



Ministry of  
Transportation  
and Infrastructure



# MOTI Geotechnical Engineering

***BCEA Expropriation Conference  
October 27, 2017***

## MOTI ENGINEERING SERVICES

### Structural Engineering



### Highway Design and Survey



### Electrical Engineering



Source: <https://www.flickr.com/photos/tranbc>

### Environmental Services



Source: Kathryn Graham

### Traffic and Highway Safety



Source: <https://www.theglobeandmail.com>

### Geotechnical Engineering



Source: <https://www.flickr.com/photos/tranbc>



## GEOTECHNICAL OVERVIEW

5 Work Units / Functions

*Geohazards & Slope Stability*

*Foundations*

*Materials & Standards*

*Aggregate Resource Management*

*Rockwork Engineering*



## Geohazards & Slope Stability



Photos by Jillian Jackson, BC MOTI



## Foundations



Photos by Sarah Gaib, BC MOTI



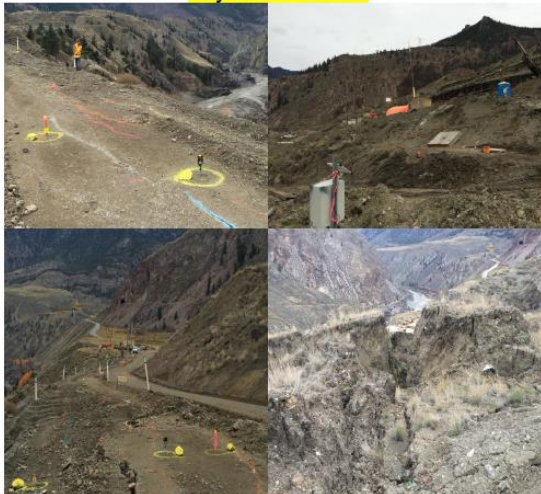
## Materials & Standards



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### RECOGNIZED PRODUCTS LIST

May 1<sup>st</sup> 2017 Edition



Slope Stabilization - Highway 99 near Lillooet

Edited and Maintained by: NEW PRODUCTS EVALUATION STANDING COMMITTEE  
Phone (250) 387-4360  
email to: [RPL@gov.bc.ca](mailto:RPL@gov.bc.ca)

INTERNET ADDRESS: <http://www.gov.bc.ca/tran>  
Site Index - Search under "R" for Recognized Products List

### Examples:

- Geotechnical Technical Circulars
- Geotechnical Design Criteria
- Geotechnical Terms of Reference
- Geotechnical updates to Sample Special Provisions and Standard Specifications.

## Aggregate Resource Management

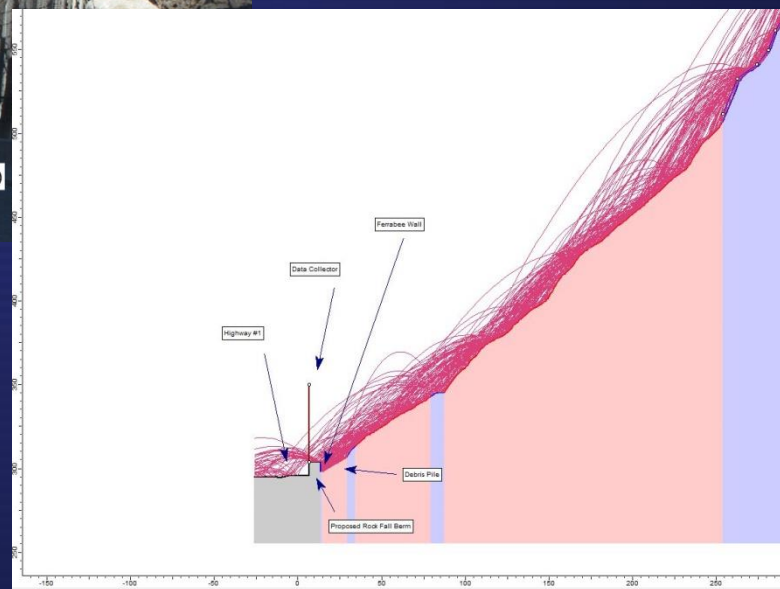




## Rockwork Engineering



Photo by Steve Pollak, BC MOTI







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# HIGHWAY DESIGN AND CONSTRUCTION



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Corridor Studies

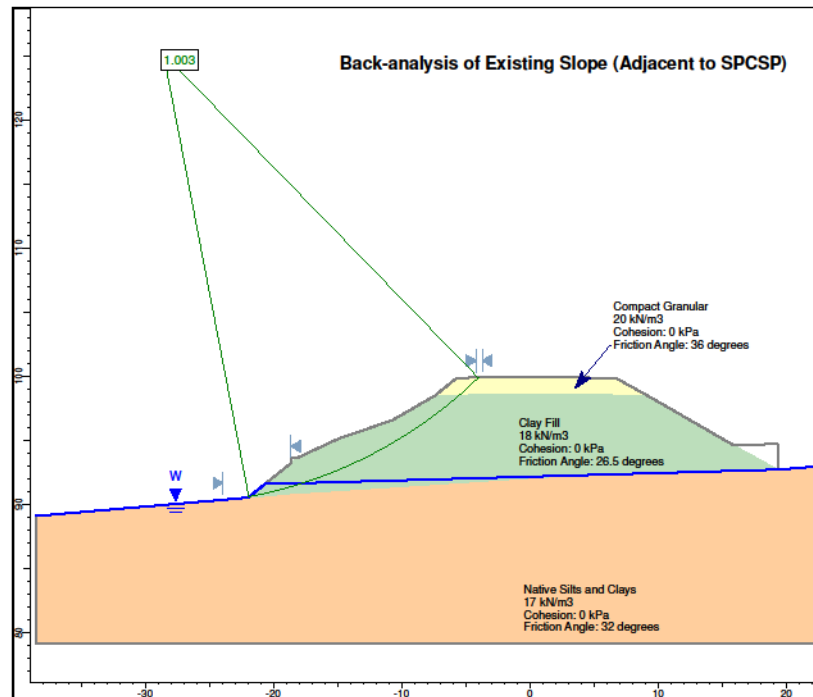
Preliminary Design

Subsurface Investigation

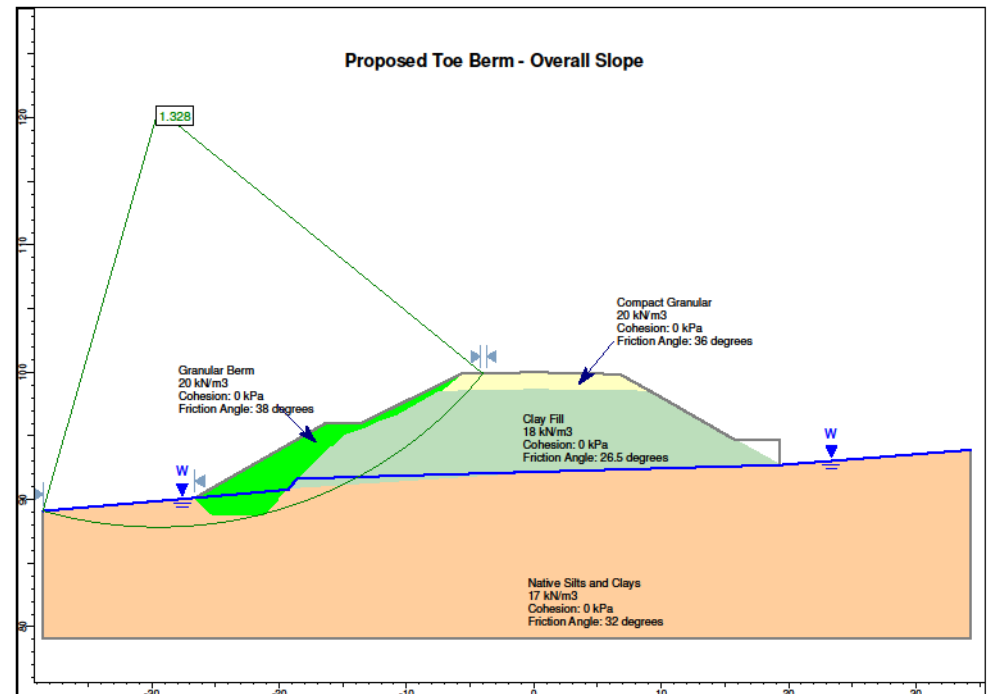


# Slope Stability Analyses

Back-analysis of Existing Slope (Adjacent to SPCSP)

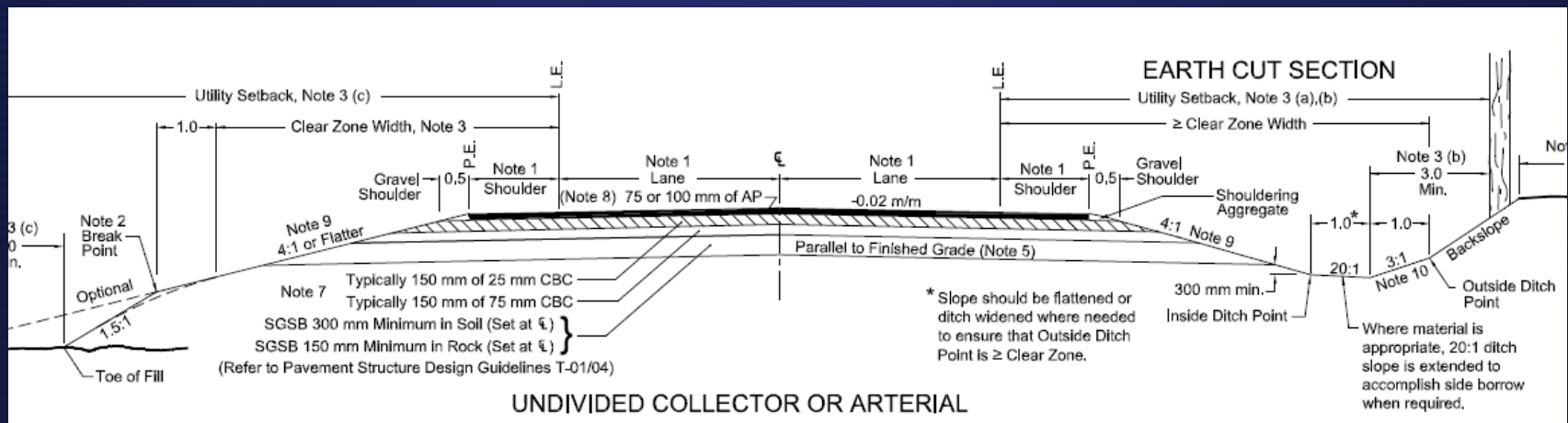


Proposed Toe Berm - Overall Slope



## Pavement Structure

- Based on characteristics of native subgrade materials and expected traffic loads.
- Typically includes sub-base gravels (i.e. SGSB), base gravels (i.e. WGB), and asphalt.







Material Availability / Suitability

Detailed Design

Tender & Award

Site Preparation

Construction

Field Review and QC/QA



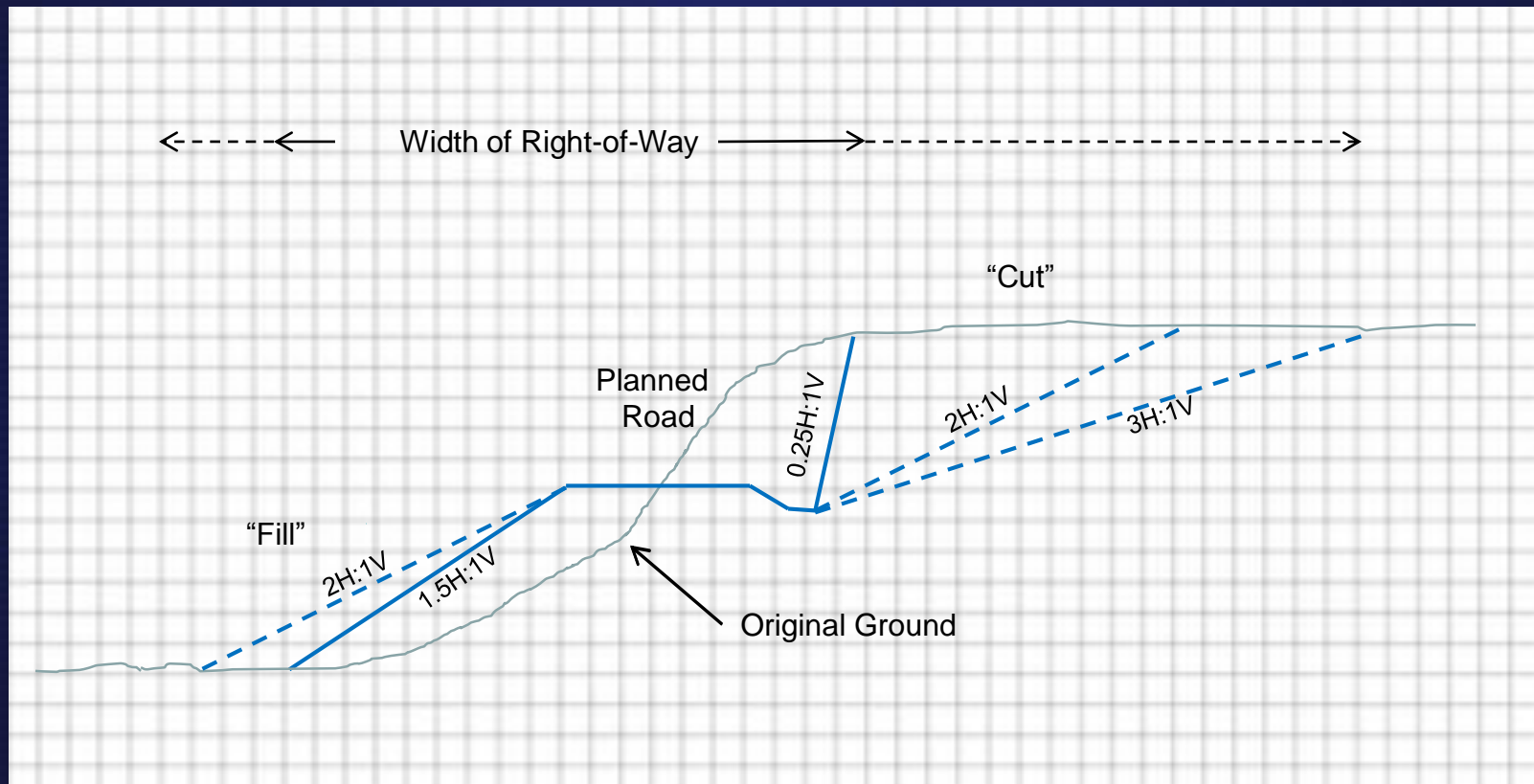
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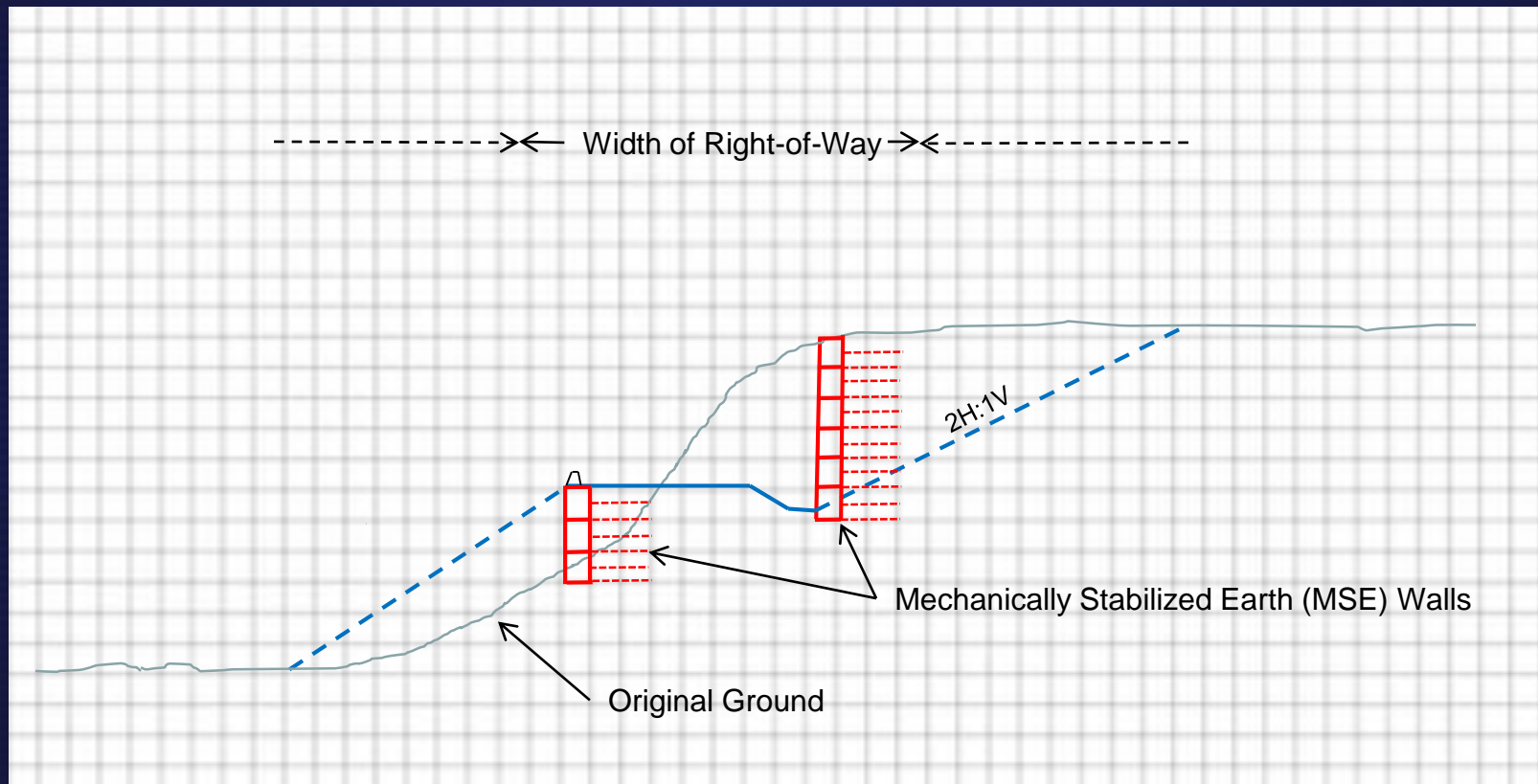
## SOME FACTORS AFFECTING PROPERTY REQUIREMENTS



## Material Types and Cut / Fill Slopes



## Retaining Walls





## Road Geometry

Affects Right of Way width through:

- Number of lanes
- Shoulder widths
- Cut and Fill slope angles
- Width of median (if any)
- Horizontal alignment (curve radius)
- Vertical alignments (affects cut and fill heights)



Source: BC Supplement to TAC  
Geometric Design Guide

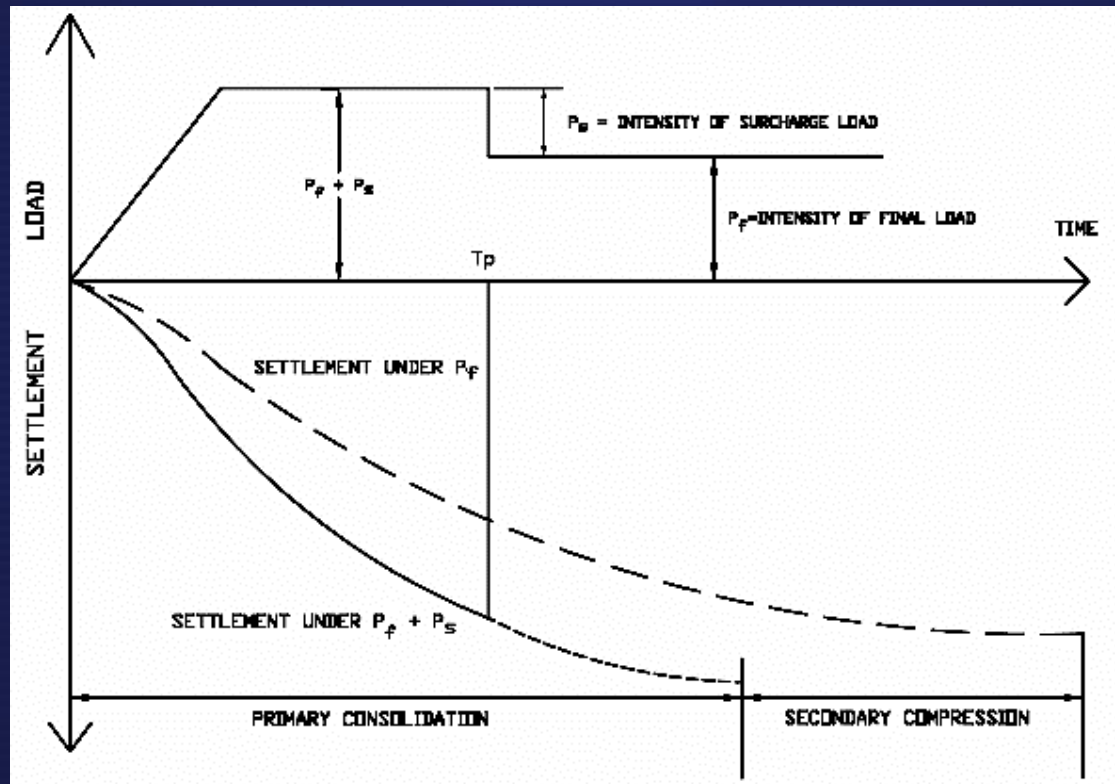


## Geohazard Mitigation / Slide Repair



- Debris flow containment structures and slide stabilization toe berms can require property acquisition beyond the typical highway Right of Way.

## Preloading (timing of acquisition)



Thank You!.....Questions?

