



STANDARD OPERATING PROCEDURE FALL PROTECTION SLOPES AND ROPE ANCHORAGES

Kiewit Bridge and Marine		
Position	Name	Ownership Date
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Rev	Revision Date	Change Description
A	6-Jun-2024	Issued for Review
B	26-Jul-2024	Issued for Final KBM DSM Review
01	3-Oct-2024	Issued for Use



NOTE: Revision history will be an alpha revision Rev. A, B, etc., until “Issued for Use”. At that point it will be issued with a two-digit numeric revision Rev. 01, 02, etc.



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1.0 PURPOSE

The objective of this Standard Operating Procedure (SOP) is to help guide the planning for all work on slopes. This procedure establishes how to access and work on steep slopes where a worker is exposed to a fall. Example fall permits are referenced as a planning guide when exposed to a fall of 6' (4' for WA).

2.0 DEFINITIONS

TERMS / ACRYNOMS	DEFINITION	REFERENCE
FLS	Front Line Supervisor – a person trained and qualified to lead and manage operations.	
Hazardous Slope	A slope from which construction work is performed where normal footing cannot be maintained without the use of devices due to the pitch of the surface, weather conditions, or surface material.	
Corporate Standard Definitions	Glossary	



3.0 ROLES AND RESPONSIBILITIES

ROLE	RESPONSIBILITY
DESIGNATED SIGNER	<ul style="list-style-type: none"> • Must review and approve every fall protection permit on their project. • Designated by district leadership and assigned on the TSCD matrix.
DESIGNATED INSPECTOR	<ul style="list-style-type: none"> • Responsible for initial inspection of fall protection systems to ensure correct installation.
PROJECT MANAGER	<ul style="list-style-type: none"> • Oversee implementation of fall protection program. • Ensure employees are trained and understand the fall protection requirements.
GENERAL SUPERINTENDENT	<ul style="list-style-type: none"> • Review, approve fall protection permits. • Ensure the fall protection hierarchy of controls is followed. • Ensure the fall protection permit is complete with all supporting documents attached.
SUPERINTENDENT	<ul style="list-style-type: none"> • Develop the fall protection permit with the goal of eliminating fall risk by following the hierarchy of controls (eliminate, prevent, restrain, arrest, administrative). • Verify the craft have appropriate training, understand the plan/permit. • Verify the permit is being adhered to in the field. • Ensure all approvals are obtained. • Ensure the team is trained on the inspection process and it is being tracked. • Confirm rescue equipment is available.
FIELD ENGINEER	<ul style="list-style-type: none"> • Participate in development of the fall protection permit. • Confirm fall distance vs fall clearance required. • Verify that the crew has the correct fall protection equipment. • Track and document all fall protection equipment and device inspections. • Verify the permit is being adhered to in the field. • Confirm rescue equipment is available.
FOREMAN	<ul style="list-style-type: none"> • Participate in the development of the fall protection permit. • Verify the permit is being adhered to in the field. • Ensure all craft employees working on the permit are properly trained to utilize their fall protection equipment and devices. • Review fall protection permit with crew prior to task and confirm signed off. • Confirm rescue equipment is available.
CRAFT	<ul style="list-style-type: none"> • Follow the fall protection permit being utilized in the field. • Only use fall protection equipment you have been trained to use. • Inspect all fall protection equipment and devices prior to every use.

4.0 PROCEDURE

- 4.1 Mitigate hazards below and address alternate access methods.
 - 4.1.1 Prior to working on a slope confirm the following items have been met:
 - 4.1.1.1 Alternative methods of access have been addressed and deemed not fit for the site conditions.
 - 4.1.2 All hazards below or on slope have been identified and/or mitigated.
 - 4.1.2.1 Impalement Hazards
 - 4.1.2.2 Voids/Landslides due to poor soil conditions – may require a Geotech to be onsite .
 - 4.1.2.3 Tripping hazards
 - 4.1.3 Slope Flowchart (Figure 6.1) can aid in the planning process and addressing hazards in the field.
- 4.2 Working Along Slope
 - 4.2.1 When accessing the slope it is recommended to work from the top down. If work is required on a slope from where normal footing cannot be maintained without the use of devices due to the pitch of the surface, weather conditions, or surface material fall restraint is required.
 - 4.2.2 Refer to Slope Flow Chart (Figure 6.1) for help on planning and selecting Fall Protection.
- 4.3 Recommended Fall Restraint Options Include:
 - 4.3.1 Fall Protection Cart
 - 4.3.1.1 Refer to and follow manufacturer’s instructions.
 - 4.3.2 Cart Options
 - 4.3.2.1 [Raptor TriRex](#)
 - 4.3.2.1.1 Multi-user and Single User Cart options available – 5 users max
 - 4.3.2.1.2 Must be set up 12’-15’ away from slope
 - 4.3.2.1.3 Can be set up on concrete (4000psi/6000psi) or flat surfaces with slopes up to 1:12
 - 4.3.2.1.4 Workzone = 30’ max
 - 4.3.2.1.5 Only use self-locking snap hooks and self-locking carabiners with cart
 - 4.3.2.1.6 See Raptor Fall Permit



4.3.2.1.7 [Garlock Cobra Cart](#)

4.3.2.1.7.1 Up to 4-person cart setup

4.3.2.1.7.2 Must be set up 15' away from slope



4.3.3 [Equipment Anchorage](#) at Top of Slope (Forklifts and Excavators)

4.3.3.1 Site conditions must allow for equipment to access and bench width must be wider than equipment width.

4.3.4 Equipment Anchorage at Top of Slope link (Trucks)

4.3.4.1 [Conterra Hitch Plate](#)



4.4 Mobile Anchor Points

4.4.1 Engineered Anchor Points (Figure 3.2)

4.4.1.1 Deadman

4.4.1.2 Ecoblock Restraint Lines – See [Restraint Line SOP](#).

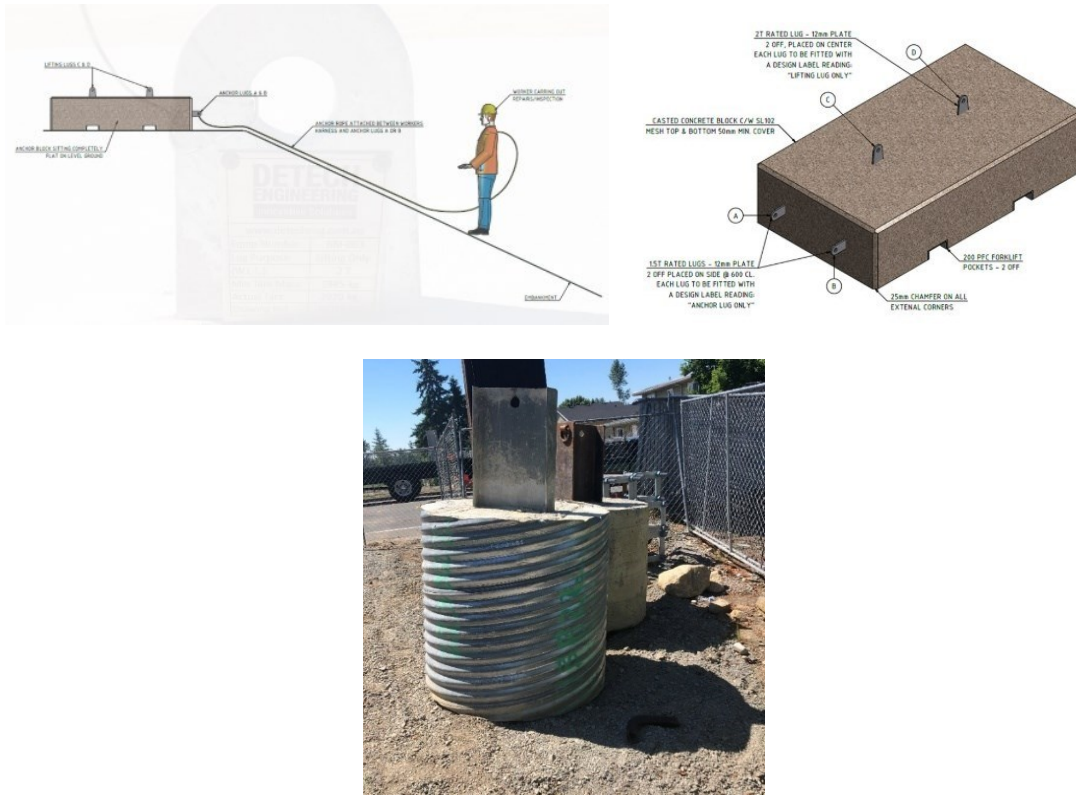


Figure 3.2



4.4.2 [3M Rope Grabs](#)


- 4.4.2.1 Must be used with an anchorage system that can resist 1000lb of force.



Example Rope Grab Options:

3M™ DBI-SALA® Lad-Saf™ Mobile Rope Grab 50003
Part Number 5000335, 3M Product Number 5000335, 3M ID 7100204313, UPC 0084

Details Typical Properties Resources Reviews Support




Security and confidence at height

Hover over image to zoom in

3M™ Protecta® Mobile Rope Grab 5000003, Fits 5/8
Part Number 5000003, 3M Product Number 5000003, 3M ID 7012819598, UPC 0084

Details Typical Properties Resources Reviews Support




Security and confidence at height.

Hover over image to zoom in

Example Anchorage Options:

3M™ Protecta® D-ring Plate Anchor For Concrete AJ720A, with Fastener Kit
Part Number AJ720A, 3M Product Number AJ720A, 3M ID 7012822279, UPC 00648250103166

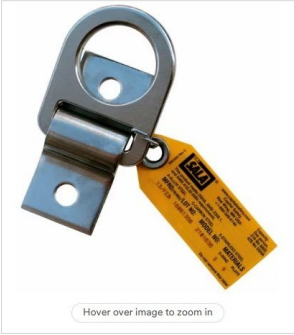
Details Typical Properties Resources Reviews Support



Meets the require
Low-profile 6" x 6"
Features pre-drille
installation
[View more details](#)
For industrial/occu

3M™ DBI-SALA® D-ring Anchorage Plate 2101638, 1 ea
Part Number 2101638, 3M Product Number 2101638, 3M ID 7100217031, UPC 0084077900834

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- **NOTE:** To confirm engineering requirements, see the TSCD Manual Table 3.10. [TSCD Manual](#)

5.0 Slope Flow Chart

See slope flow chart below for planning.

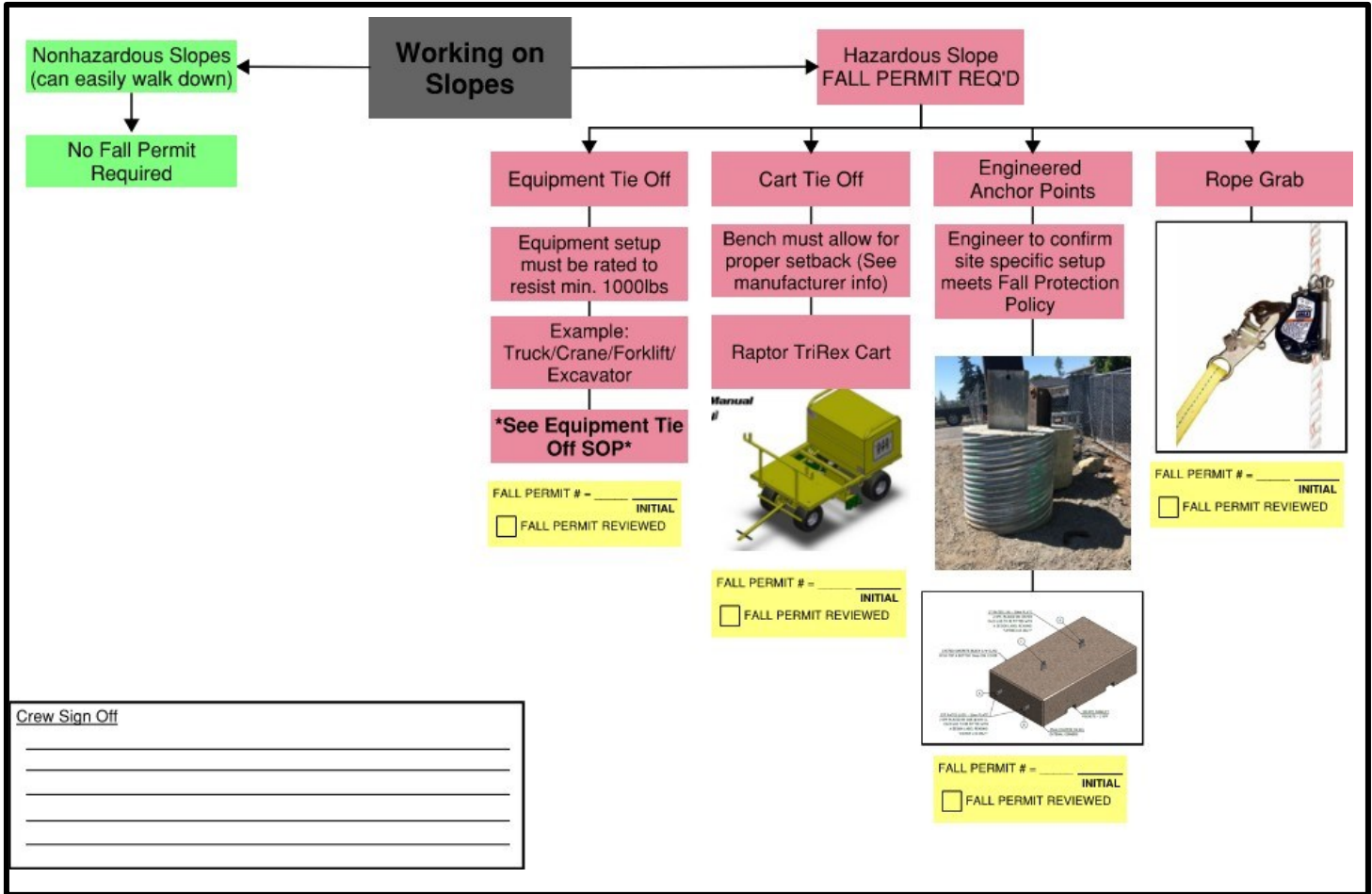


Figure 6.1

6.0 REFERENCES

- [Kiewit - Trenching & Excavation Policy](#)
- [OSHA 1926 Subpart P App B](#)
- [TSCD Manual](#)
- [Restraint Line SOP](#)