

Inspection Date	2021-11-17 12:35:12 PM	Latitude	Longitude
User Name	Samuel Lyster	49.336651	-117.798922
Structure ID #	CW-003	49°20'11.94"	-117°47'56.12"
ORCS File #	CW-003		Accuracy (m) 5
Road Resp.	DSE	Design Info Available	No
FSR Project		Construction Info Available	No
File ID / Branch		Estimated Year Installed	
Road Name	Columbia Western Railway	ORG Responsible for Design	
User km	10		
Design Function	Wall to retain road fill or bridge approach fill		
Wall Type	Gravity		
Facing Type	Cast in place concrete		
Inspection Comments			

Primary Elements

Foundation
Material

Poor

Large boulder in wall foundation has displaced 180 mm
away from wall

Piles and Shafts

Lagging

Anchor Heads

Wire /
Geosynthetic
Facing Elements

Bin or Crib

Concrete

Poor

Crack near center of wall. Hairline at base, and expands to ~20mm width at top of wall.
Wall section on left side of crack tilts out ~20mm. Crack likely caused by wall
movement from the foundation boulder moving.Shortcrete or
GroutManufactured
Block/Panel/
Brick

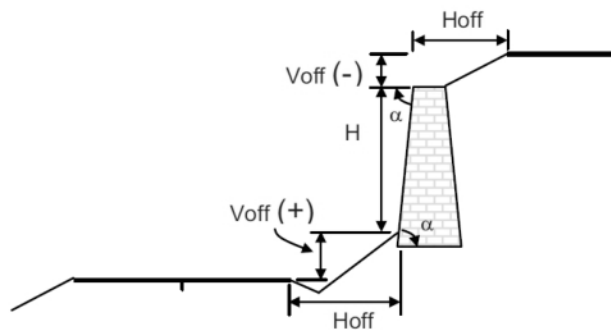
Mortar

Other Primary
Element

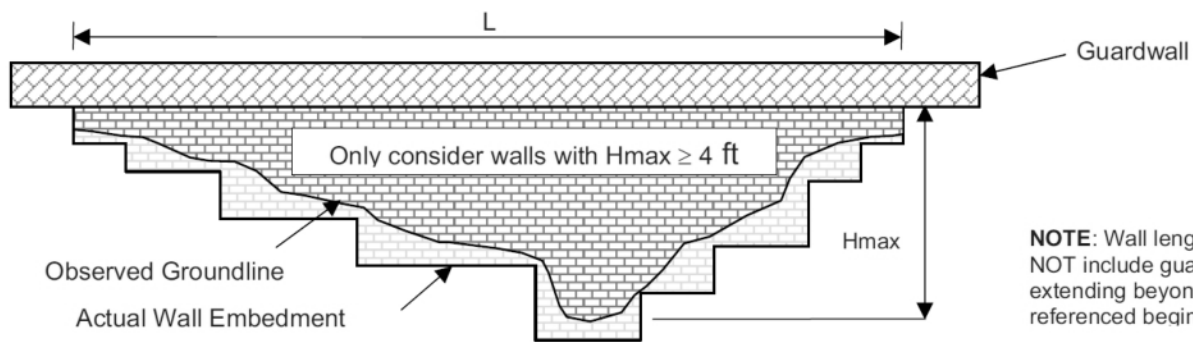
Secondary Elements

Drainage System	Good	One drain noted near bottom centre of wall.
Traffic Barrier/ Fence	Good	Interlocking concrete blocks
Road	Good	
Upslope	Good	Rock cut
Downslope	Good	Rock and boulders.
Lateral Slope	Fair	Potential for surface drainage induce erosion of left (upchain) lateral slope.
Detrimental Vegetation		
Culvert		
Curb/Berm/ Ditch	Good	Large ditch on upslope side of road
Other Secondary Element		

Measurements



Max. Wall Height (Hmax) (m)	5.3
Wall Length (L) (m)	20.4
Wall Face Area (m ²)	
Wall Face Angle (α) (°)	
Avg. Vertical Distance (VOff) (m)	
Avg. Horizontal Distance (HOff) (m)	



NOTE: Wall length does NOT include guardwall extending beyond Visidata-referenced begin/end.

Approximate Length, Steepness,
and Constituent Materials
of "Lateral Slope"* (if applicable)

Inspection Questions

Inspector's Wall Performance Condition Rating	Poor
Condition Narrative	Functional. Crack needs monitoring and repair to support base of wall where foundation Boulder moved.
Date of Last Inspection	
Previous Inspection Record(s) Considered?	
Available Design Information / Construction Documentation Considered?	
FSR Road Status (at time of inspection)	
Capitalized FSR	
Is there any movement or settlement instrumentation data to record?	
FRPA forest values at risk of damage or loss given a catastrophic wall failure	None
Estimate of failure consequence <u>given</u> a catastrophic wall failure	High: Seasonal to long term loss of road access; loss of life or injury; no alternate routes available
Inspector's <u>opinion</u> if additional investigation and/or more thorough inspection or risk assessment required?	

PEng Questions

Is monitoring instrumentation
required, if not already in place?

No

PEng's recommended future
inspection frequency

Yearly

PEng's recommended date of
next future inspection

2022

PEng's recommended wall
repair/replace action

Recommend hiring a geotechnical engineering to inspect the wall and prescribe a repair to stabilize the left section of wall that has displaced due to foundation boulder movement.

PEng's Repair/Replace
Recommendations Narrative

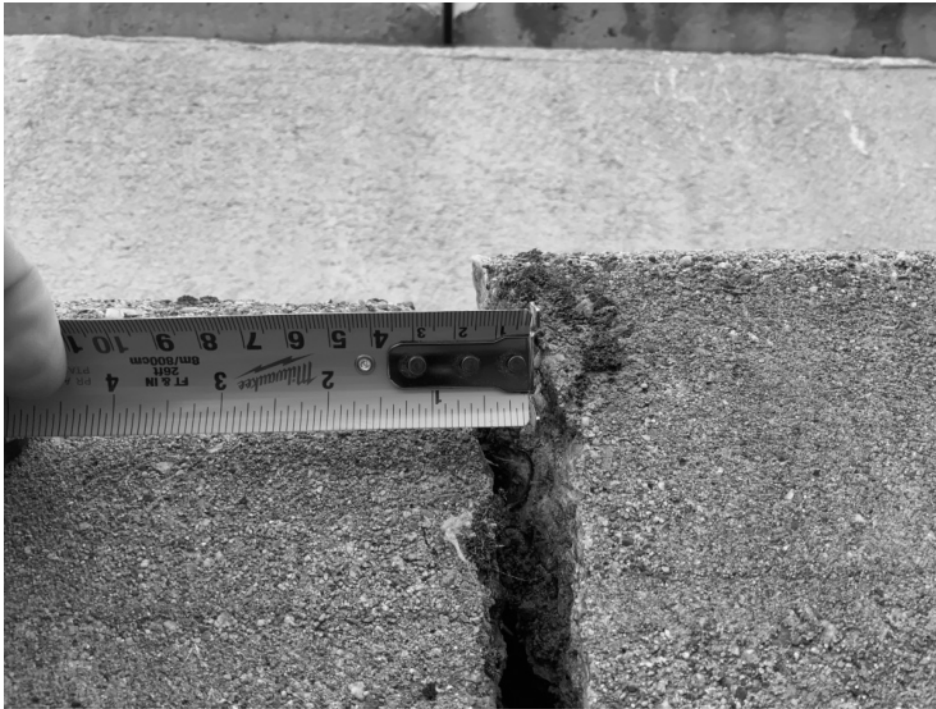
PEng's Additional Comments



Left (up chain) side potential for surface erosion issues on lateral slope.



Concrete interface on large Boulder. Boulder has moved 7 inches away from wall



Wall tilt 2cm

Inspection Date	2021-11-17 12:56:17 PM	Latitude	Longitude
User Name	Samuel Lyster	49.336364	-117.796188
Structure ID #	CW-002	49°20'10.91"	-117°47'46.28"
ORCS File #	CW-002		Accuracy (m) 7
Road Resp.	DSE	Design Info Available	
FSR Project		Construction Info Available	
File ID / Branch		Estimated Year Installed	
Road Name	Columbia Western Railway	ORG Responsible for Design	
User km	9.8		
Design Function	Wall to retain road fill or bridge approach fill		
Wall Type	Gravity		
Facing Type	Cast in-place Mass Concrete		
Inspection Comments			

Primary ElementsFoundation
Material**Fair**

Evidence of movement left end of wall. Slope displaced 7cm down and 7cm away from wall (see pics).

Piles and Shafts

Lagging

Anchor Heads

Wire /
Geosynthetic
Facing Elements

Bin or Crib

Concrete

GoodShortcrete or
GroutManufactured
Block/Panel/
Brick

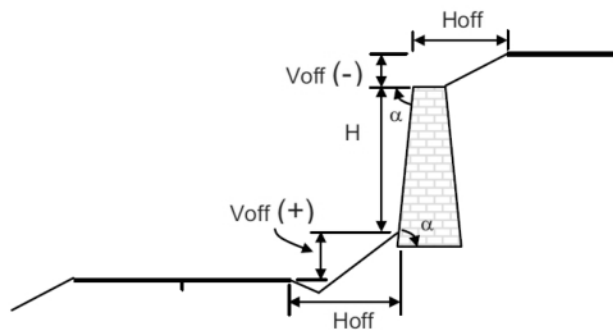
Mortar

Other Primary
Element

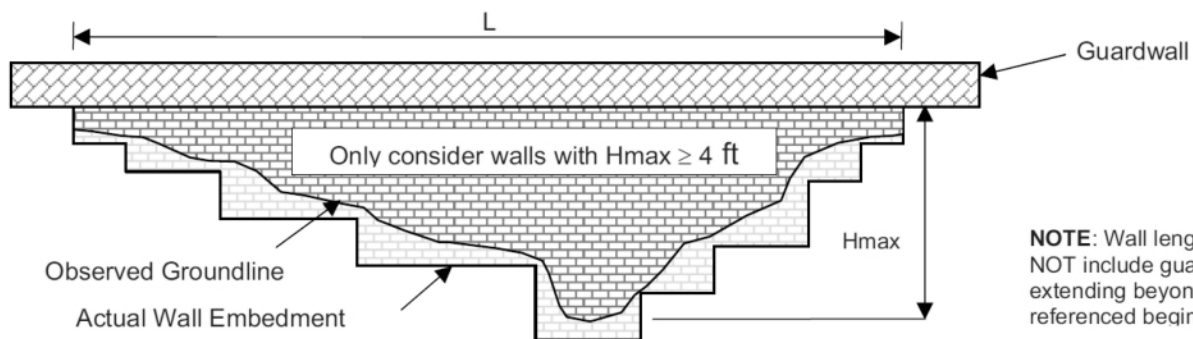
Secondary Elements

Drainage System	Good	Drain at toe right end of wall. Evidence of flow (stains and moss).
Traffic Barrier/ Fence	Good	
Road	Good	8m wide with 2m ditch
Upslope	Good	Rock bluff
Downslope	Good	Rock armoured slope
Lateral Slope		
Detrimental Vegetation		
Culvert		
Curb/Berm/ Ditch		
Other Secondary Element		

Measurements



Max. Wall Height (Hmax) (m)	5.5
Wall Length (L) (m)	18.5
Wall Face Area (m ²)	
Wall Face Angle (α) (°)	
Avg. Vertical Distance (VOff) (m)	
Avg. Horizontal Distance (HOff) (m)	



NOTE: Wall length does NOT include guardwall extending beyond Visidata-referenced begin/end.

Approximate Length, Steepness,
and Constituent Materials
of "Lateral Slope"* (if applicable)

Inspection Questions

Inspector's Wall Performance
Condition Rating

Fair

Condition Narrative

Functional. Monitor downslope or movement.

Date of Last Inspection

Previous Inspection Record(s)
Considered?

Available Design Information /
Construction Documentation
Considered?

FSR Road Status (at time of
inspection)

Capitalized FSR

Is there any movement or
settlement instrumentation
data to record?

FRPA forest values at risk of
damage or loss given a
catastrophic wall failure

None

Estimate of failure
consequence given a
catastrophic wall failure

Moderate: Some loss of road prism; intermittent or low exposure of people to constant exposure of people; short term closure of road during wall repair/replacement; alternate routes available

Inspector's opinion if
additional investigation and/or
more thorough inspection or
risk assessment required?

PEng Questions

Is monitoring instrumentation
required, if not already in place?

No

PEng's recommended future
inspection frequency

2 years

PEng's recommended date of
next future inspection

2023

PEng's recommended wall
repair/replace action

Monitor slope movement of downslope, left end of wall.

PEng's Repair/Replace
Recommendations Narrative

NOTE: photos were lost due to a bug with the filemake go app

PEng's Additional Comments

NOTE: photos lost due to bug with filemaker go app

Inspection Date	2021-11-17 1:15:56 PM	Latitude	Longitude
User Name	Samuel Lyster	49.335554	-117.792881
Structure ID #	CW-001	49°20'7.99"	-117°47'34.37"
ORCS File #	CW-001		Accuracy (m) 6
Road Resp.	DSE	Design Info Available	No
FSR Project		Construction Info Available	No
File ID / Branch		Estimated Year Installed	
Road Name	Columbia Western Railway	ORG Responsible for Design	
User km	9.5		
Design Function	Wall to retain road fill or bridge approach fill		
Wall Type	Gravity		
Facing Type	Cast in-place Mass Concrete		
Inspection Comments			

Primary Elements

Foundation

Material

Fair

Foundation erosion located 1.5m left and 2m right of culvert plunge location. See

photos.

Piles and Shafts

Lagging

Anchor Heads

Wire /

Geosynthetic

Facing Elements

Bin or Crib

Concrete

Shortcrete or

GroutManufactured

Block/Panel/

Brick

Mortar

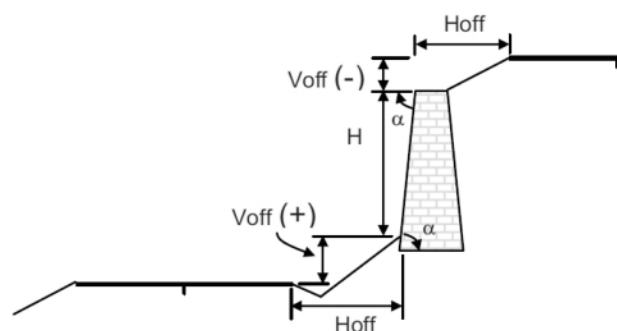
Other Primary

Element

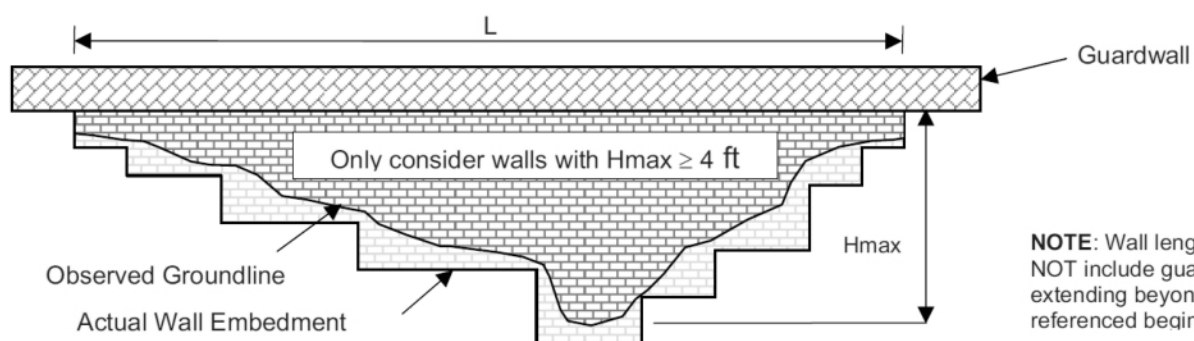
Secondary Elements

Drainage System	Poor	5 drain pipes observed with evidence of drainage. Evidence of subsurface flow and erosion of wall foundation 1.5m left of where culvert flow hits rock. Erosion 50cm into wall, 1.2m wide. Additional erosion unlikely as it's on bedrock.
Traffic Barrier/ Fence	Good	
Road	Good	4.4m wide
Upslope	Good	
Downslope	Good	Bedrock
Lateral Slope	Good	Potential for erosion from surface flow at left end
Detrimental Vegetation		
Culvert	Poor	Inlet blocked 75%
Curb/Berm/ Ditch	Good	1.5 to 3m wide ditch
Other Secondary Element		

Measurements



Max. Wall Height (Hmax) (m)	7
Wall Length (L) (m)	50
Wall Face Area (m ²)	
Wall Face Angle (α) (°)	
Avg. Vertical Distance (VOff) (m)	
Avg. Horizontal Distance (HOff) (m)	



NOTE: Wall length does NOT include guardwall extending beyond Visidata-referenced begin/end.

Approximate Length, Steepness,
and Constituent Materials
of "Lateral Slope"* (if applicable)

Inspection Questions

Inspector's Wall Performance Condition Rating	Fair
Condition Narrative	Functional. Monitor location of foundation erosion. Likely driven by downslope failure from reservoir levels, or possibly from subsurface flow through wall.
Date of Last Inspection	
Previous Inspection Record(s) Considered?	
Available Design Information / Construction Documentation Considered?	
FSR Road Status (at time of inspection)	
Capitalized FSR	
Is there any movement or settlement instrumentation data to record?	
FRPA forest values at risk of damage or loss given a catastrophic wall failure	None
Estimate of failure consequence <u>given</u> a catastrophic wall failure	High: Seasonal to long term loss of road access; loss of life or injury; no alternate routes available
Inspector's <u>opinion</u> if additional investigation and/or more thorough inspection or risk assessment required?	

PEng Questions

Is monitoring instrumentation
required, if not already in place?

No

PEng's recommended future
inspection frequency

2 years

PEng's recommended date of
next future inspection

2023

PEng's recommended wall
repair/replace action

Clean culvert inlet and excavate a sump.

PEng's Repair/Replace
Recommendations Narrative

PEng's Additional Comments





Potential surface flow erosion location



Erosion of foundation 1.5m left (upchain) of culvert.



2m right of culvert plunge location, 20cm into wall, 40cm wide, 14cm high



Hairline crack at top of white deposits



Joint. Sealant mostly gone.