

Q:\Vancouver\GIS\ENGINEERING\13403101-01\Maps\13403101-01_Figure01_SiteLocation.mxd modified 6/12/2015 by morgann.zondervan

LEGEND

- ★ Site Location
- City
- Major Road
- ▭ National Park
- - - Provincial Boundary

NOTES
 Base data source:
 Imagery from ESRI Basemaps
 (various dates)

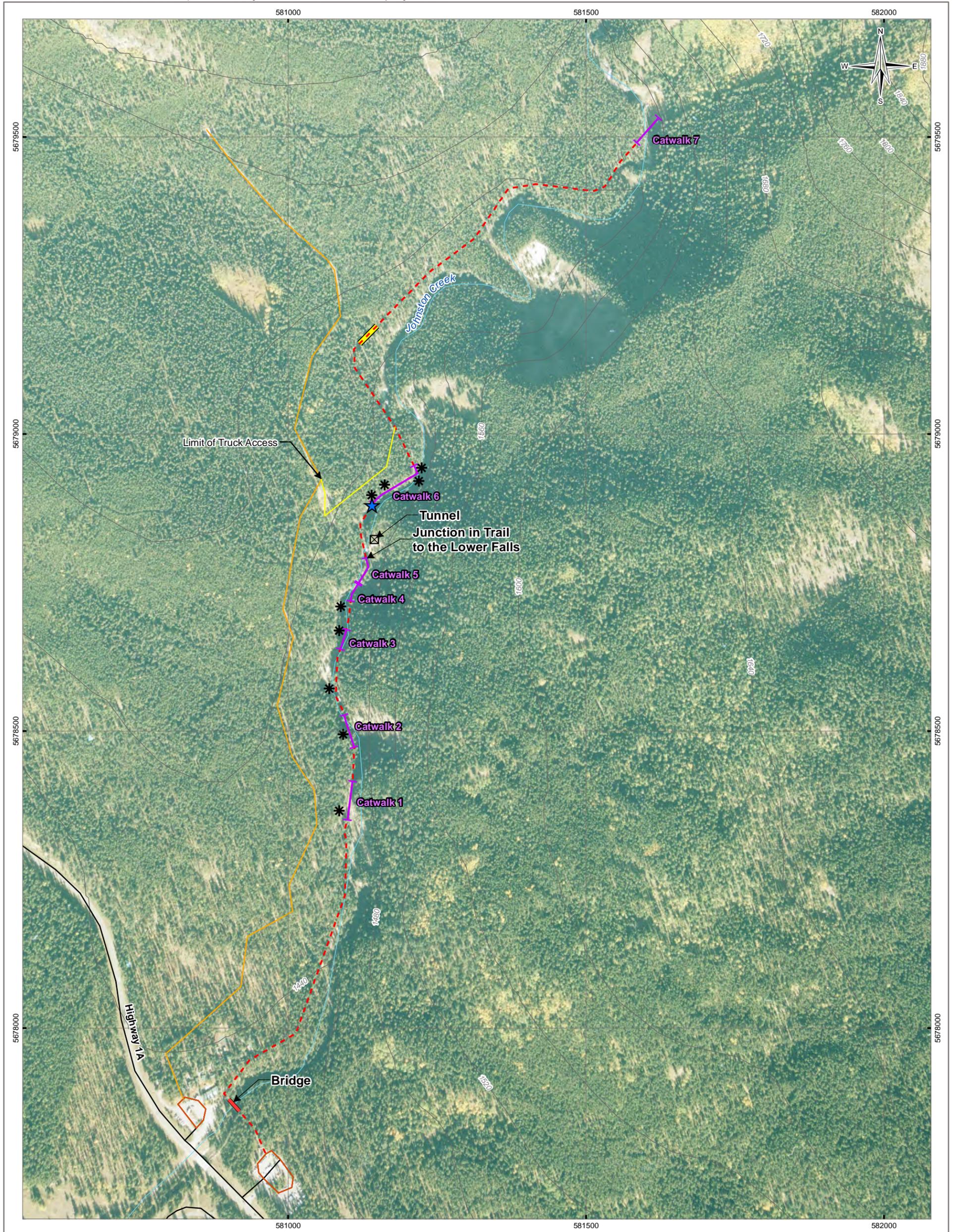
STATUS
 ISSUED FOR USE

**JOHNSTON CANYON
 SLOPE STABILIZATION
 BANFF NATIONAL PARK**

Site Location

PROJECTION UTM Zone 11		DATUM NAD83		CLIENT Parks Canada / Parcs Canada	
Scale: 1:1,000,000					
FILE NO. V13403101-01_Figure01_SiteLocation.mxd					
PROJECT NO. V13403101-01	DWN MEZ	CKD SL	APVD SM	REV 0	TETRA TECH EBA
OFFICE Tl EBA-VANC	DATE June 12, 2015				

Figure 1



LEGEND

- ★ Location of Trim Blasting
- ✱ Location of Rock Bolting (approximate)
- X Tunnel
- Johnston Canyon Hiking Trail
- Bridge
- Pickup Truck Access Trail from Johnston Canyon Resort (fire road)
- Foot Path Connecting Truck Access to Hiking Trail
- Catwalk
- Pavement Replacement Required
- Road
- Parking Lot
- Contour (40 m)
- Watercourse

NOTES
 1. Locations taken using a handheld GPS and are therefore approximate
 2. Base data source: Imagery from The National Air Photo Library (A31849_029) CanVec 1:50,000

JOHNSTON CANYON SLOPE STABILIZATION BANFF NATIONAL PARK

Site Plan

PROJECTION UTM Zone 11	DATUM NAD83	CLIENT Parks Canada
Scale: 1:6,000 100 50 0 100 Metres		
FILE NO. V13403101-01_Figure02_SitePlan.mxd		
PROJECT NO. V13403101-01	DWN MEZ	CKD SL
OFFICE TtEBA-VANC	APVD RB	REV 0
DATE June 12, 2015		Figure 2

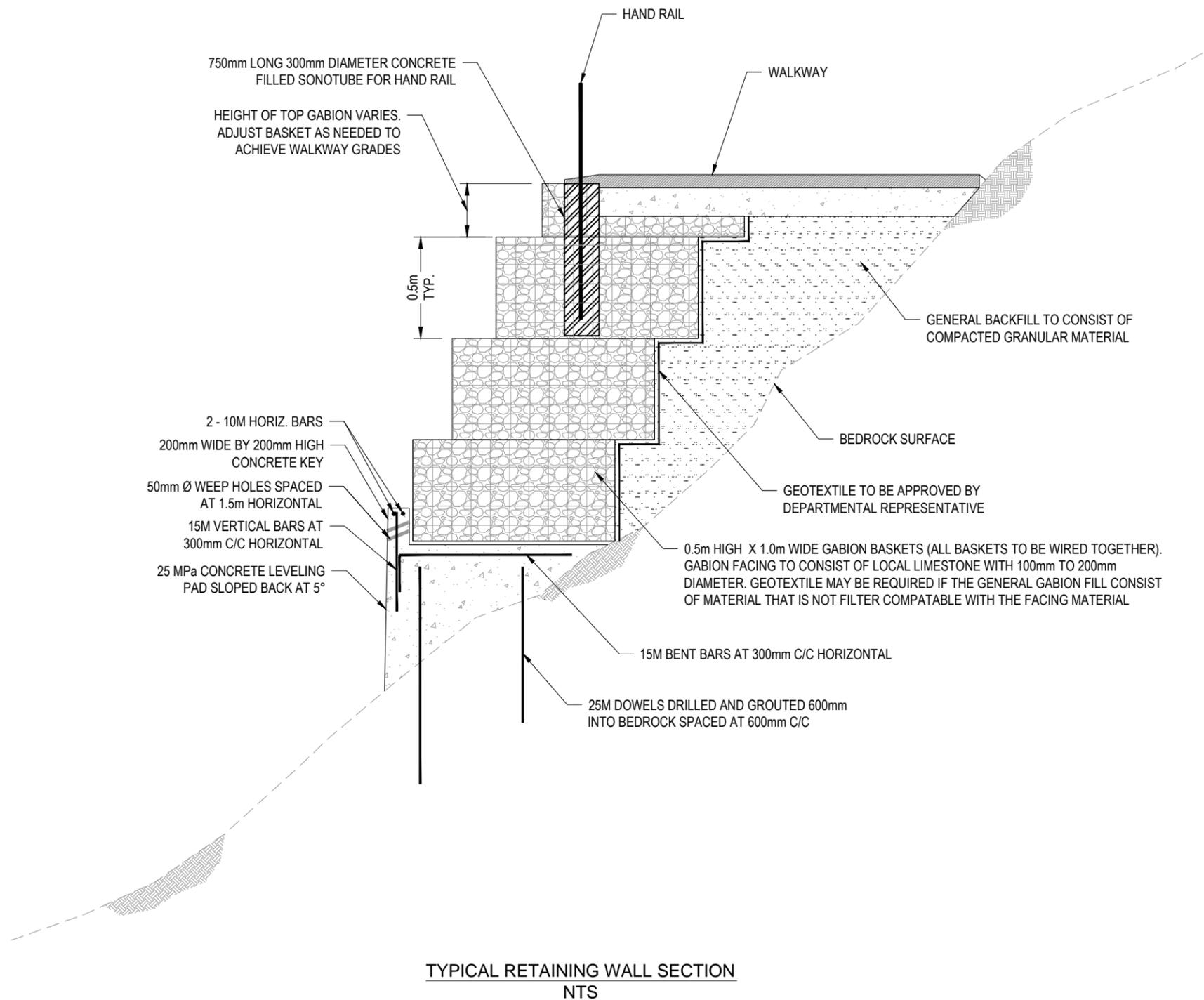
STATUS
ISSUED FOR USE



LOCATION OF RETAINING WALL TO BE REPLACED

NOTES:

1. USE GALVANIZED AND GREY PVC COATED MACCAFERRI GABION BASKETS OR EQUIVALENT (TO BE APPROVED BY DEPARTMENTAL REPRESENTATIVE).
2. INSTALL GABION BASKETS IN ACCORDANCE WITH MANUFACTURES' RECOMMENDATIONS AND SPECIFICATIONS.
3. DOWELS TO CONSIST OF 25 mm DIAMETER, GRADE 517/690 MPa DEFORMED STEEL BARS CONFORMING TO CAN/CSA G30.18, SUCH AS "DYWIDAG THREADBAR" MANUFACTURED BY DYWIDAG CANADA LIMITED, OR APPROVED EQUIVALENT. INSTALL DOWELS USING CEMENT GROUT IN ACCORDANCE WITH ROCK BOLT SPECIFICATIONS.
4. REMOVE SOFT/LOOSE/DELETERIOUS MATERIAL FROM CONCRETE LEVELING PAD SUBGRADE. SUBGRADE TO BE APPROVED BY THE DEPARTMENTAL REPRESENTATIVE PRIOR TO PLACING CONCRETE.
5. CONCRETE LEVELING PAD TO CONSIST OF MINIMUM 25 MPa, 28 DAY UNCONFINED COMPRESSIVE STRENGTH, WITH EXPOSURE CLASS F-1. INSTALL REBAR WITH CONCRETE LEVELING PAD AS SHOWN ON DRAWING.
6. COMPACT GRANULAR BACKFILL USING A HANDHELD PLATE COMPACTOR IN LOOSE LIFTS NOT EXCEEDING 200 mm TO 93% STANDARD PROCTOR, UNLESS OTHERWISE APPROVED IN THE FIELD BY DEPARTMENTAL REPRESENTATIVE.
7. INSTALL WEEP HOLES WITH MINIMUM 50 mm DIAMETER AS SHOWN ON DRAWING.



LEGEND

NOTES

1. THIS DRAWING IS NOT BASED ON A MEASURABLE SCALE.
2. DETAILS SHOWN ON THIS DRAWING WILL REQUIRE FIELD FITTING.

CLIENT

Parks Canada Agency L'Agence Parcs Canada

JOHNSTON CANYON

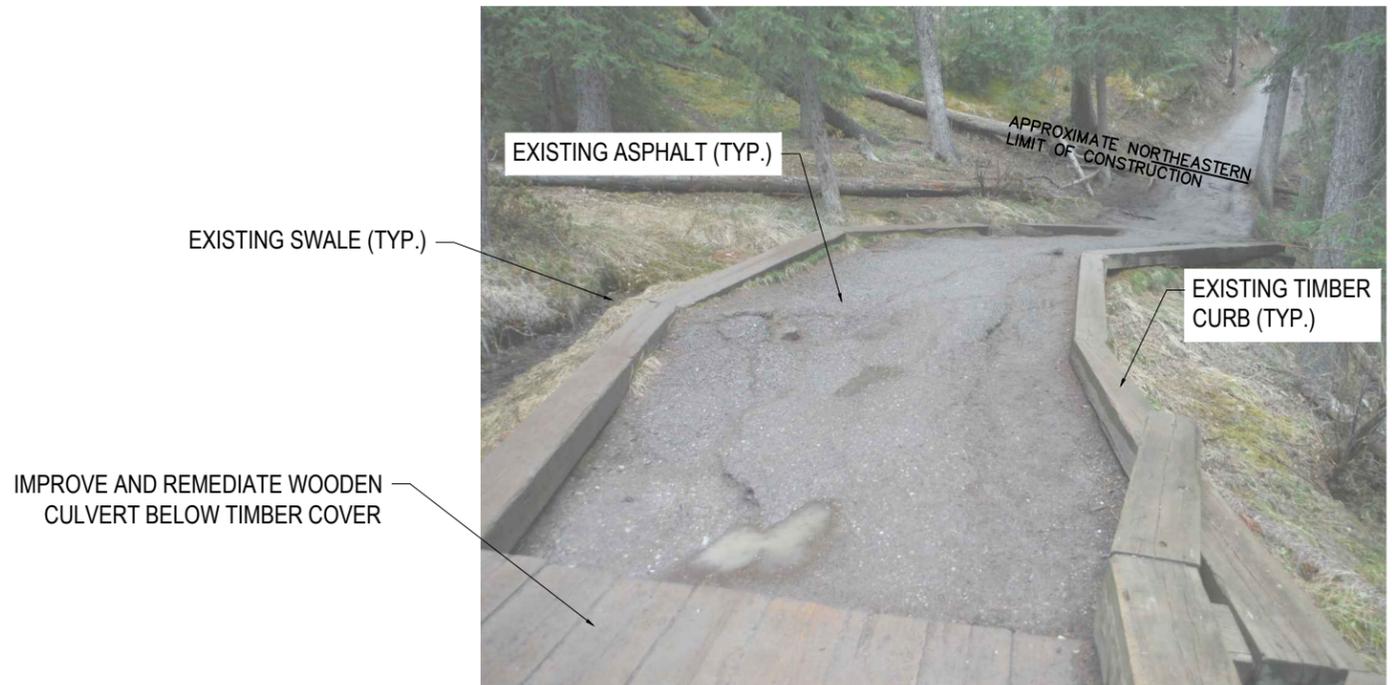
RETAINING WALL TYPICAL SECTION

ISSUED FOR USE



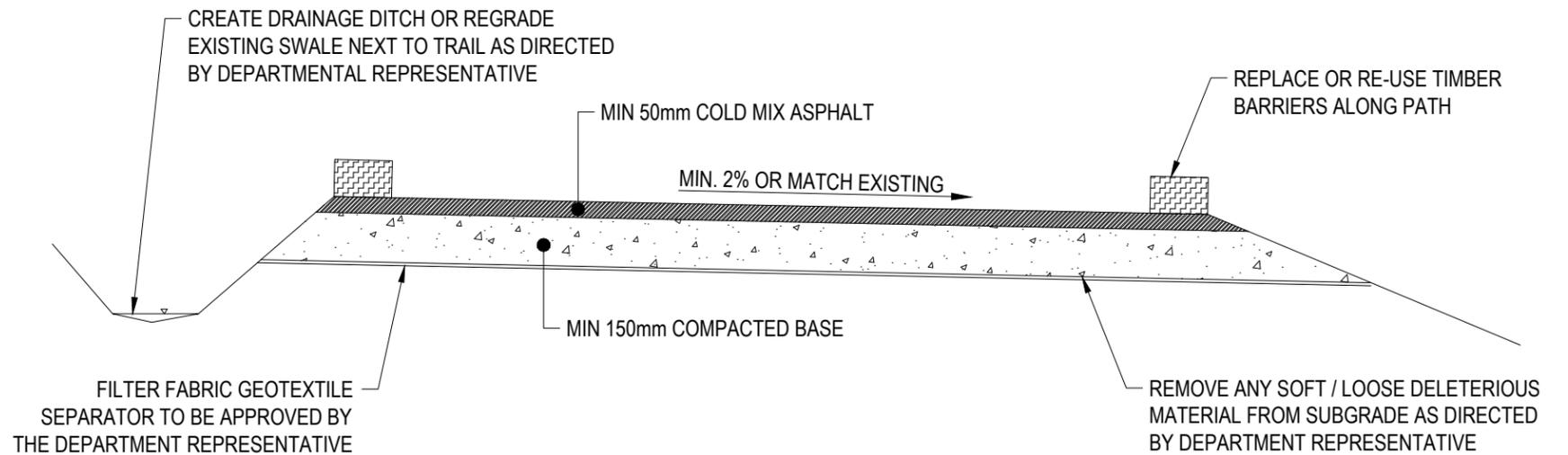
PROJECT NO. V13403101	DWN EY	CKD CH	REV 0
OFFICE VANC	DATE JUNE 2015		

FIGURE 3



NOTES:

1. RE-PAVE DAMAGED ASPHALT AREA WITHIN LIMIT OF CONSTRUCTION (LOC) FOR A SECTION APPROXIMATELY 30m LONG AND 2.7m WIDE WITH 50mm (MIN.) THICK APPROVED COLD MIX ASPHALT AND 150mm MIN THICK BASE COURSE.
2. WORK LOCATION TO BE CONFIRMED BY DEPARTMENTAL REPRESENTATIVE ON SITE.
3. REMOVE TIMBER CURBS AND STOCKPILE ON SITE TO BE REUSED.
4. SAWCUT EXISTING PAVEMENT IN LOC. REMOVE EXISTING ASPHALT AND DISPOSE AT DESIGNATED DISPOSAL SITE.
5. REMOVE ANY SOFT/LOOSE, DELETERIOUS MATERIAL FROM SUBGRADE. SUBGRADE SURFACE TO BE APPROVED BY DEPARTMENTAL REPRESENTATIVE.
6. RE-SHAPE BASE GRAVEL TO MATCH EXISTING TRAIL GEOMETRY.
7. HANDHELD PLATE COMPACTOR SHALL BE USED TO ACHIEVE 93% MODIFIED PROCTOR DENSITY (OR OTHERWISE APPROVED BY DEPARTMENTAL REPRESENTATIVE) ON BASE GRAVEL AND ASPHALT.
8. REGRADE EXISTING SWALE TO PREVENT PONDING WATER.
9. RE-INSTALL TIMBER CURBS.
10. INSTALL ADDITIONAL CULVERTS AS DIRECTED BY THE DEPARTMENTAL REPRESENTATIVE.
11. REFER TO CONTRACT SPECIFICATIONS FOR ADDITIONAL DETAILS.



**TYPICAL SECTION THROUGH NEW PAVEMENT
STRUCTURE NORTH OF CATWALK 6
NTS**

LEGEND

NOTES

1. THIS DRAWING IS NOT BASED ON A MEASURABLE SCALE.

CLIENT

Parks Canada Agency L'Agence Parcs Canada

JOHNSTON CANYON

**EXISTING TRAIL RE-PAVING
CONSTRUCTION DETAILS**

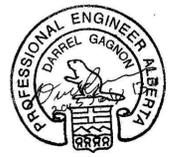
ISSUED FOR USE



PROJECT NO. V13403101	DWN EY	CKD CH	REV 0
OFFICE VANC	DATE JUNE 2015		

FIGURE 4

ISSUED FOR TENDER
NOT FOR CONSTRUCTION



DO NOT SCALE DRAWINGS

Revision/Revision	Description/Description	Date/Date

Client/client

Parks Canada Agency / L'Agence Parcs Canada



Project title/Titre du projet

BANFF NATIONAL PARK, ALBERTA

JOHNSTON CANYON TRAIL

Approved by/Approuvé par
DPG

Designed by/Concept par
THSU/DAWO

Drawn by/Dessiné par
JAGN

PWSC Project Manager/Administrateur de Projets TPSCG

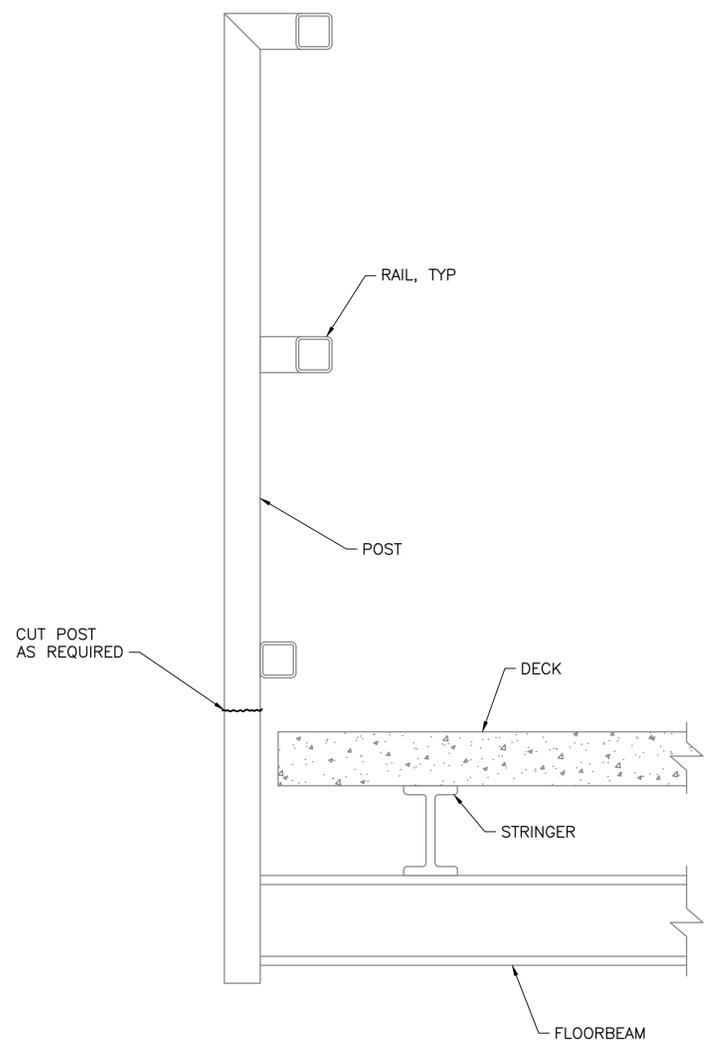
PWSC, Architectural and Engineering Resources Manager/Ressources Architectural et de Directeur d'ingénierie, TPSCG

Client/client
PCA

Drawing title/Titre du dessin

RAILING REMOVAL AND REPLACEMENT

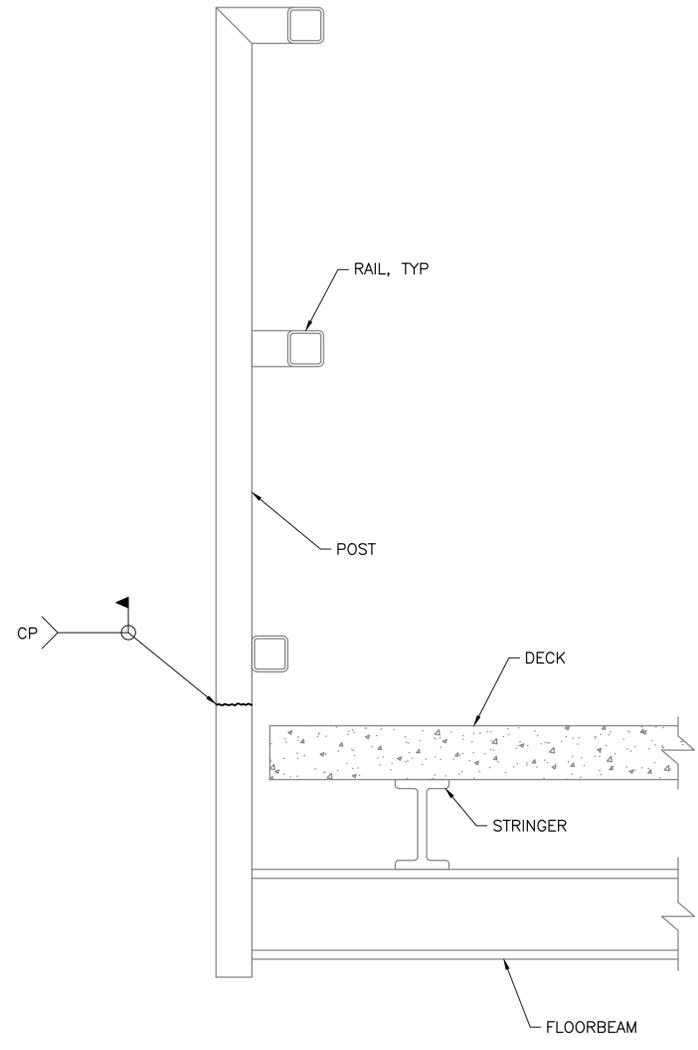
Project No./No. du projet: 704-V13403101
Sheet/Fauille: 1 OF 1
Revision no./La Révision no.: 1



WALKWAY RAILING – REMOVAL

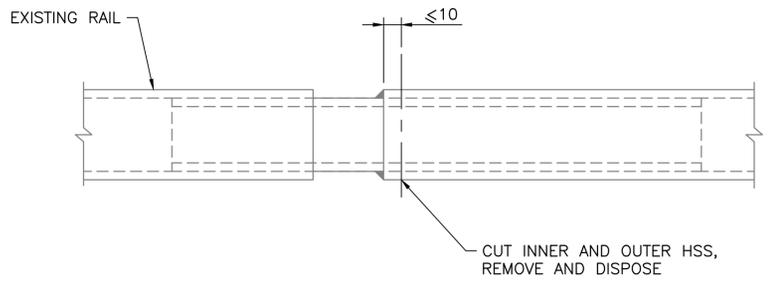
1:5

NOTE:
ACTUAL RAILING GEOMETRY MAY DIFFER INCLUDING NUMBER OF RAILS.



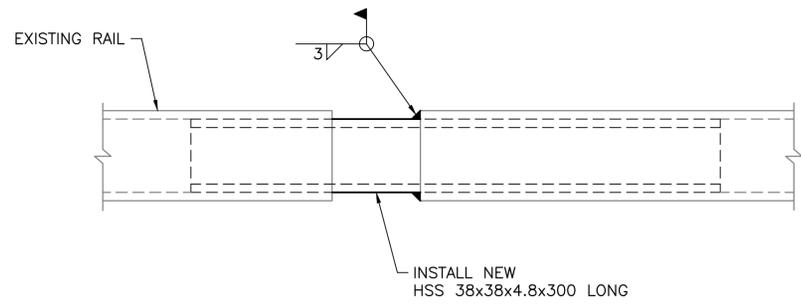
WALKWAY RAILING – REPLACEMENT

1:5



RAIL SPLICE – REMOVAL

1:2



RAIL SPLICE – REPLACEMENT

1:2

NOTE:
WELD TO BE ON DOWNHILL END OF SPLICE

NOTES:

1. WELDING TO CAN/CSA W59
2. NEW HSS: G40.21M GRADE 350W CLASS C
3. TOUCH UP DAMAGED COATINGS WITH AN APPROVED SYSTEM SUCH AS CARBOLINE CARBOGUARD 954H8 WITH CARBOCOAT 30R.



ISSUED FOR TENDER
NOT FOR CONSTRUCTION



DO NOT SCALE DRAWINGS

Revision/	Description/Description	Date/Date

Revision/	Description/Description	Date/Date

Client/client: Parks Canada Agency / L'Agence Parcs Canada



Project title/Titre du projet: BANFF NATIONAL PARK, ALBERTA

JOHNSTON CANYON TRAIL

Approved by/Approuvé par: DPG

Designed by/Concept par: DAWO

Drawn by/Dessiné par: JAET

PWGSC Project Manager/Administrateur de Projets TPSGC

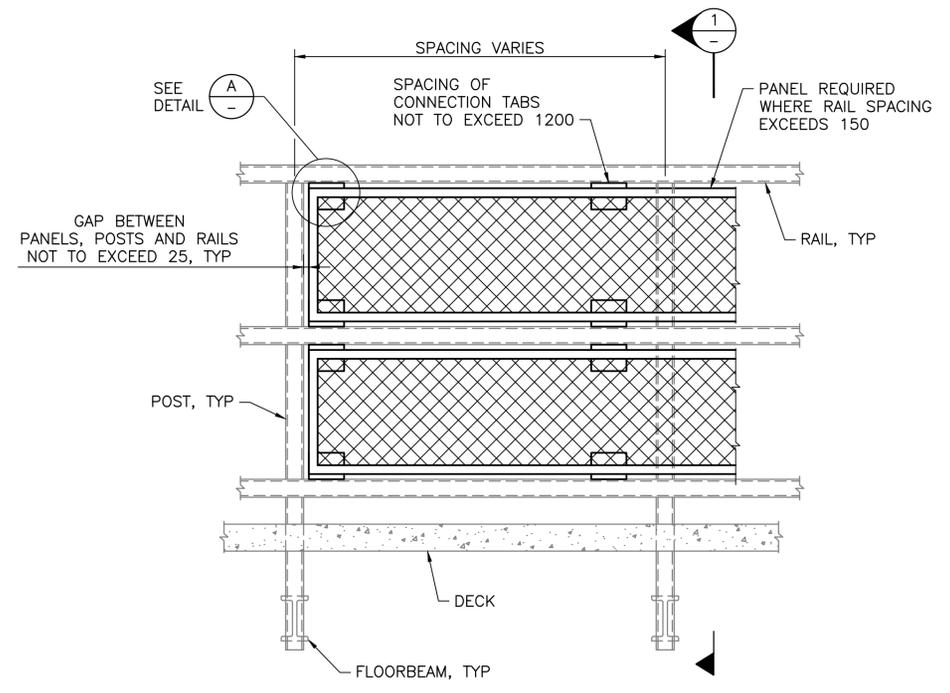
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Client/client: PCA

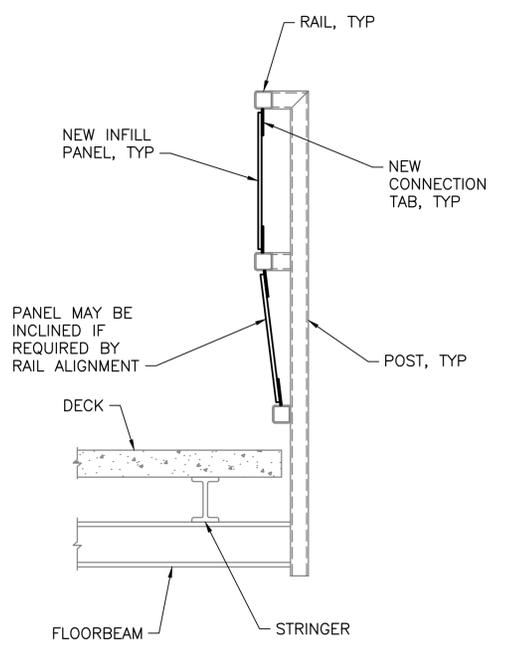
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RAILING INFILL PANELS

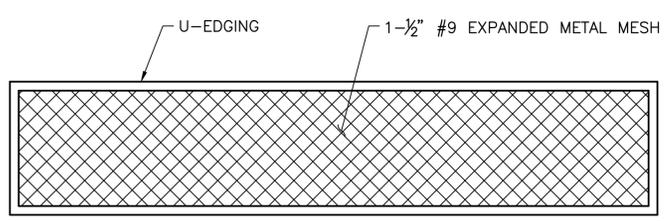
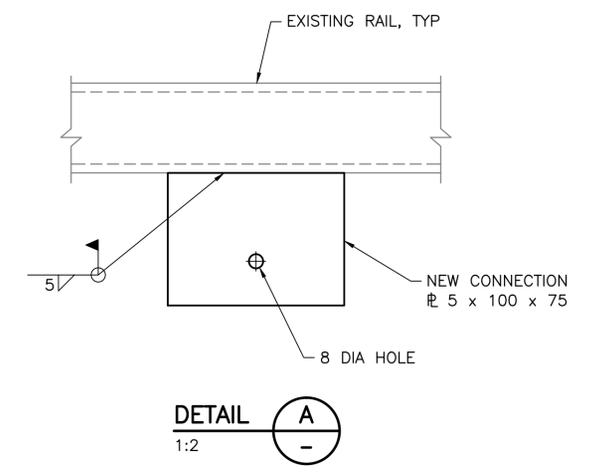
Project No./No. du projet 704-V13403101	Sheet/Fauille 1 OF 1	Revision no./La Révision no.
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RAILING - ELEVATION
1:10



SECTION 1
1:10

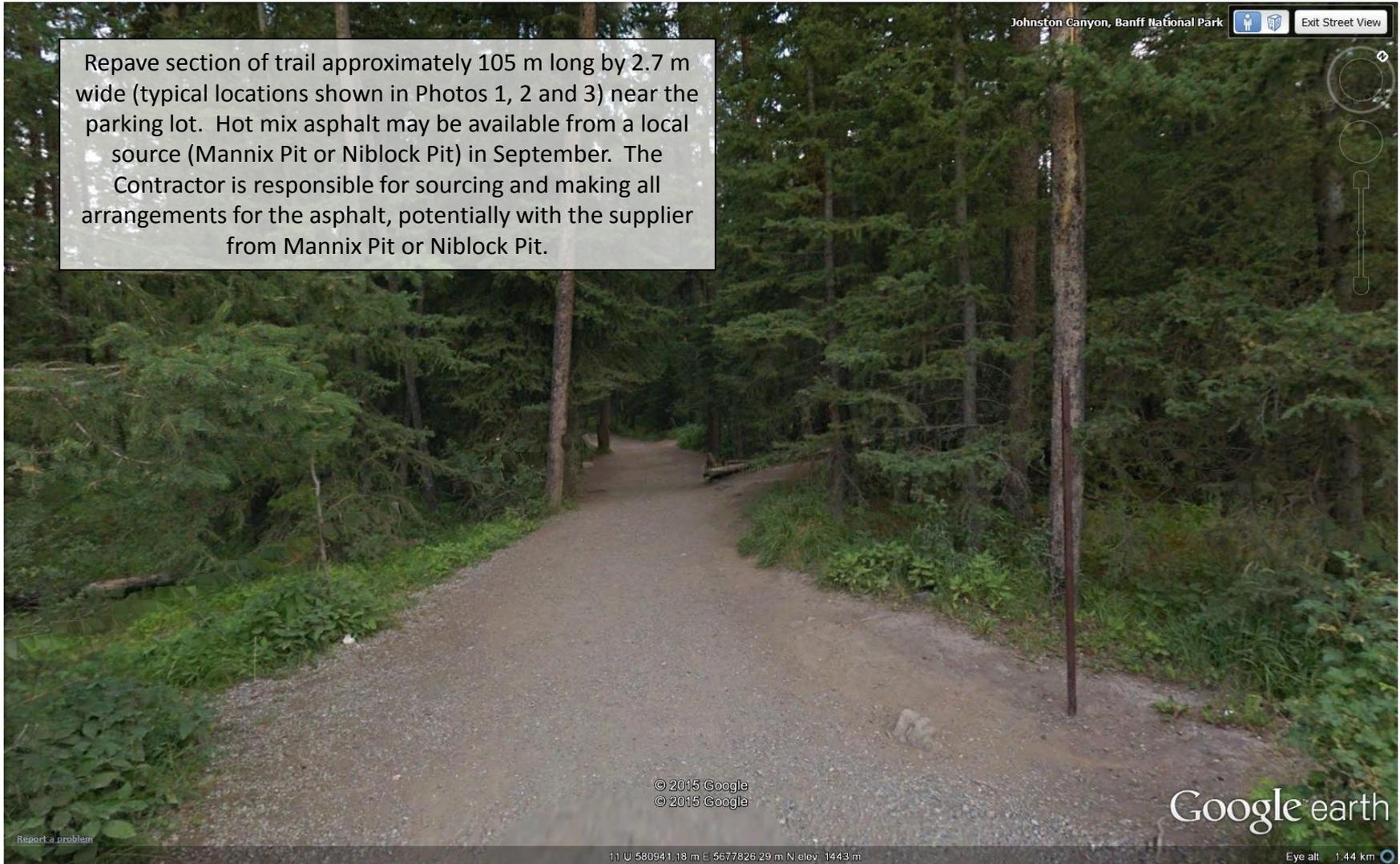


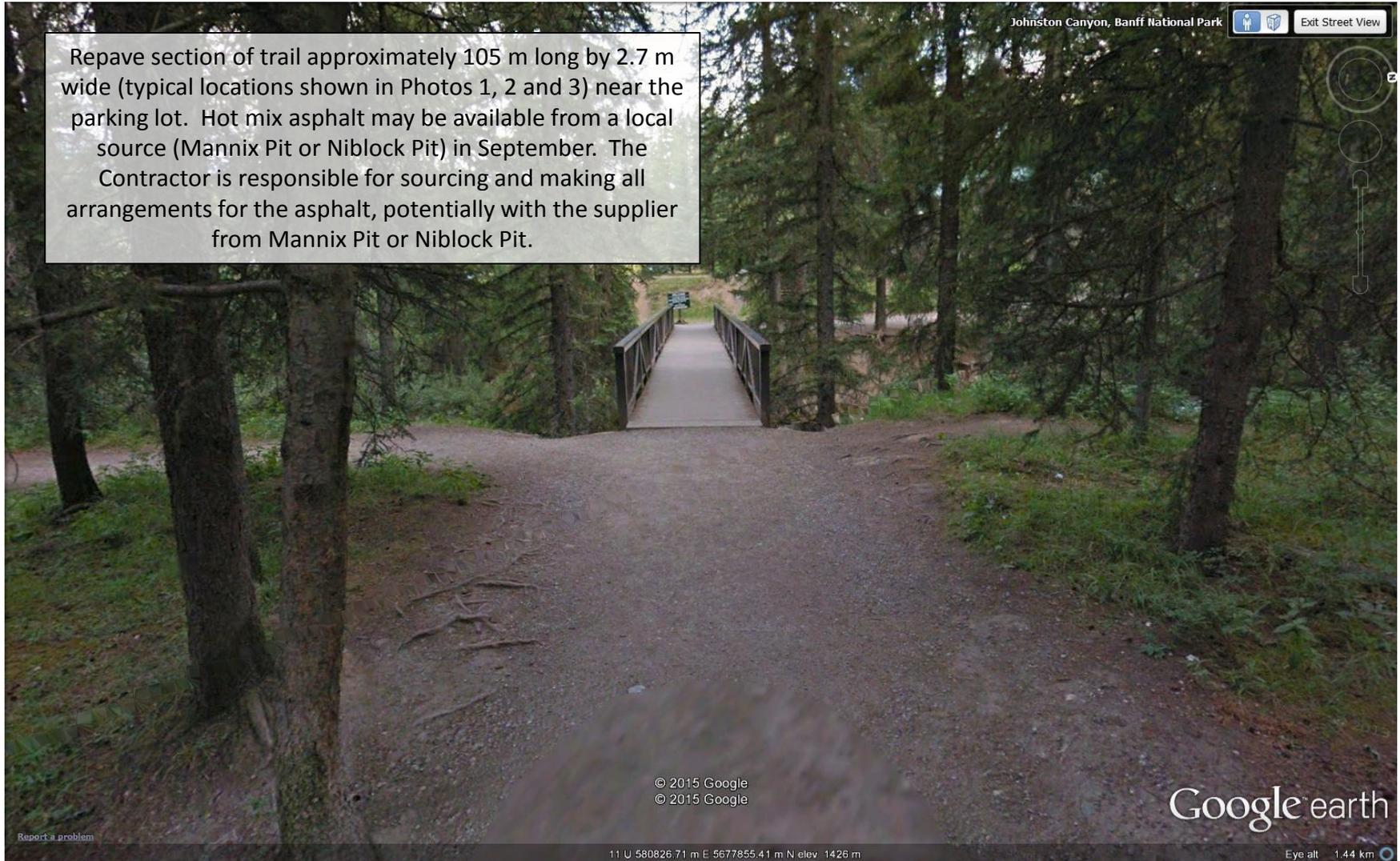
TYPICAL PANEL
NTS

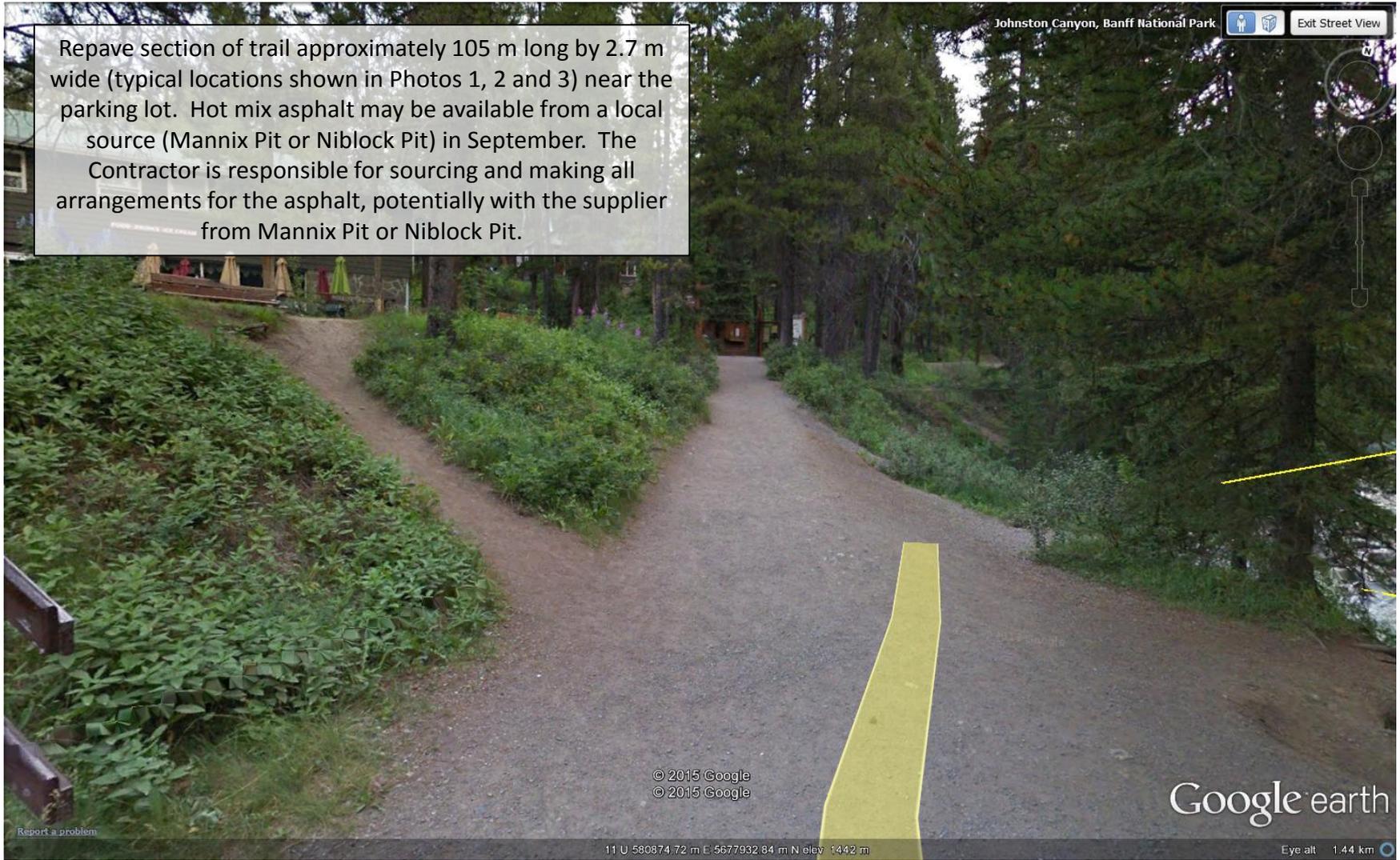
NOTES:

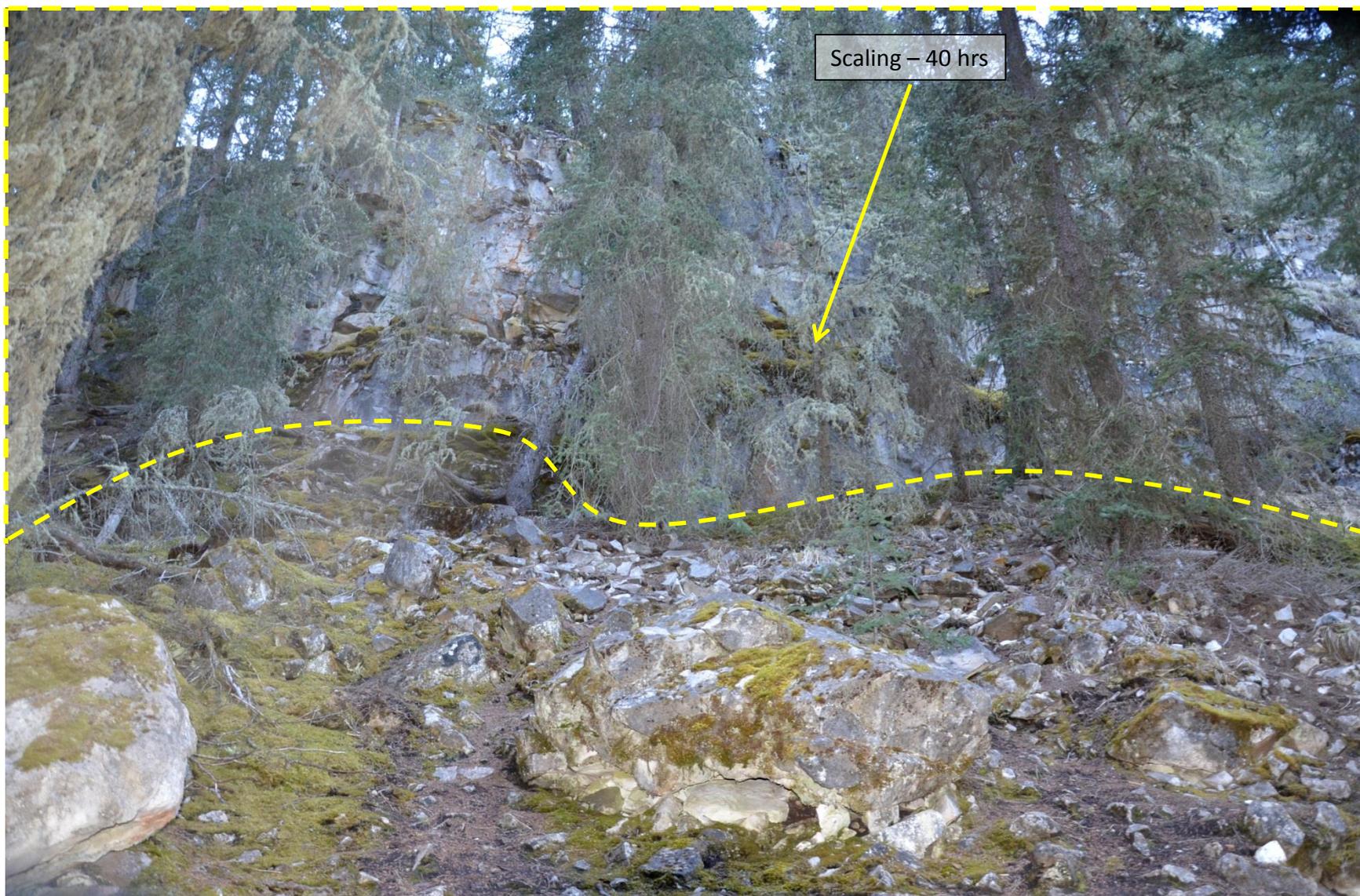
1. WELDING TO CAN/CSA W59
2. PLATES: G40.21M GRADE 350W
3. EXPANDED METAL MESH AND U-EDGING TO BE HOT DIP GALVANIZED.
4. FASTEN WITH 1/4" A307 GALVANIZED BOLTS WITH SUITABLE WASHERS.
5. REPAIR DAMAGED PAINT ON EXISTING RAILING WITH AN APPROVED SYSTEM.
6. INFILL PANEL SHALL NOT PROTRUDE BEYOND FACE OF RAILS.

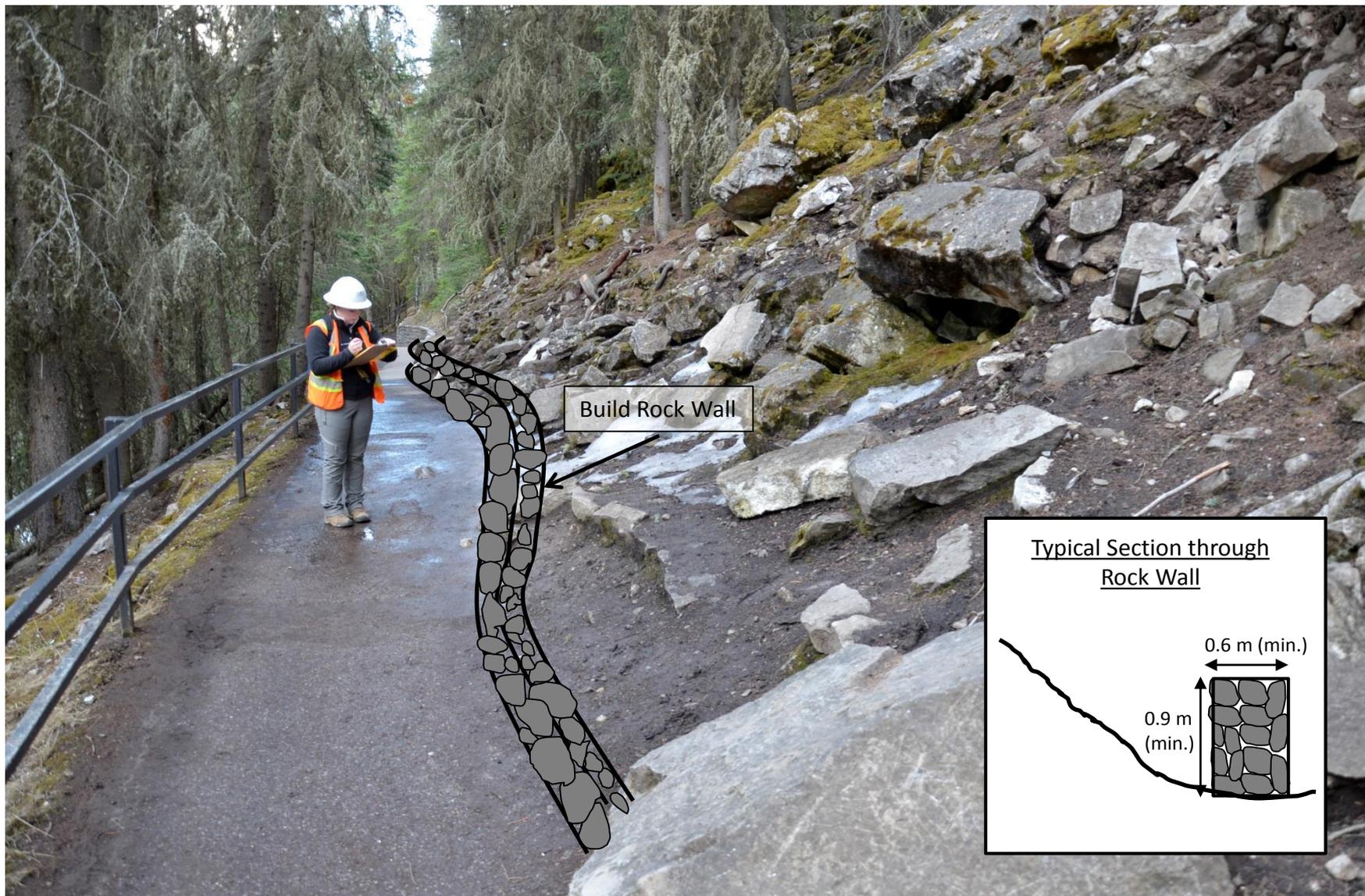


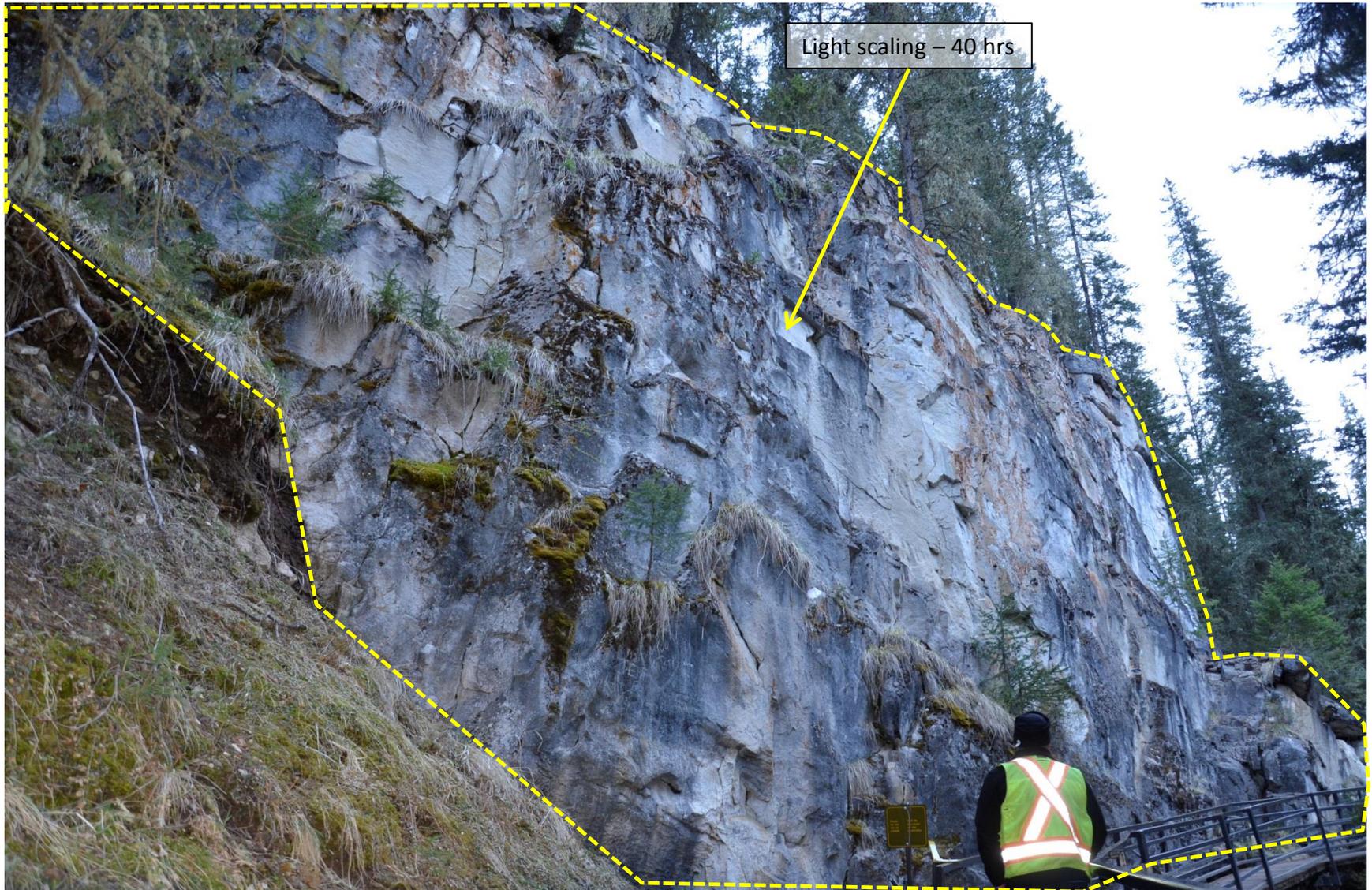










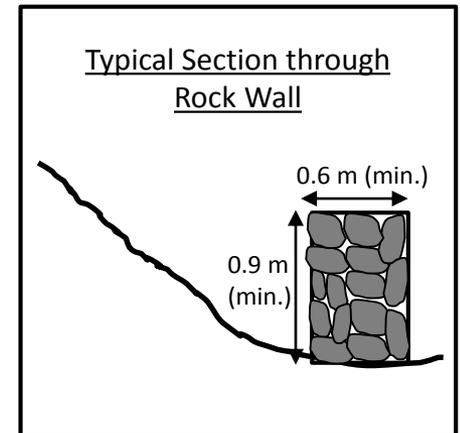
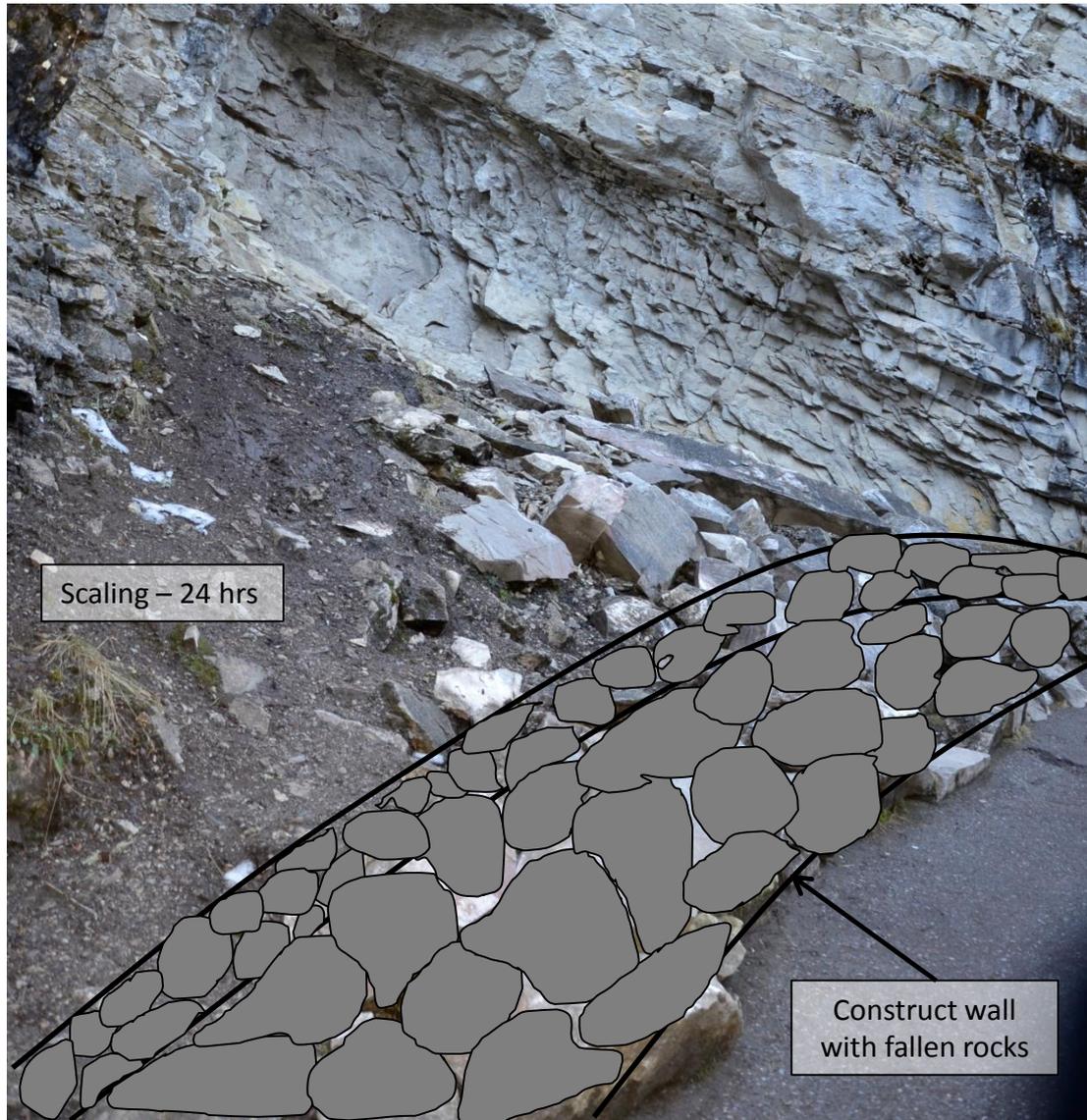


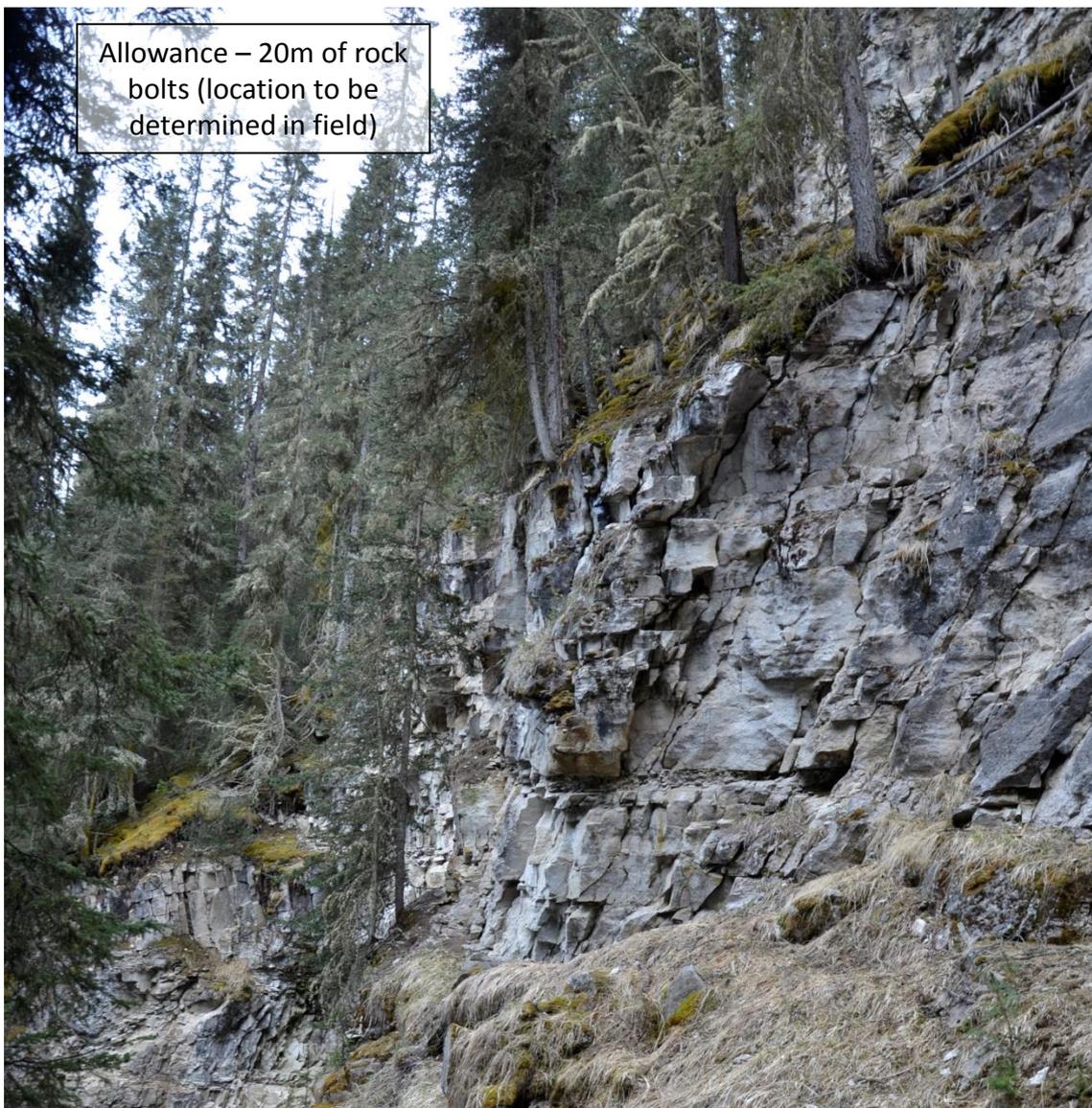


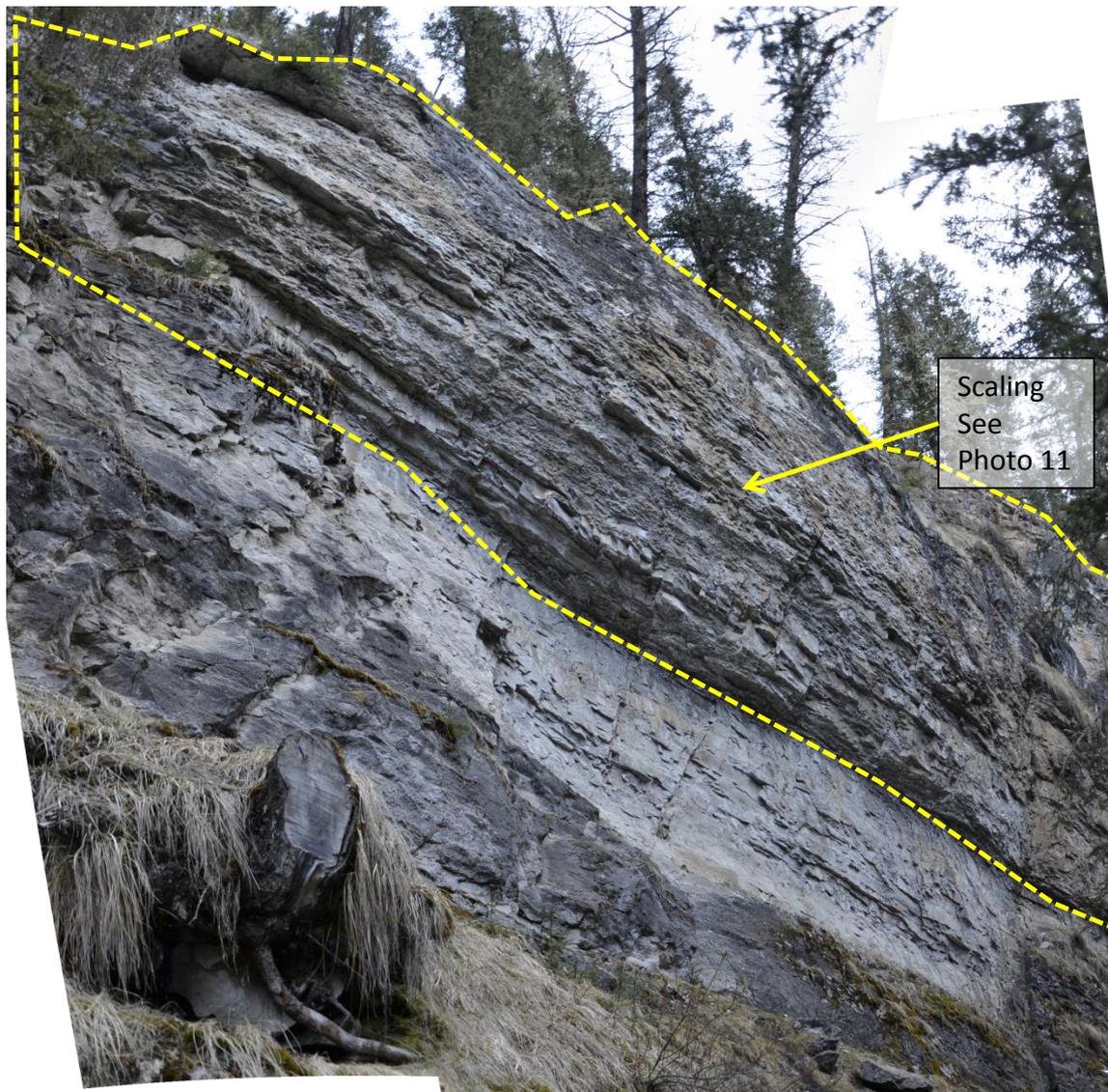


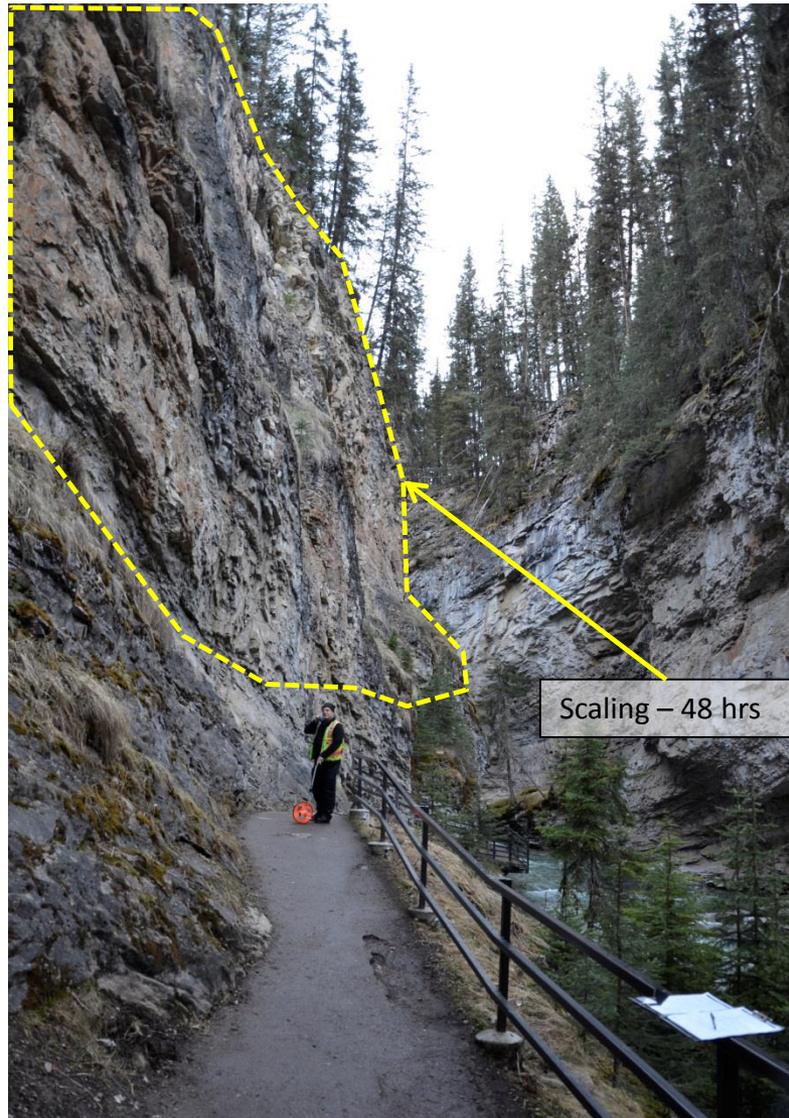


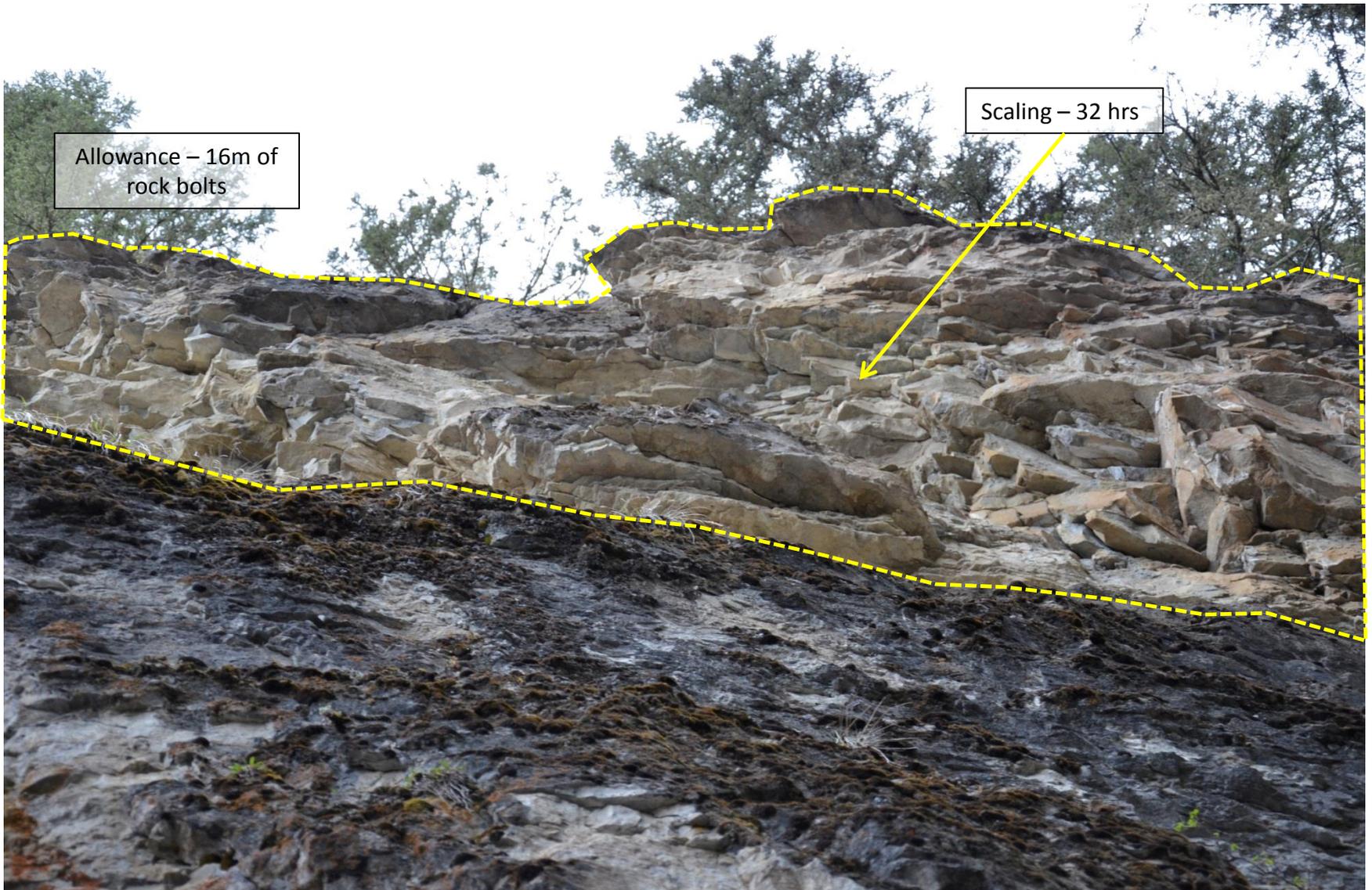












Allowance – 16m of
rock bolts

Scaling – 32 hrs



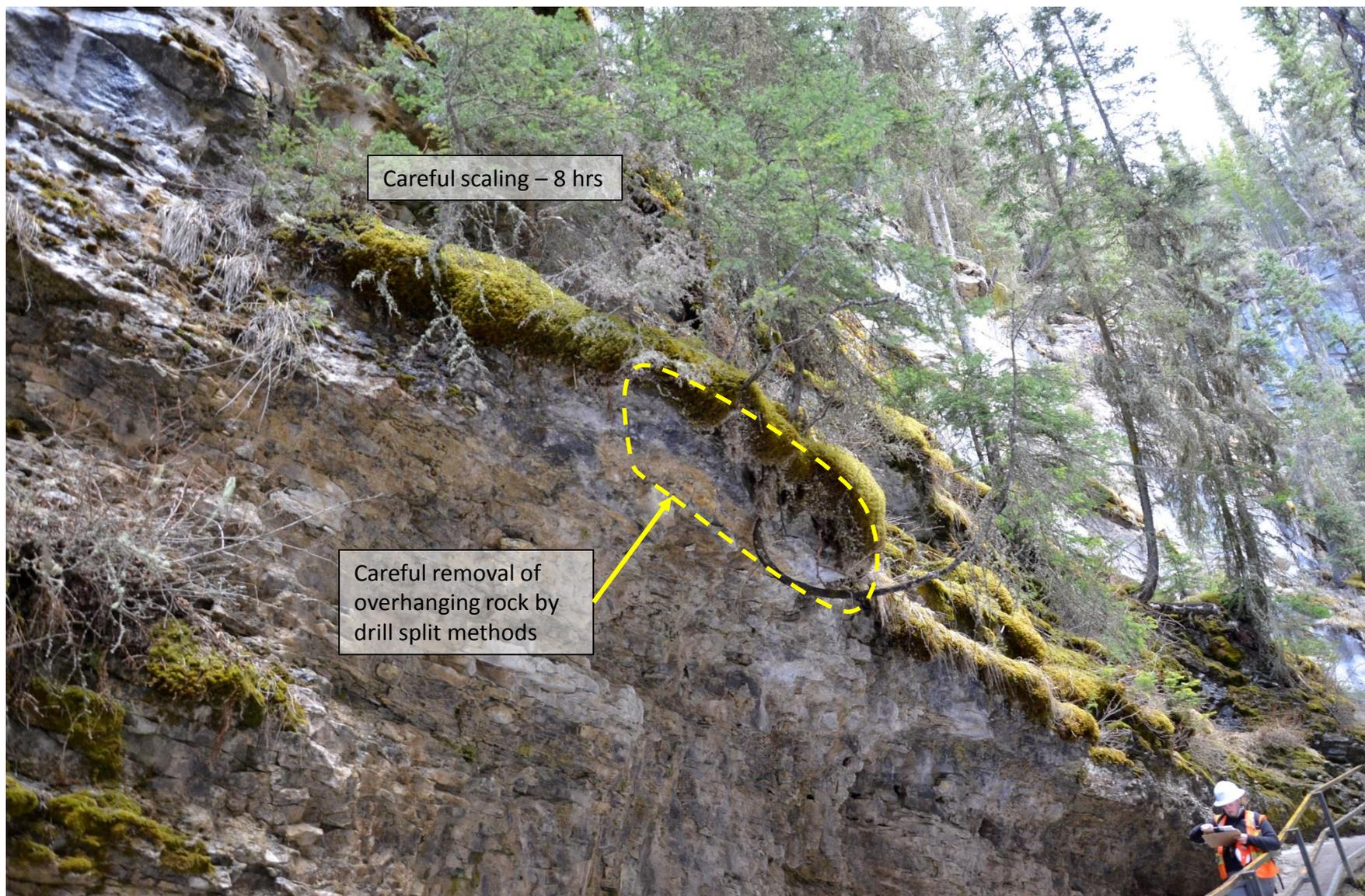
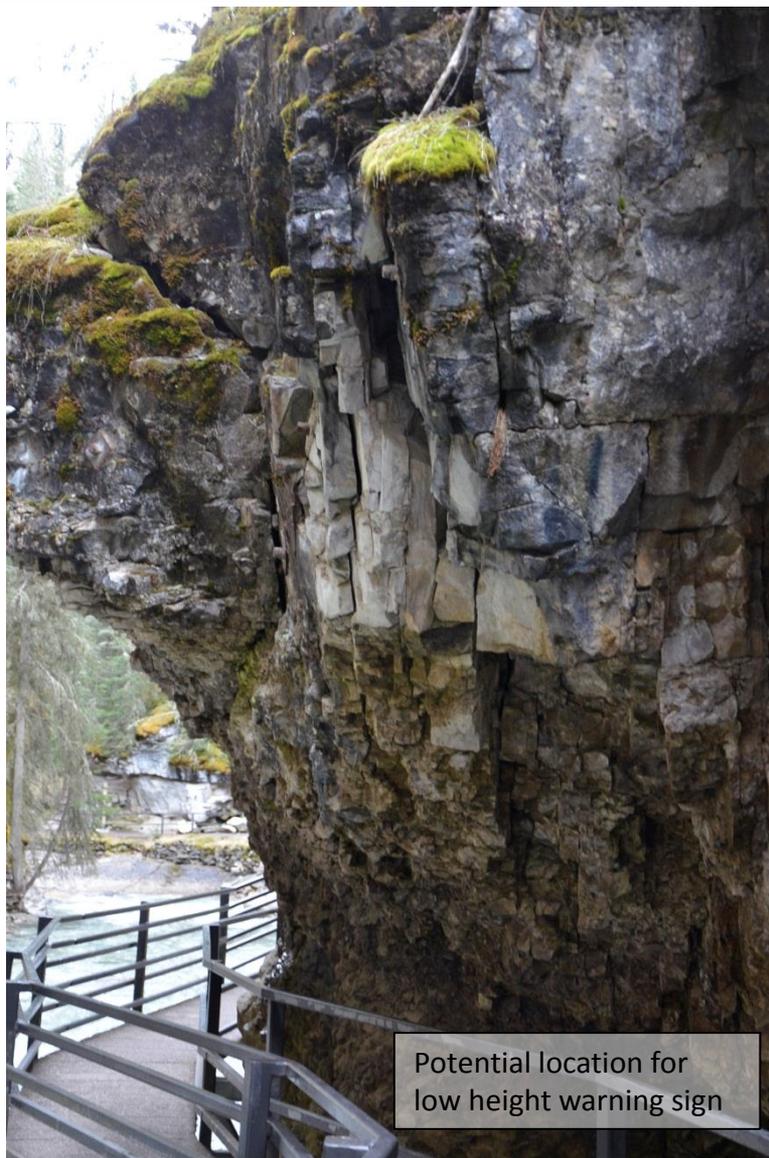
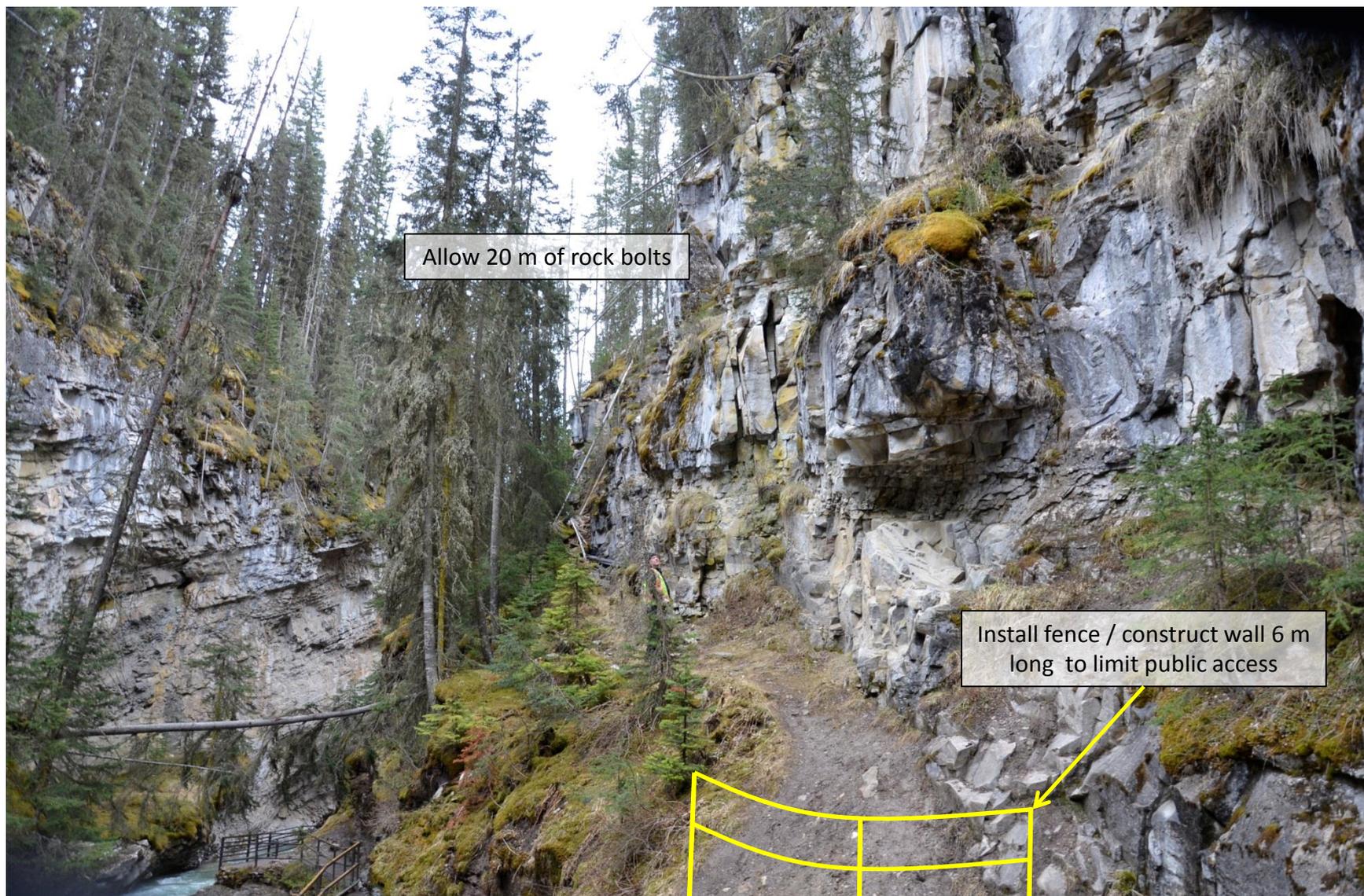
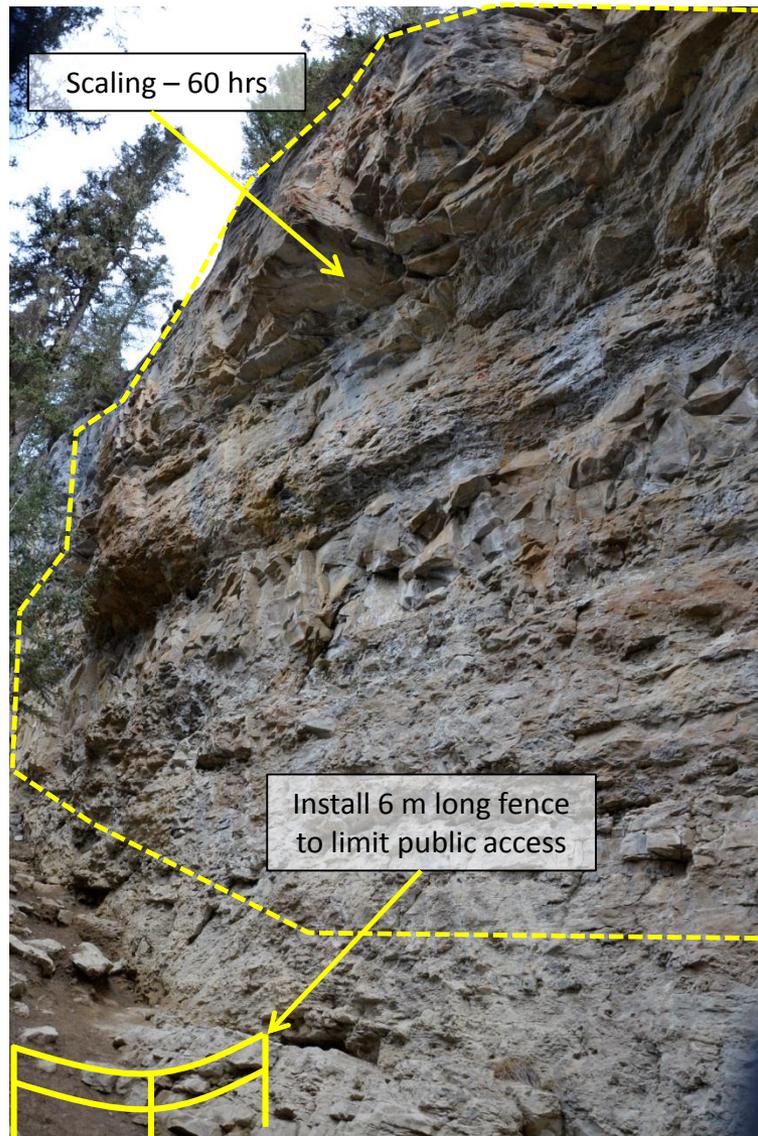


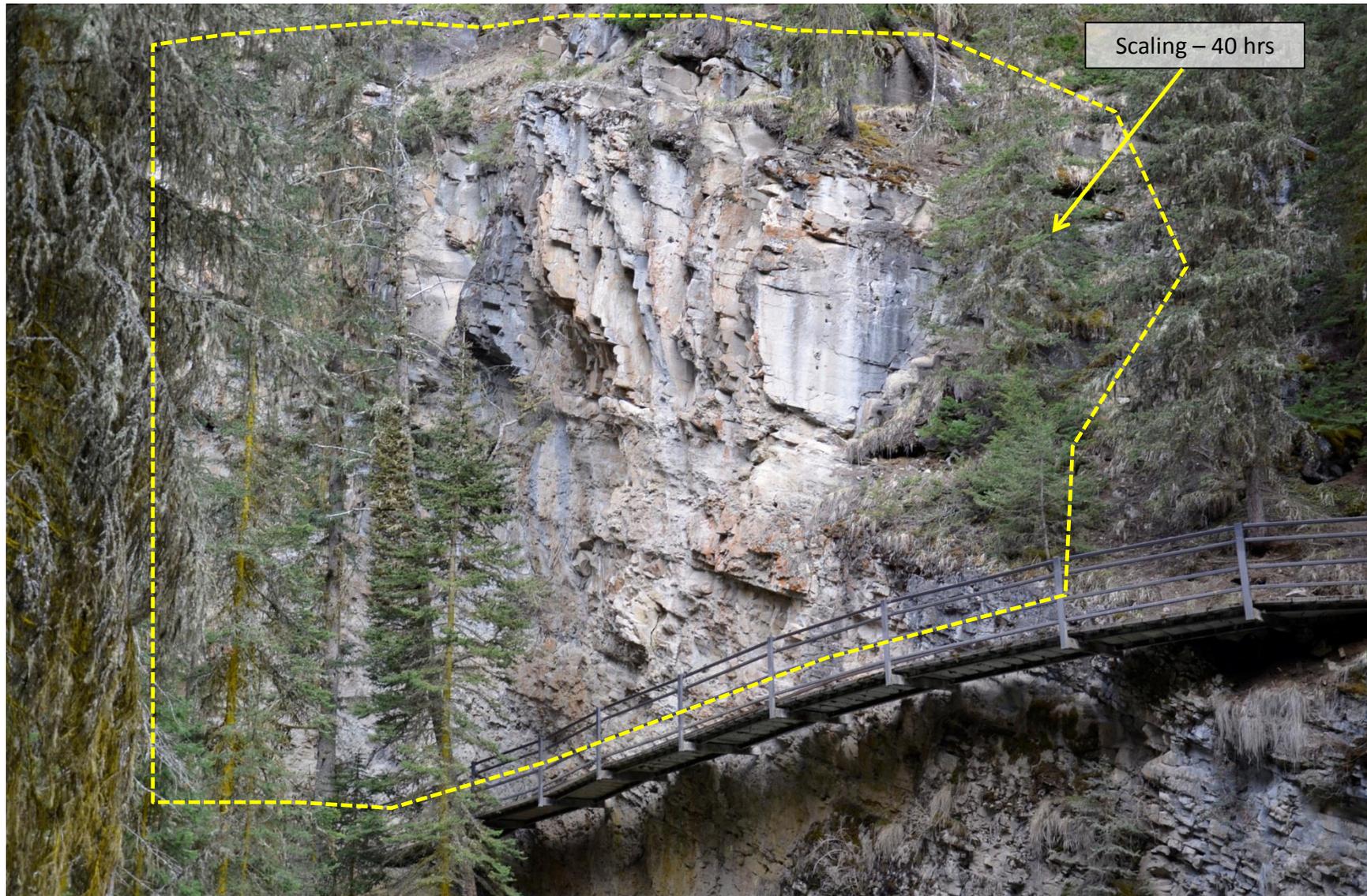
Photo Taken: April, 2015

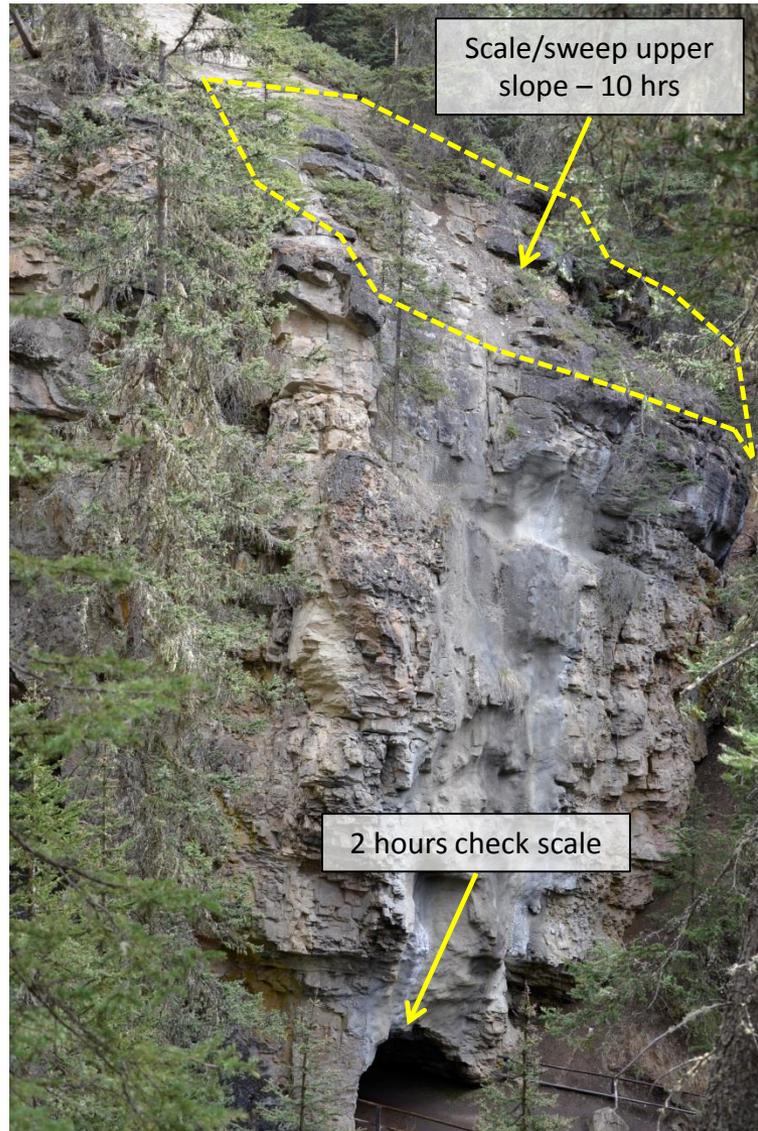




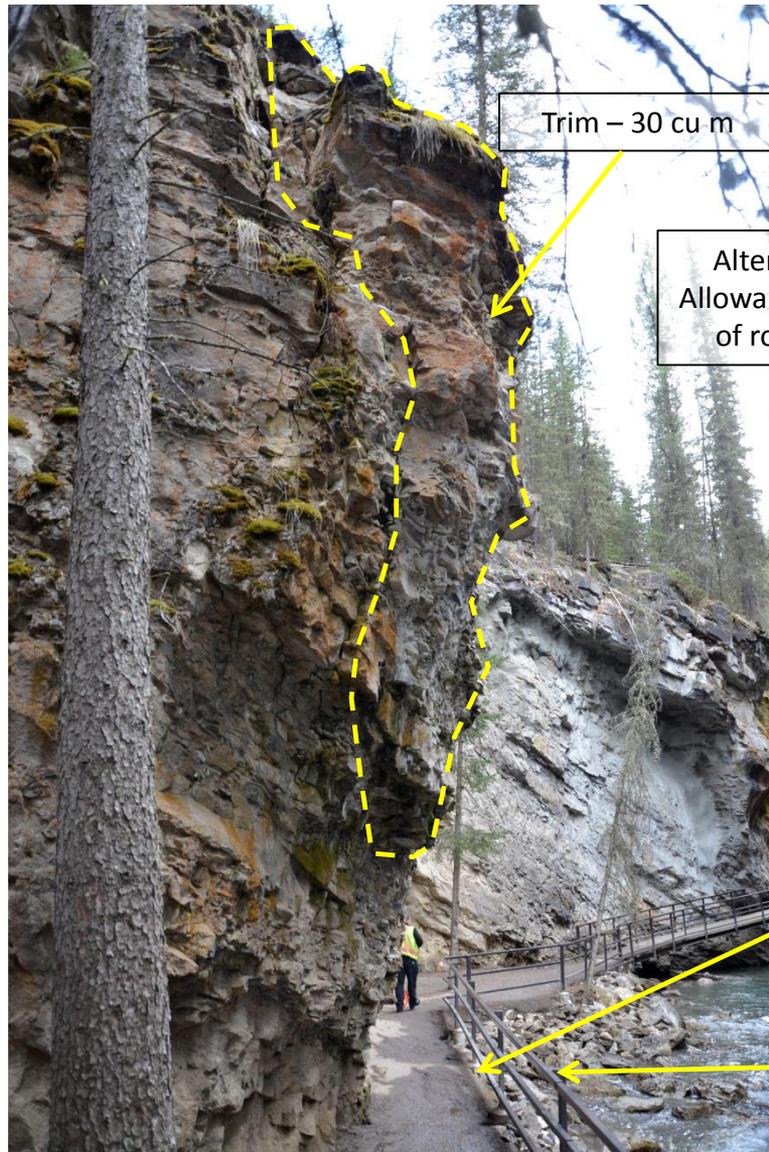












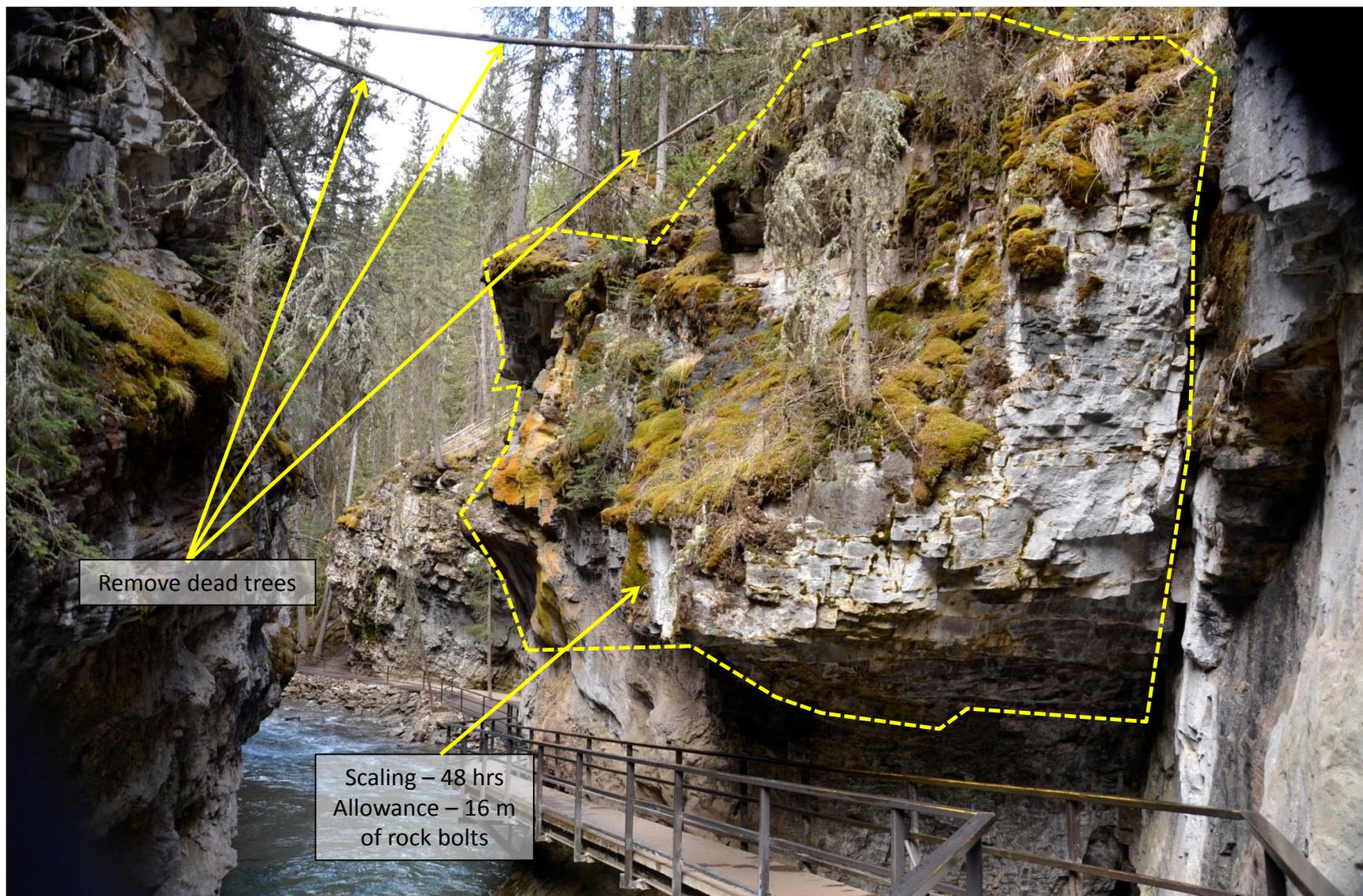
Trim – 30 cu m

Alternative –
Allowance of 25m
of rock bolts

Note: As per specification 31 23 21
scaling following trimming is
considered incidental to the contract

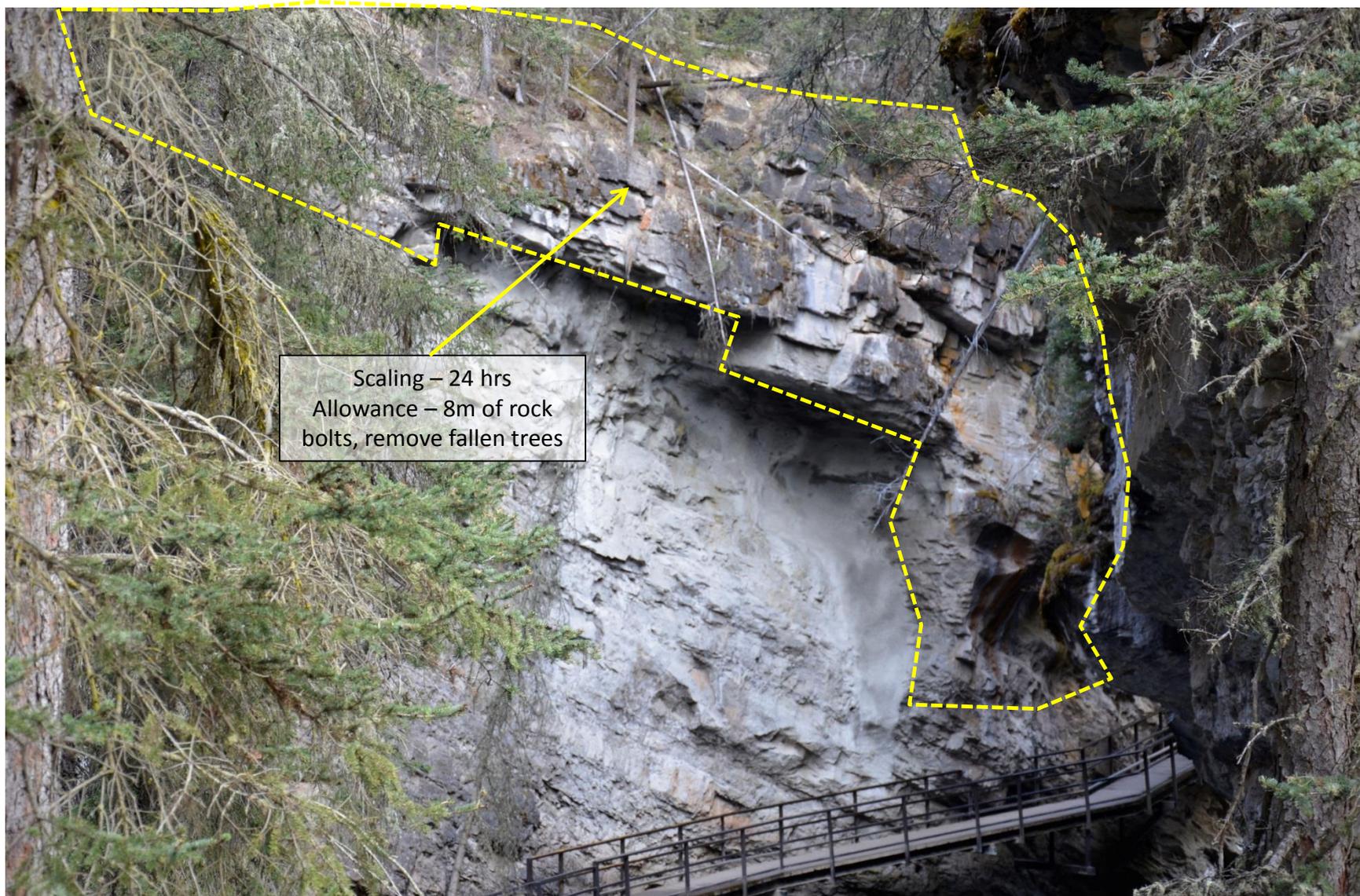
Remove excess asphalt from
creek prior to trim blasting

Remove railing
prior to trim blast

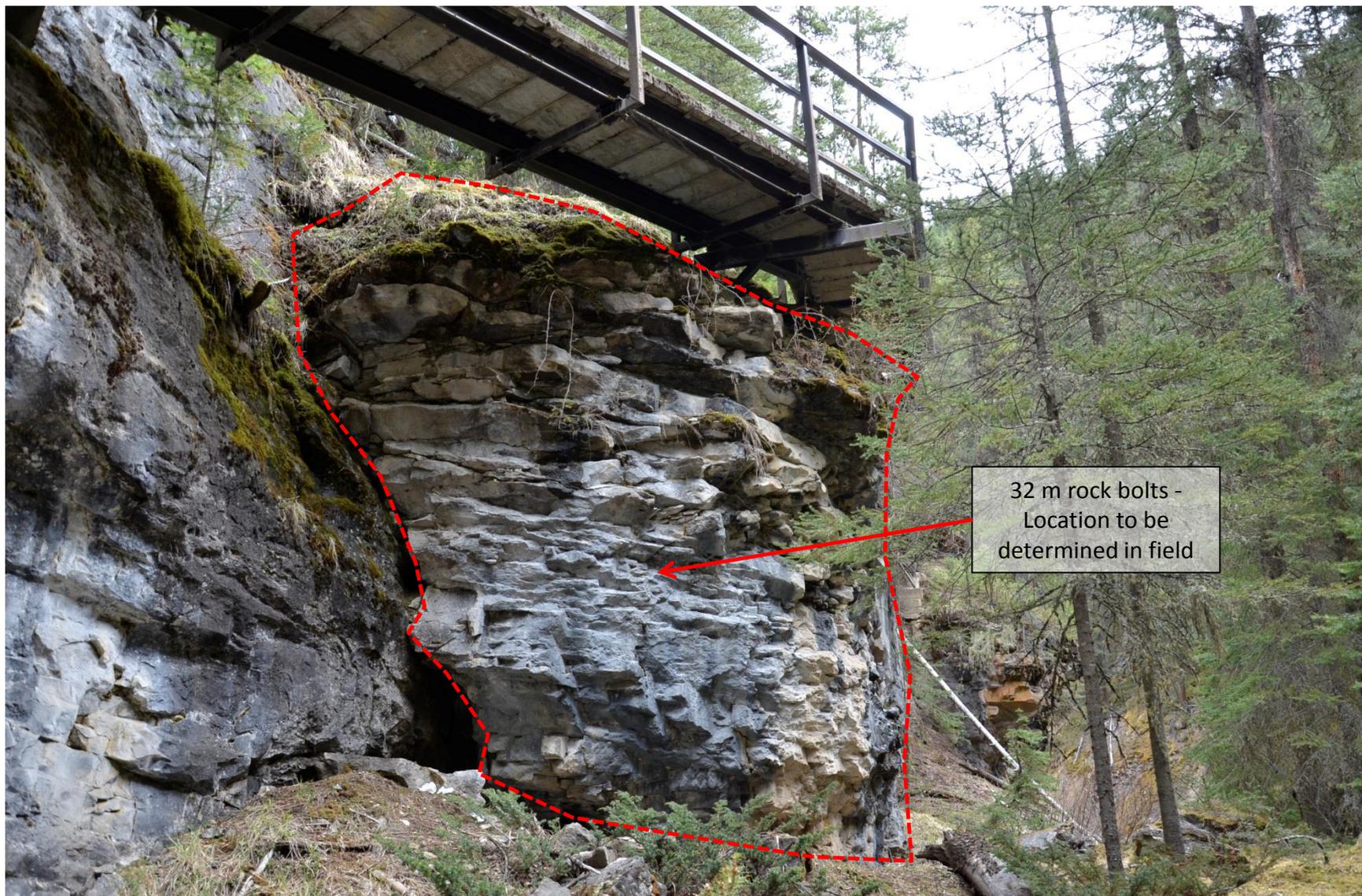


Remove dead trees

Scaling – 48 hrs
Allowance – 16 m
of rock bolts



Scaling – 24 hrs
Allowance – 8m of rock bolts, remove fallen trees



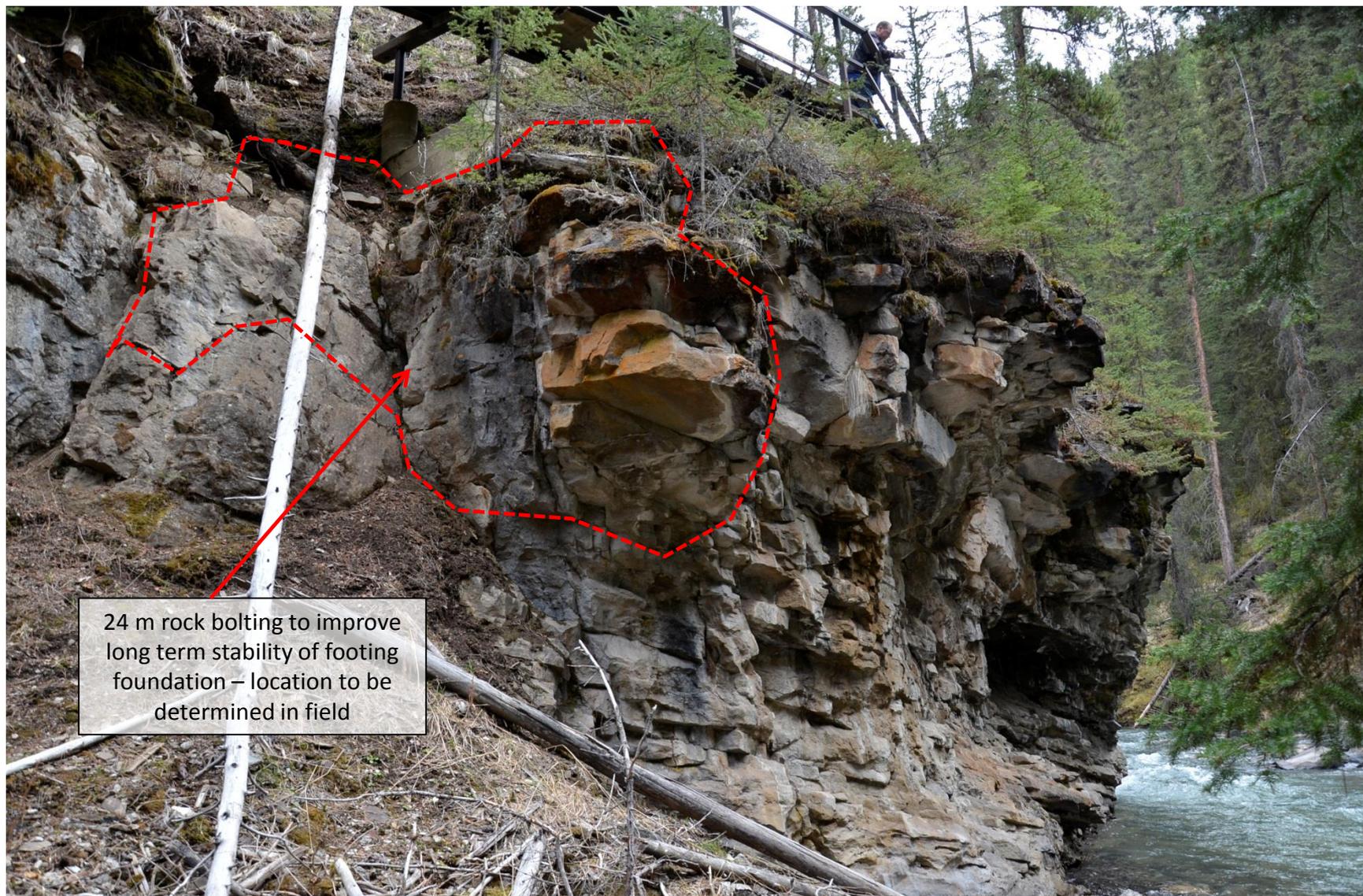


Erosion below footing foundation – to be monitored

Note: Clean out to competent rock under the direction of the Departmental Representative. Form and place concrete (estimated 0.2 m³).

Photo 30





24 m rock bolting to improve long term stability of footing foundation – location to be determined in field

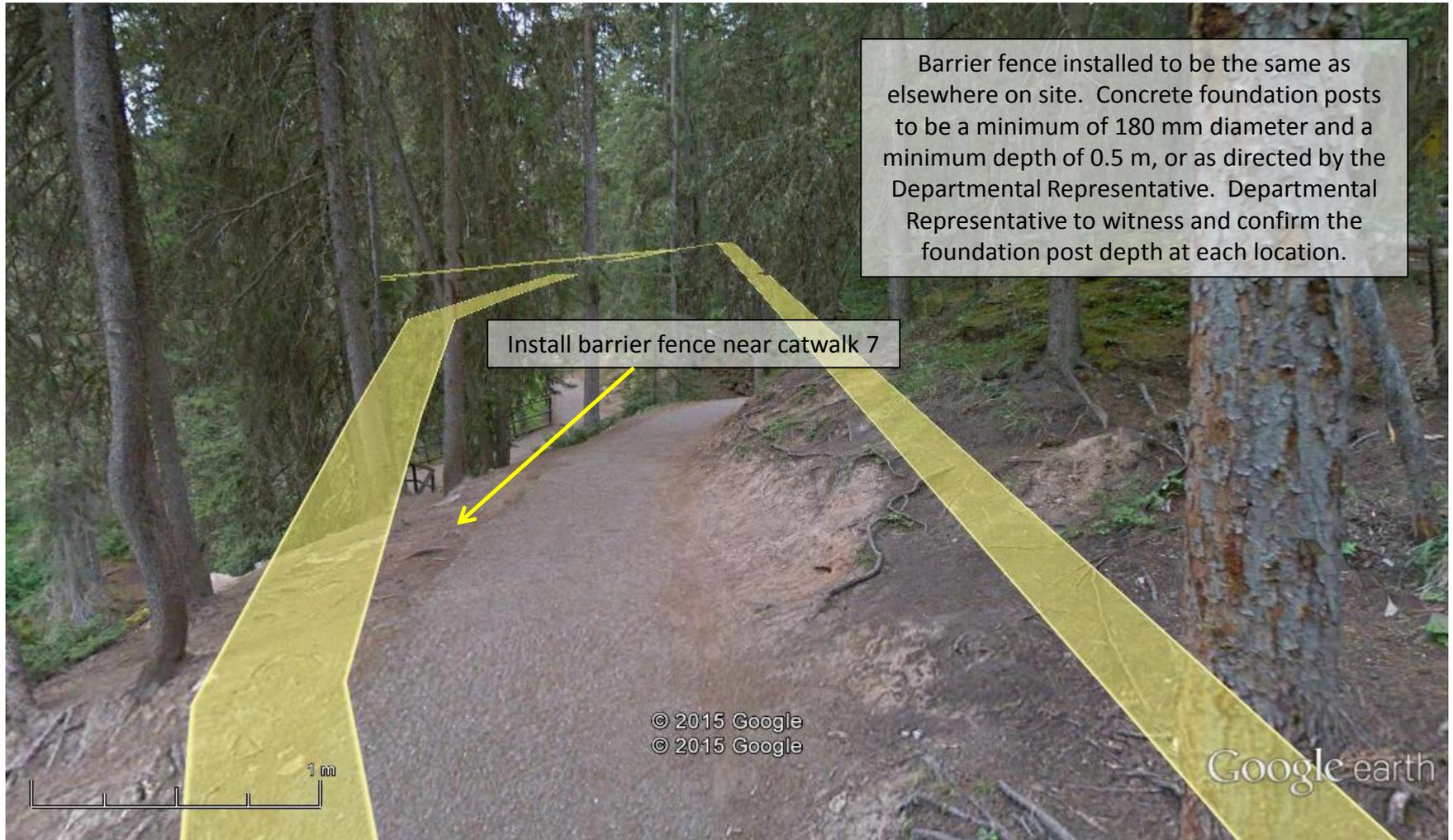








Post signage during construction at
the junction of Johnston Canyon
Trail with Paint Pots Trail

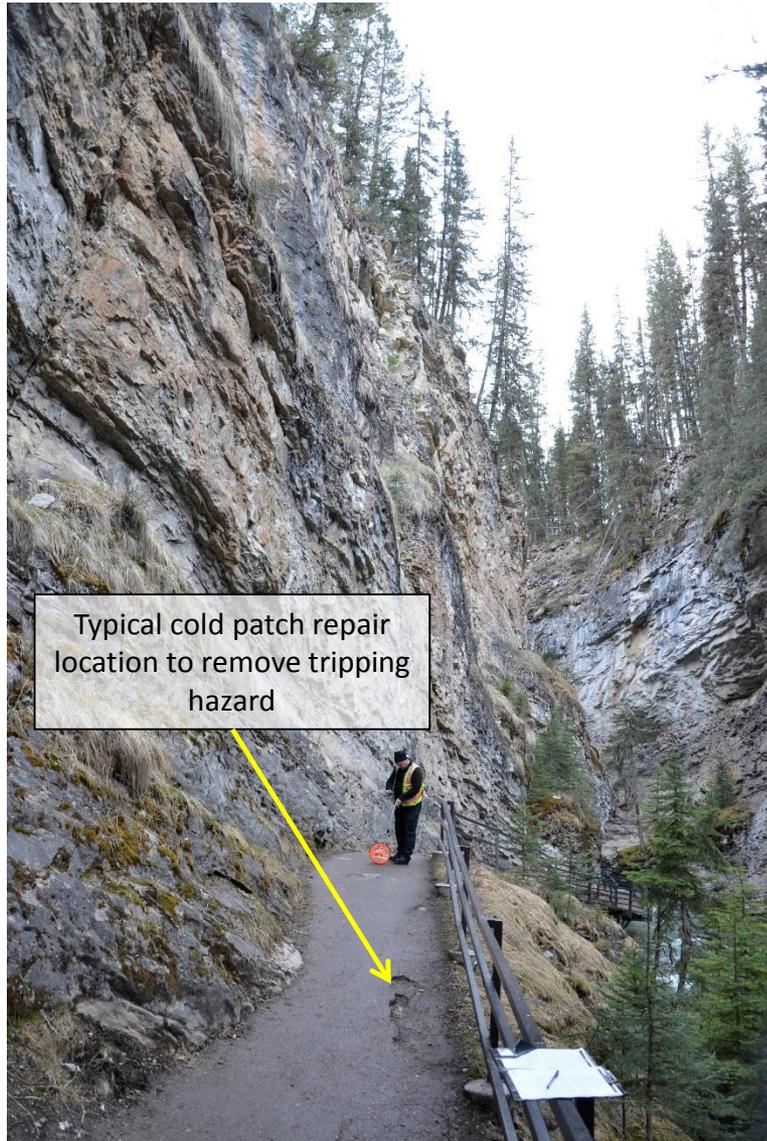






Buck up log jam

Note: The 30 hours will be used to buck up as much wood as can safely be cut. The intent is not to try and remove the entire log jam in 30 hours.



Typical cold patch repair location to remove tripping hazard

Summary of Cold Patch Locations	
Location	Estimated Cold Patch Area (m ²)
Parking lot to Catwalk 1	9
Between Catwalk 1 and 2	3
Between Catwalk 2 and 3	21
On Catwalk 3	3
Between Catwalk 3 and 4	7
Between Catwalk 4 and 5	2
5 th Catwalk to tunnel	3
Lower Falls trail junction to 6 th Catwalk	20
Between 6 th Catwalk and fire road foot access path	4
Between fire road foot access path and 7 th Catwalk	141*

*Total includes the 30 m x 2.7 m stretch of trail to be replaced shown on Photo 27, where granular base will be required as shown on Figure 4. At other cold patch locations, only small quantities of granular base may be required.