **(b)** Protection of Traveling Cable. Means shall be provided so that the traveling cable is protected against damage from striking the building or structure, over-tensioning, or other causes (see paras. 2.3.6 and 3.7.6.3)
- (c) Storage of Traveling Cable.
 - (1) On manned platforms, cable shall be wound on drums designed for that purpose or placed in a container outside of the working area.
 - (2) On ground-rigged manned platforms, cable may be wound on drums at the boarding elevation or contained as described above.

3.11.2.2 Circuit Protection.

The building power supply for the equipment shall be an independent circuit provided with a disconnect switch.

3.11.2.3 Guarding of Electrical Parts.

An uninsulated live part that is a shock hazard shall be located or enclosed so that protection will be during normal operation.

3.11.2.4 Circuit Potential Limitations.

- (a) Circuit potential installed on a roof or other exterior location for service to the equipment shall not exceed 600 V, except when located at street or grade elevations, in witch case the potential shall be limited to 230 V.
- (b) Circuit potential to electrical components on manned platforms shall not exceed a nominal voltage of 480 single or polyphase.
- (c) Circuit potential permitted for operating devices, limit switches, and electrical interlocks shall not exceed a nominal voltage of 230 single phase.
- (d) Circuit potential limitations for hand power tools used on a working platform shall not exceed a nominal voltage of 230 single phase, which may be included in the equipment's power circuit.

3.11.2.5 Equipment Electrical Service System

(a) Receptacle and Cable System (Power). Provisions for electrical grounding shall be included with the power supply system, All supply receptacles shall be of a weatherproof type and shall be installed in accordance with para. 2.3.6.

16 Retrofit of New, Power Operated Systems **Dedicated to the Building**

16.3.3 Electric cable and separate hanging lifelines shall be stabilized against displacement by the wind at vertical intervals not exceeding 200 feet (61 m). The means of stabilization may be independent of the building face being cleaned.

16.4 Electrical Provisions on the Building

16.4.1 Electrical outlet shall provide electrical service on a common dedicated circuit that matches the electrical power requirements of the equipment's operation and service including its peak amps, volts and phase. At least one outlet shall be provided for each building level from witch the equipment is supported. Additional outlets shall be provided on large roof areas and spaced a maximum of 200 feet (61 m) between outlets. Each outlet shall have a strain relief device which can be secured to the receptacle's anchorage.

16.4.2 The electrical design of the power supply shall be in accordance with (a) through (f).

(a) Building wire sizes shall be of such capacity that not more than a 3% voltage drop from nominal equipment requirements shall occur at each building outlet when full load is applied to the circuit.

- (b) Each power communication outlet shall be provided with an adjacent strain relief anchorage to prevent force being applied to the outlet or to the conduit leading to the outlet by movement of the equipment. All outlets (receptacles) shall be of the twist lock type.
- (c) The equipment power supply should be from an independent electrical circuit that will remain separate from all other equipment within or on the building. If the building is provided with an emergency power system, the equipment circuit may be designed so that it is connected to the emergency circuit
- (d) The power circuit shall be provided with a cut-off switch that can be locked in the ON or OFF position. The switch shall be conveniently located with respect of the primary operating area of the equipment to allow the operators of the equipment access to the switch.
- (e) Power and communication outlets shall be located at the approximate elevation of the primary equipment operating area.
- (f) The power circuit shall contain a separate equipment ground conductor that shall be connected to an earth ground.

ELECTRICAL POWER OUTLET REQUIREMENTS [SUPPLIED BY OTHERS]				
OUTLET TYPE WEATHERPROOF POWER OUTLET WITH STRAIN RELIEF EYEBOLT				
VOLTAGE		208V		
PHASING		SINGLE PHASE		
FREQUEN	CY	60 HZ		
AMPERA	GE	30A		
VOLTAGE	DROP	NO MORE THEN 3% DROP IN VOLTAGE AT ANY OUTLET		
RECEP	TACLE	SAFETY-SHROUD, TWIST-LOCK	NEMA NO.	
HUBBLL NO.	FEMALE	HBL2620SW	L6 - 30R	







DAVIT MANUAL

Suspended Access Systems and Fall Protection

