MINUTES OF ENGINEERING COMMITTEE MEETING

Covering Design, Construction, Capital Improvement, Master Plan and other Engineering, Operational and Planning Related Matters

Tuesday, November 16, 2021, 2:00 pm, via video/teleconference.

MINUTES

1. **Convene Meeting/Roll Call**

Committee Members Present:
Mark Smolley
Lois Henry
Ken Lande
Mike Murphy

David Ladd - absent

Staff Present:
James Furtado, Director of Operations
Josh Wolff, Engineering Manager
Joel Scianna, Assistant Engineer
Holly Hossack. District Secretary
Rick Rogers, District Manager (arrived at 2:15 p.m.)

2. **Oral Communications:** None

3. **Old Business**:
   A. ENGINEERING PROJECT SUMMARIES AND CALENDAR
   Review and discussion by the Committee regarding; priorities of projects, constructability study timing, Huckleberry easements, FAQ for Water Master Plan & Model, timeline on Master Plan, AWIA risk assessment/emergency response, and GIS/CAD Specialist hired.

4. **New Business**:
   A. FOREMAN PIPELINE ACCESS TRAIL REHABILITATION UPDATE
   Presentation by J. Tarantino, Vice President of Freyer & Laureta, on the Foreman Pipeline Access Trail Rehab.

   Discussion by the Committee, staff, and presenter regarding; walkable access, slide potential, constructability, amount of work needed, buried pipes, and FEMA.

B. GOALS AND OBJECTIVES FOR 2021-2022

R. Rogers introduced this item.

Discussion by the Committee and staff regarding the three main items for the manager's goals and objectives is; recovery from the CZU Fire, the Capital Improvement Plan, and potential consolidation with Big Basin Water (and other water mutuals).

5. **Adjournment**: 3:20 p.m.

Foreman Grading/Erosion Control Project Update

Engineering Committee Meeting

November 16, 2021

FREYER & LAURETA, INC.

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Presenter

Jeff Tarantino, P.E.
Vice President
Freyer & Laureta, Inc.
Project Manager

Project Purpose

- Stabilize slope
- Protect District infrastructure
- Reduce long-term erosion risk

Existing Conditions

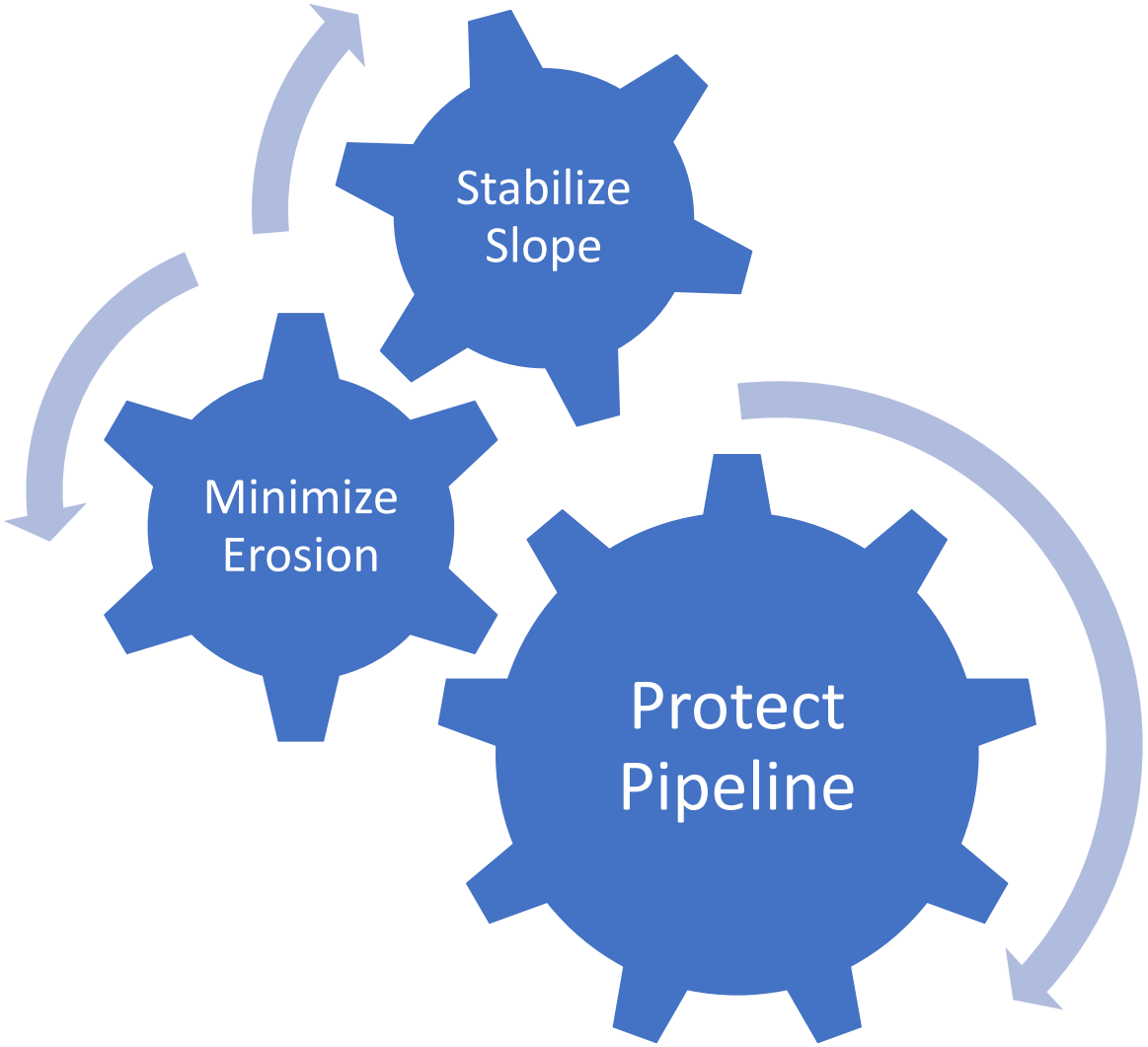
Example: Side Cast Fill

Example: Longitudinal Cracking

Example: Upslope Sloughing

Project Objectives

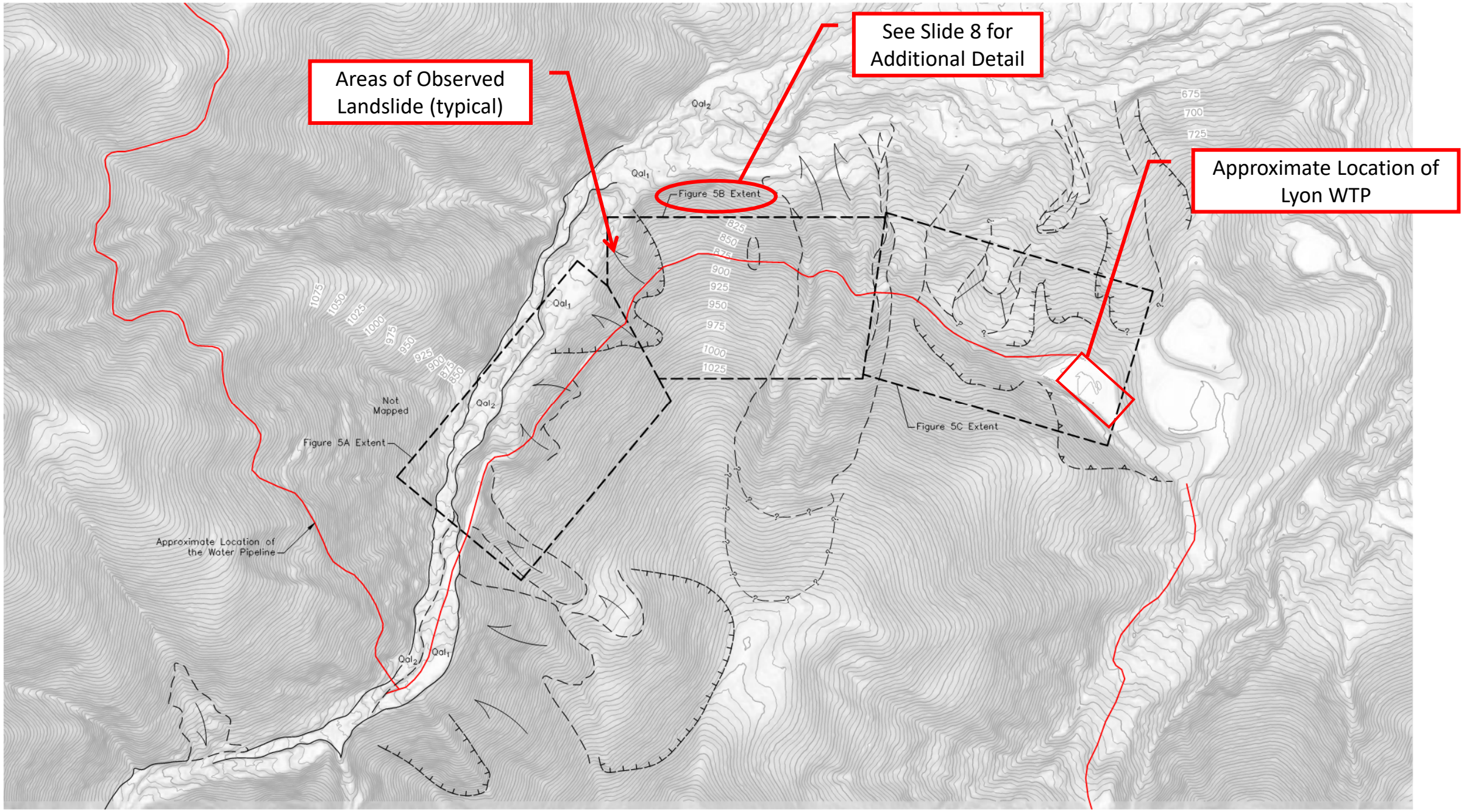
- Address slope instability
- Provide erosion protection
- Protect existing pipelines
- Provide walkable access

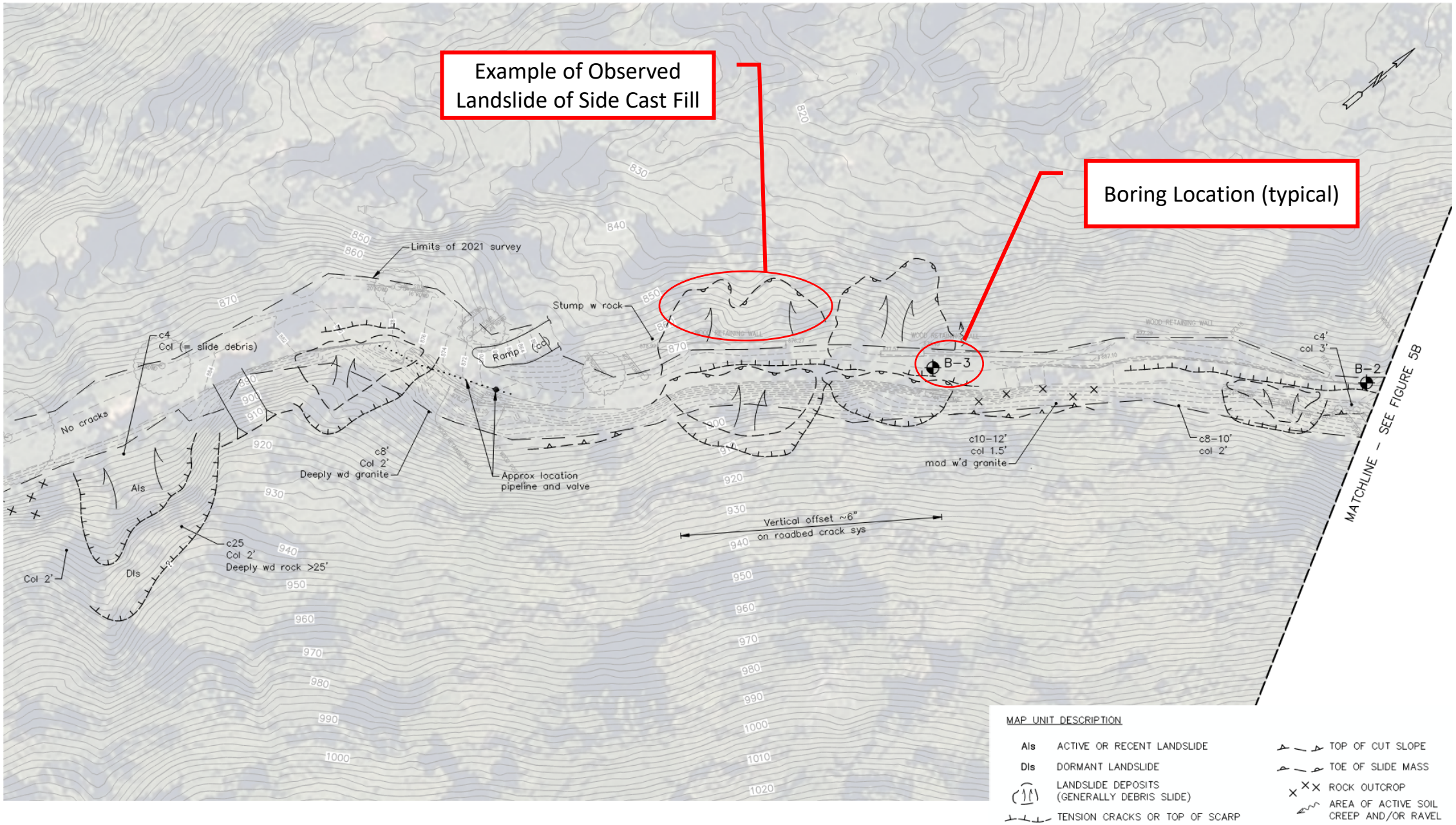


Geotechnical Investigation

Work Completed

- Reviewed existing geological maps
- Perform three borings
- Evaluated soil conditions
- Perform laboratory analysis


Areas of Observed Landslide (typical)
See Slide 8 for Additional Detail
Approximate Location of Lyon WTP
Figure 5B Extent
Figure 5A Extent
Figure 5C Extent
Not Mapped
Approximate Location of the Water Pipeline
Qal1
Qal2


Example of Observed Landslide of Side Cast Fill
Boring Location (typical)
Limits of 2021 survey
Stump w rock
Ramp (cut)
B-3
B-2
c4
Col (= slide debris)
No cracks
Als
Dls
Col 2'
c25
Col 2'
Deeply wd rock >25'
c8'
Col 2'
Deeply wd granite
Approx location pipeline and valve
Vertical offset ~6" on roadbed crack sys
c10-12'
col 1.5'
mod w'd granite
c8-10'
col 2'
c4'
col 3'
MATCHLINE - SEE FIGURE 5B
MAP UNIT DESCRIPTION
Als ACTIVE OR RECENT LANDSLIDE
Dls DORMANT LANDSLIDE
LANDSLIDE DEPOSITS (GENERALLY DEBRIS SLIDE)
TENSION CRACKS OR TOP OF SCARP
TOP OF CUT SLOPE
TOE OF SLIDE MASS
ROCK OUTCROP
AREA OF ACTIVE SOIL CREEP AND/OR RAVEL

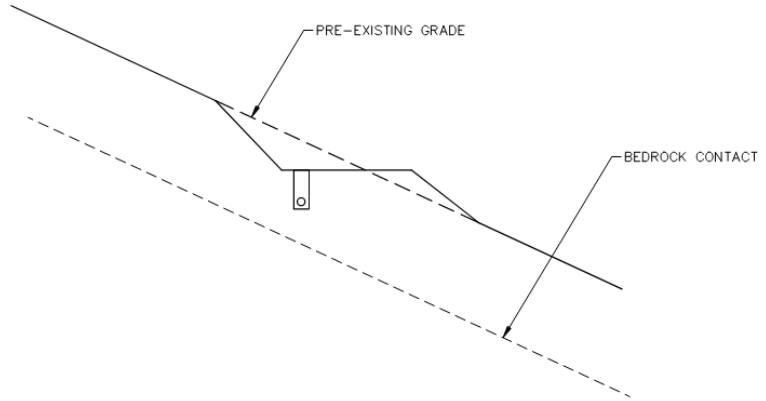
Geotechnical Investigation

Investigation Results

- Side cast fill requires stabilization
- Upslope sloughing can be mitigated
- Erosion control improvements
- Varying depth to bedrock between 1 foot below ground surface to up to 8 feet below ground surface

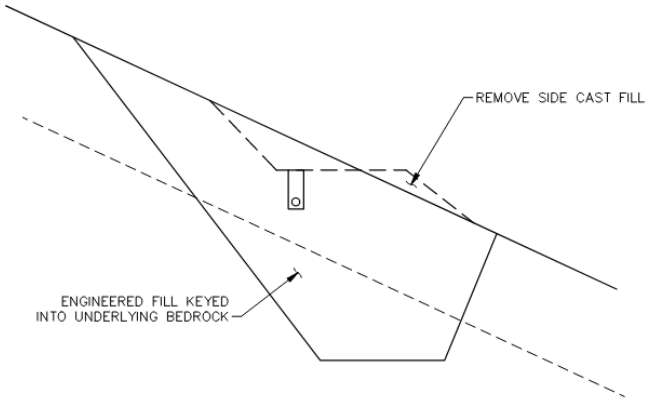
Alternative 1: Restore Slope

- Returns slope to previous condition
- Requires excavations varying from 3 feet to 10 feet
- Likely not feasible



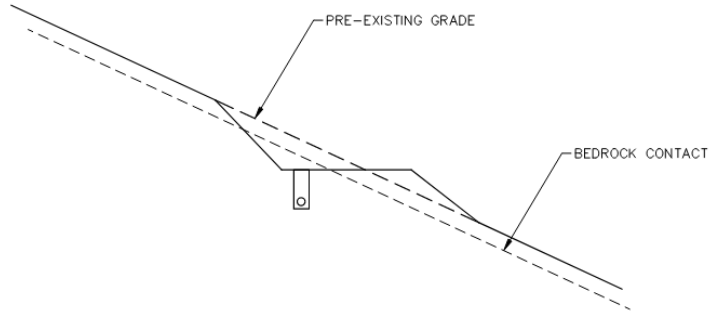
EXISTING CONDITIONS - DEEP SOIL PROFILE

NOT TO SCALE



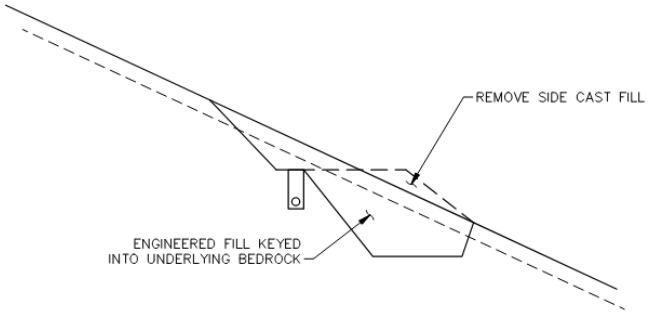
ALTERNATIVE 1 - DEEP SOIL PROFILE

NOT TO SCALE



EXISTING CONDITIONS - SHALLOW SOIL PROFILE

NOT TO SCALE

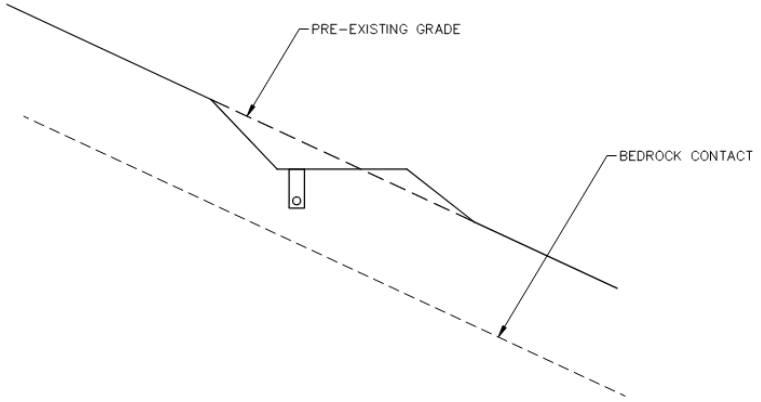


ALTERNATIVE 1 - SHALLOW SOIL PROFILE

NOT TO SCALE

Alternative 2: Remove Debris/Provide Catchment

- Removes side cast fill on downslope
- Requires wall to catch debris from upslope
- Challenging construction requirements
- Not preferred solution



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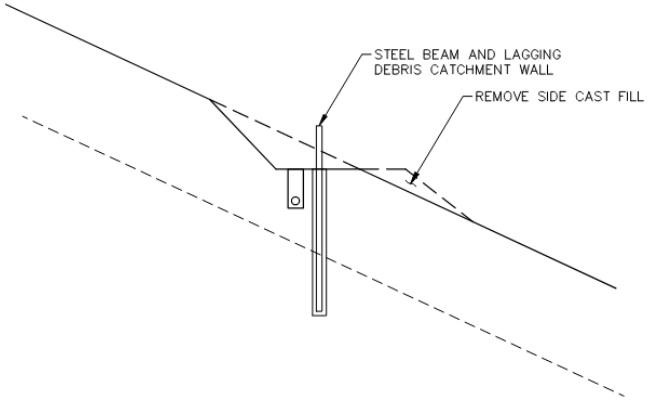
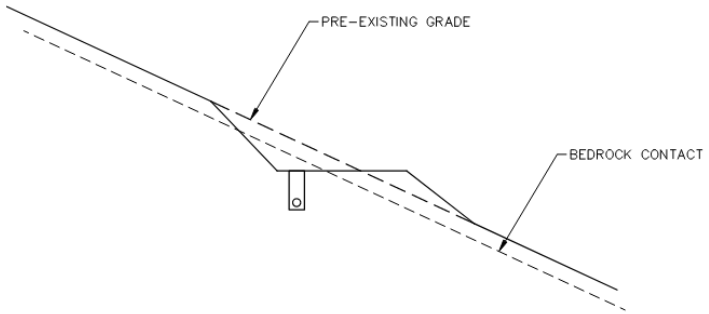


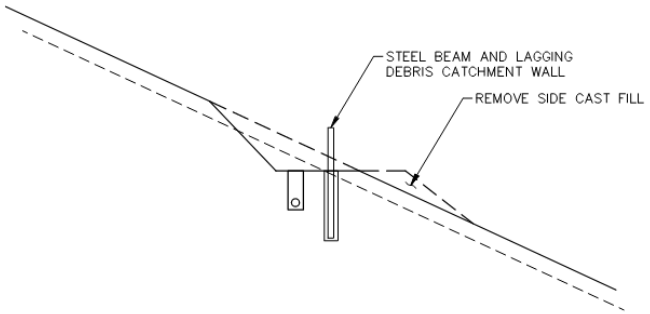
ALTERNATIVE 2 - DEEP SOIL PROFILE

NOT TO SCALE



EXISTING CONDITIONS - SHALLOW SOIL PROFILE

NOT TO SCALE

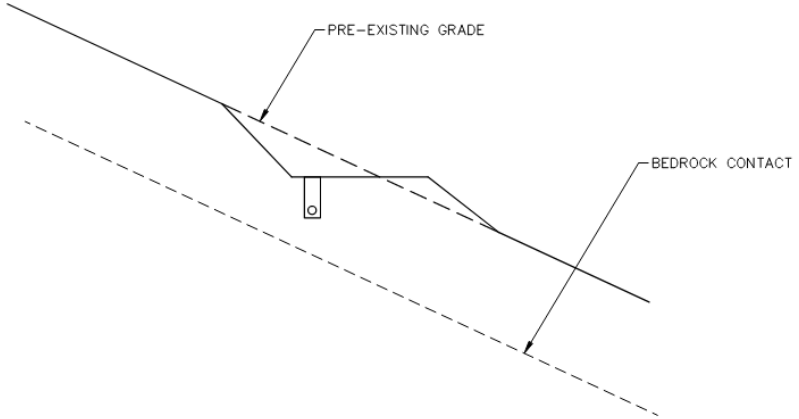


ALTERNATIVE 2 - SHALLOW SOIL PROFILE

NOT TO SCALE

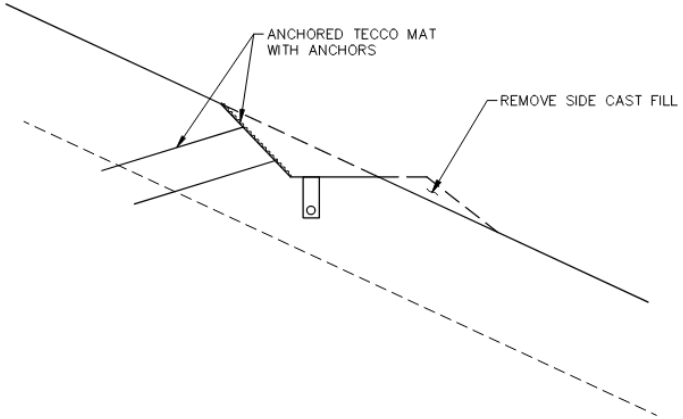
Alternative 3: Remove debris/stabilize slope

- Removes side cast fill on downslope
- Utilize pre-engineered system to stabilize slope
- Requires offhaul
- Not preferred solution



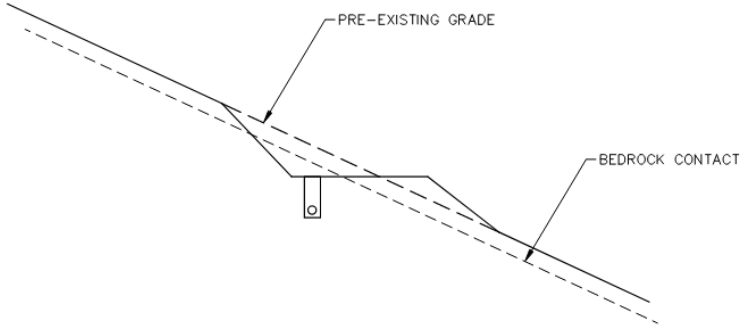
EXISTING CONDITIONS - DEEP SOIL PROFILE

NOT TO SCALE



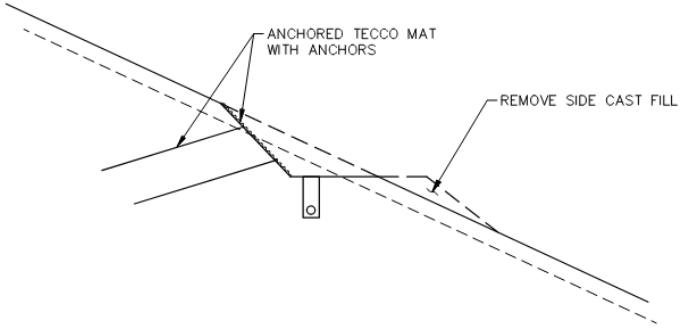
ALTERNATIVE 3 - DEEP SOIL PROFILE

NOT TO SCALE



EXISTING CONDITIONS - SHALLOW SOIL PROFILE

NOT TO SCALE

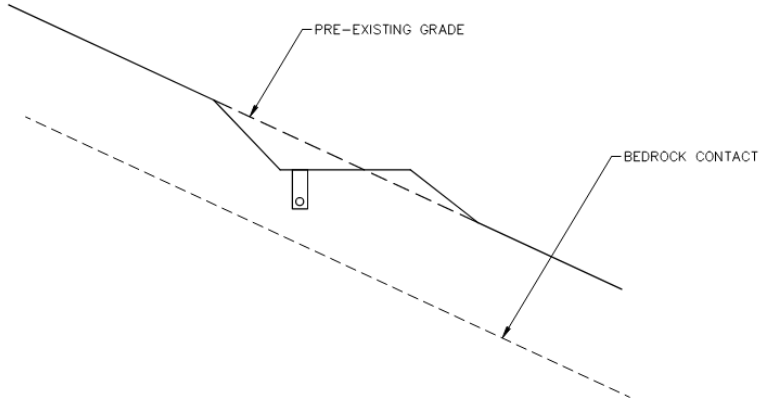


ALTERNATIVE 3 - SHALLOW SOIL PROFILE

NOT TO SCALE

Alternative 4: Reuse debris/stabilize slope

- Removes side cast fill on downslope
- Reuses material
- Utilize pre-engineered system to stabilize slope
- Preferred solution



EXISTING CONDITIONS - DEEP SOIL PROFILE

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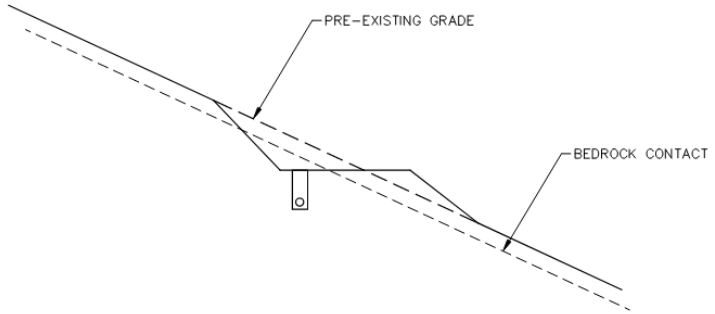

EXISTING CONDITIONS - SHALLOW SOIL PROFILE

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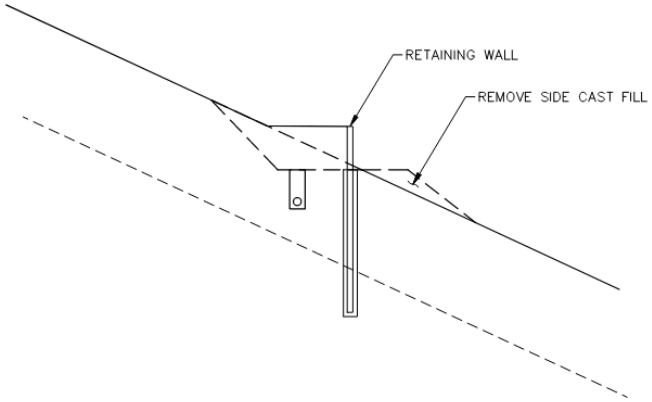
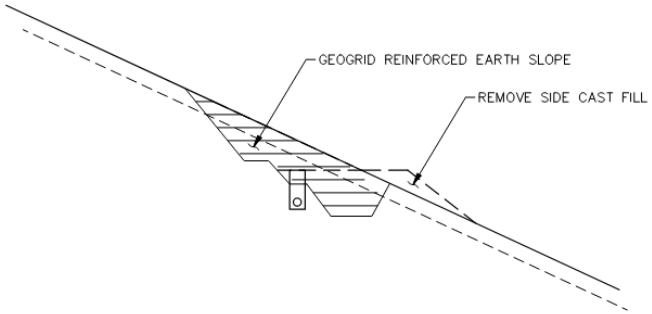


ALTERNATIVE 4 - DEEP SOIL PROFILE

NOT TO SCALE

NOTE:
AT DEEPER SOIL LOCATIONS, DEEPER FOUNDATIONS SHOULD BE USED TO TRANSFER FILL LOADS TO COMPOTENT MATERIALS. THIS EXAMPLE USES A STEEL BEAM AND LAGGING WALL AND MAINTAINS A PATH.



ALTERNATIVE 4 - SHALLOW SOIL PROFILE

NOT TO SCALE

NOTE:
AT SHALLOW SOIL LOCATIONS PILES OR KEYWAYS MAY BE FEASIBLE. THIS EXAMPLE SHOWS A GEOGRID REINFORCED EARTH SLOPE.

Next Steps

- Proceed with design of Alternative 4
- Optimize design to minimize soil offhaul
- Provide erosion control measures

Questions?

Engineering Committee Meeting

November 16, 2021