Joint Oregon-Washington Legislative Action Committee

IBR's "Tunnel Concept Assessment"

"I skate to where the puck is going, not where it has been". Wayne Gretzky

The Interstate Bridge Replacement (IBR) authority has wasted hundreds of thousands of dollars evaluating where the puck has been, not where it is going. Namely, it has made an outdated assumption about where the Columbia's barge channel would be located. It is this channel that an Immersed Tube Tunnel (ITT) must be submerged beneath as part of planning a new Columbia crossing. The IBR report lists 17 consultants and not one asked this most basic question!

Mistakenly, the IBR's ITT assessment evaluates the use of the existing Primary Channel under the current I-5 bridge lift span. But this channel is 200 yards closer to the river bank on the Vancouver side than it needs to be. A design based on this location necessitates a tunnel diving at an unusually steep grade from the Vancouver side. Thus, the IBR's use of such a mistaken location leads to its greatly inaccurate prediction of extra cost.

An ITT designed for a New Primary Channel nearer to the center of the river would be one third shorter portal to portal, have half the total grade, and require two-thirds less cut & cover construction. The IBR's ITT design is estimated to cost a whopping $3 billion. A more realistic estimate of an ITT at the right location would be $1 billion.

In fact, when planners designed a new bridge for a Columbia River Crossing, they used exactly this New Primary Channel location 200 yards closer to the center of the river.

Thus, IBR has wasted money evaluating an ITT at the wrong site. The IBR should invest a few more thousand evaluating where the tunnel (puck) is going. The IBR staff and consultants should avoid the trap of being prisoners of their experience, decades of bridge-building. Vancouver, Canada, hired international ITT experts to evaluate a new Fraser River ITT. The IBR should hold to world-class design competition between teams of bridge engineers and ITT engineers. Let the best solution win.

As a background to my role, I am a concerned citizen with a lengthy career in engineering and cost accounting. I have sought to give input to planners in a transparent process. I was encouraged when Greg Johnson, IBR administrator, asked for a meeting recently to discuss a Columbia River ITT. However, I was informed that IBR was simply to give me a 35-minute presentation of why an ITT will not work. The IBR administrator, his assistant, and six consulting engineers would then take my questions, but I would have no time allotted for my presentation. The IBR team also refused my request to include on my side an international ITT expert and environmental attorney to add to the discussion.

In my solo role during the actual meeting, I questioned the IBR presentation findings. However, I was told categorically that IBR would make no further evaluation of an ITT! Participants explained that IBR had "spent hundreds of thousands of dollars on experts" and the decision against an ITT was firm. This step appears to be an attempt to choke off any further discussion. However, the IBR administrator, Greg Johnson, did agree to meet in any public forum to defend this decision. I welcome this further opportunity for a fair, public debate.

Bob Ortblad MSCE, MBA

Please review the attachment.

Meeting July 14, 2021

1 - Citizen
6 - WSP Consultants
2 - IBR Administrator & Assistant
3 – WSTC, two Staff, one Commissioner

Tunnel Concept Assessment

Interstate BRIDGE Replacement Program

Myth vs. Fact

Myth: A replacement bridge has already been designed.

Myth: A third bridge would eliminate the need to replace the Interstate Bridge.

Myth: Light rail transit has already been decided.

Myth: A tunnel can solve the Interstate Bridge transportation problems just as easily as a bridge.

Fact.

A tunnel cannot be feasibly built within the footprint of I-5 without eliminating important connections to Hayden Island, downtown Vancouver, and SR-14. It also comes with significantly more operational, environmental and historical resource impacts, and would cost more than a replacement bridge.

For more information about the suitability of an immersed tube tunnel, view the Tunnel Concept Assessment.

1 click

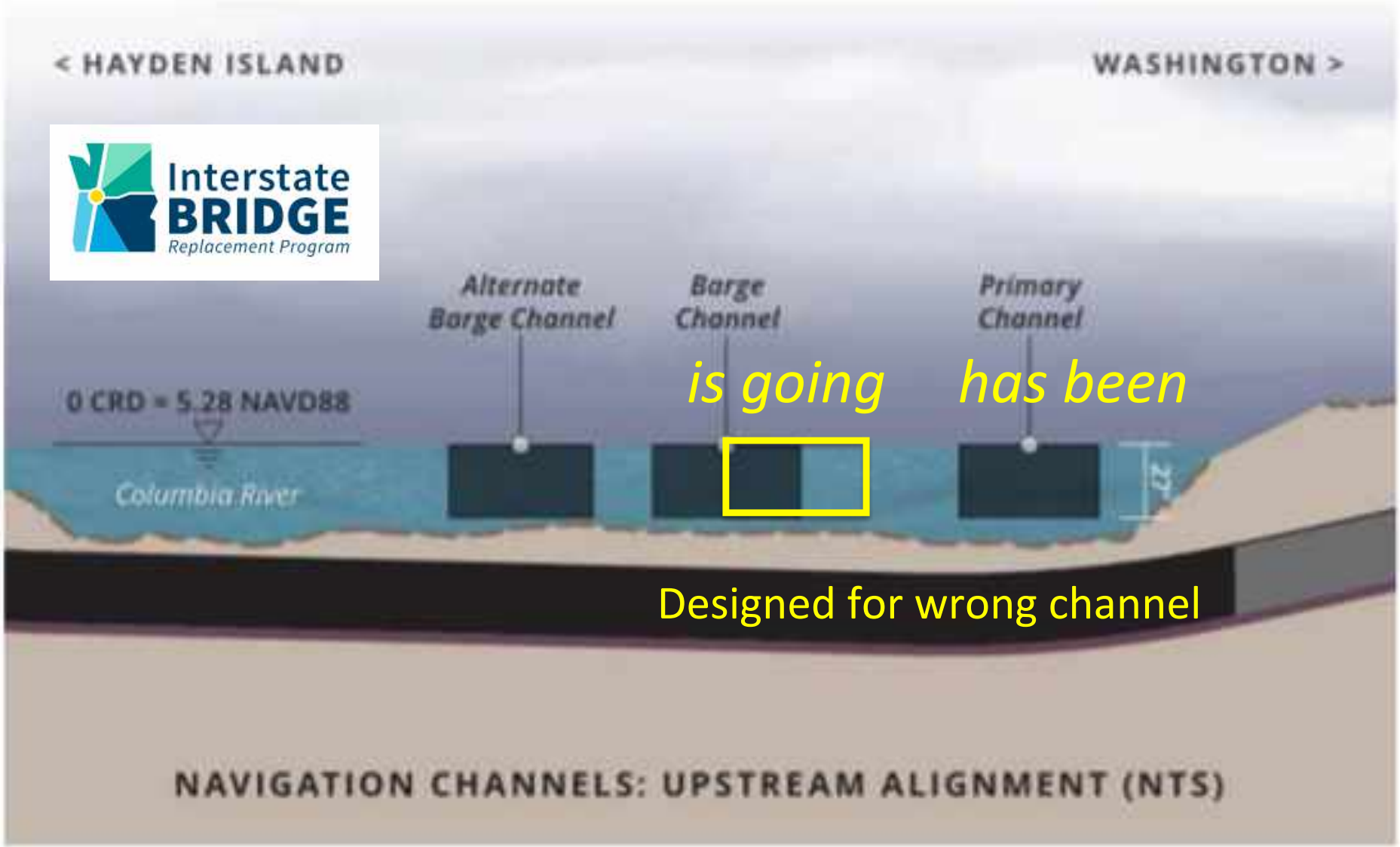
2 click

view the Tunnel Concept Assessment.

https://www.interstatebridge.org/media/4ivnpz3n/2021-03-03-final-itt-v2-48-_remediated.pdf

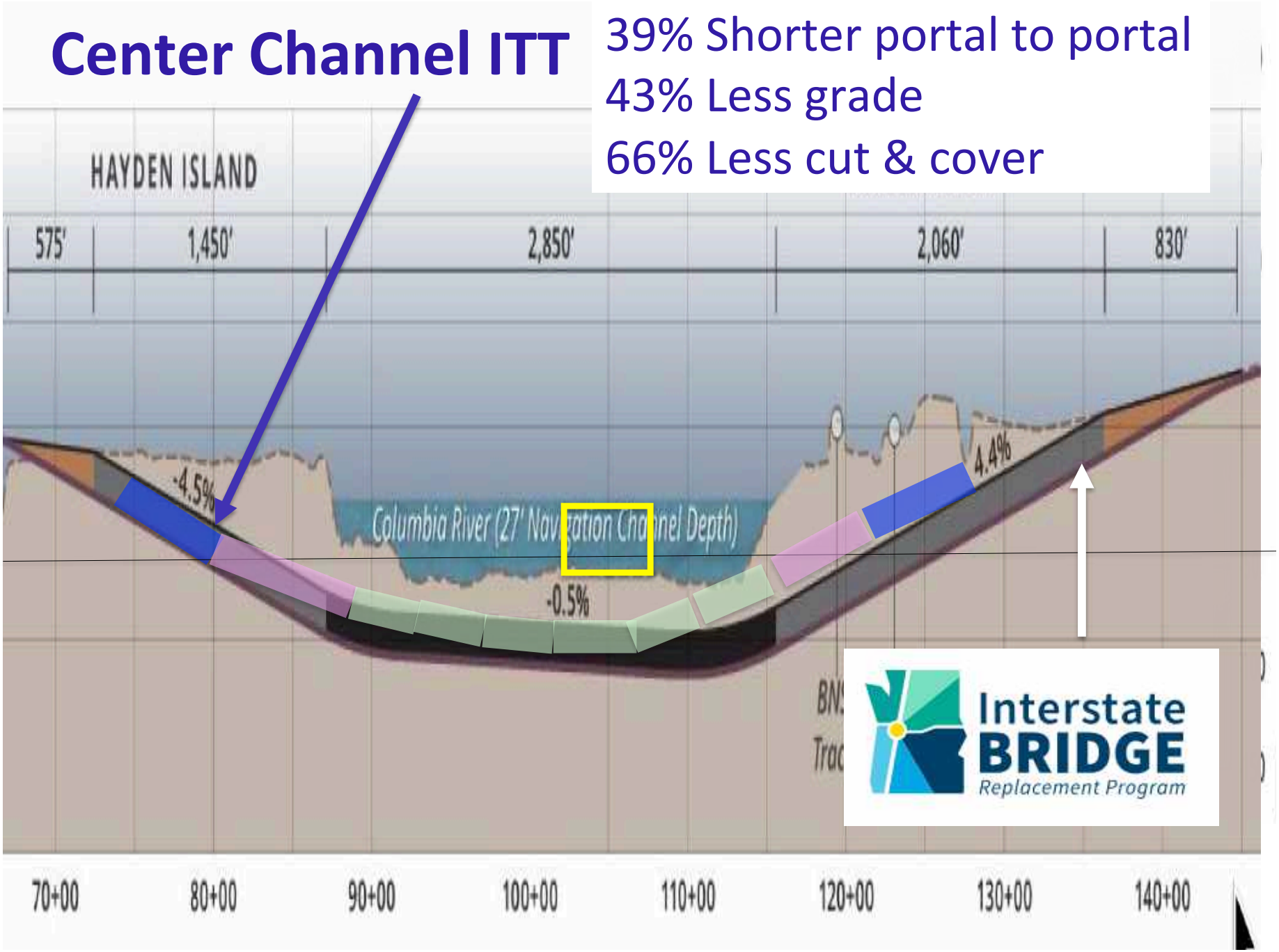
"I skate to where the puck is going, not where it has been".

Wayne Gretzky

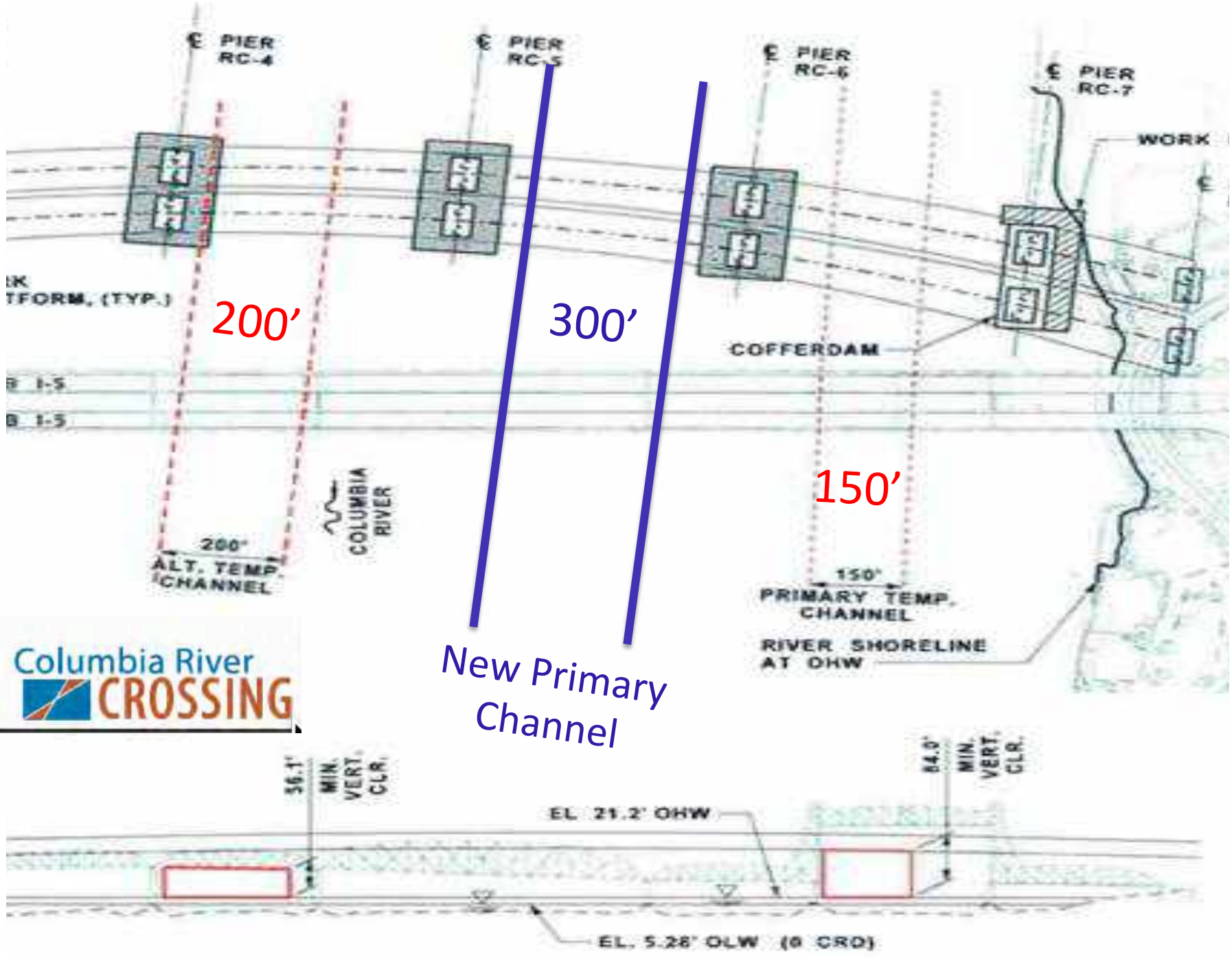


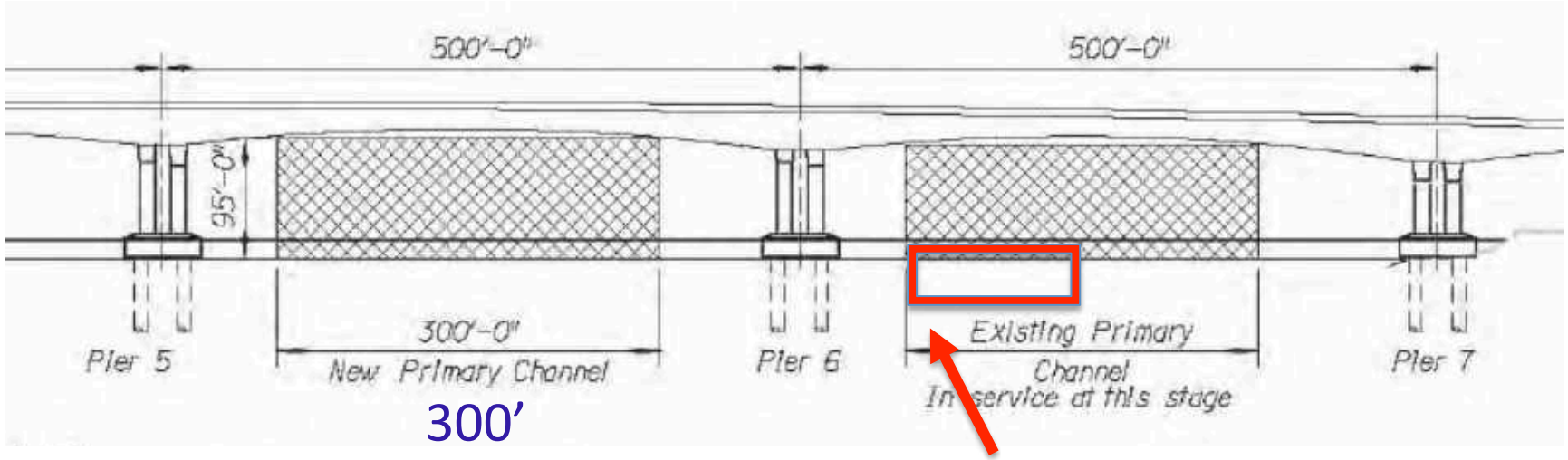
Center Channel ITT

39% Shorter portal to portal
43% Less grade
66% Less cut & cover



Interstate BRIDGE Replacement Program


℄ PIER RC-4
℄ PIER RC-5
℄ PIER RC-6
℄ PIER RC-7
WORK
℄
TFORM, (TYP.)
200'
300'
COFFERDAM
I-5
I-5
150'
COLUMBIA RIVER
200'
ALT. TEMP. CHANNEL
150'
PRIMARY TEMP. CHANNEL
RIVER SHORELINE AT OHW
New Primary Channel
Columbia River CROSSING
36.1'
MIN. VERT. CLR.
84.0'
MIN. VERT. CLR.
EL 21.2' OHW
EL. 5.28' OLW (0 CRD)



300’

New Primary Channel

150’ 17’ deep

Primary Temp. Channel

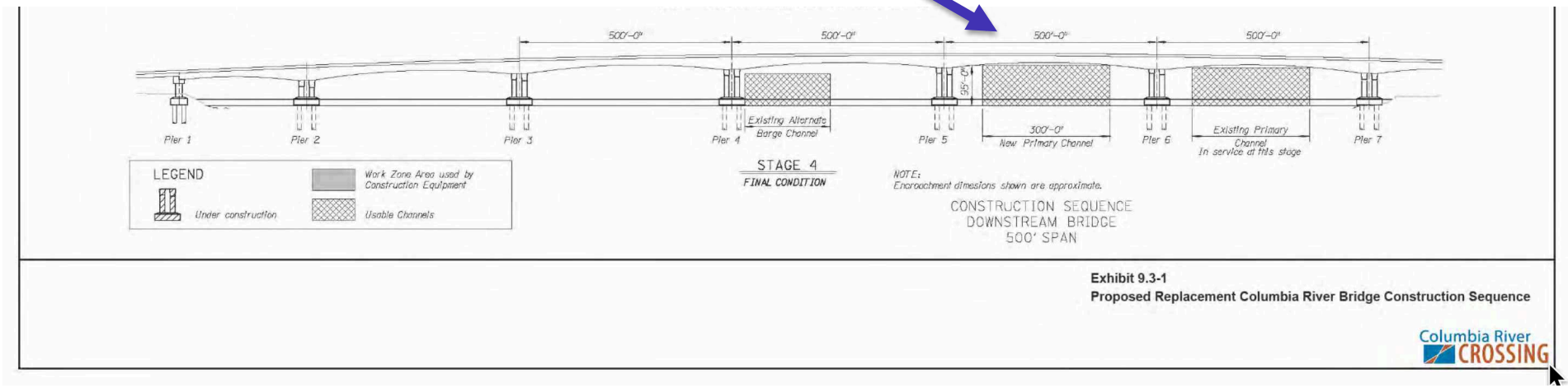
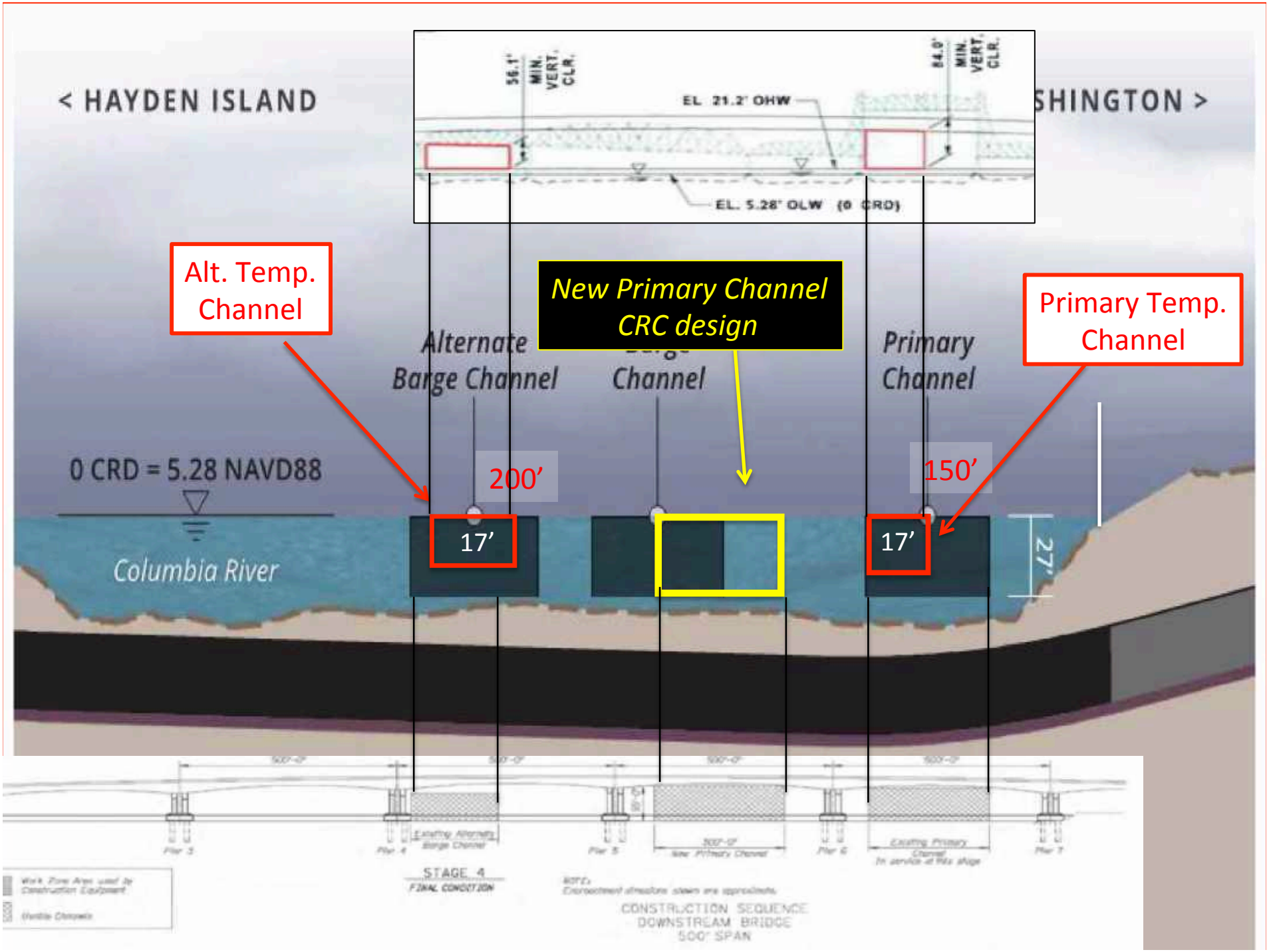
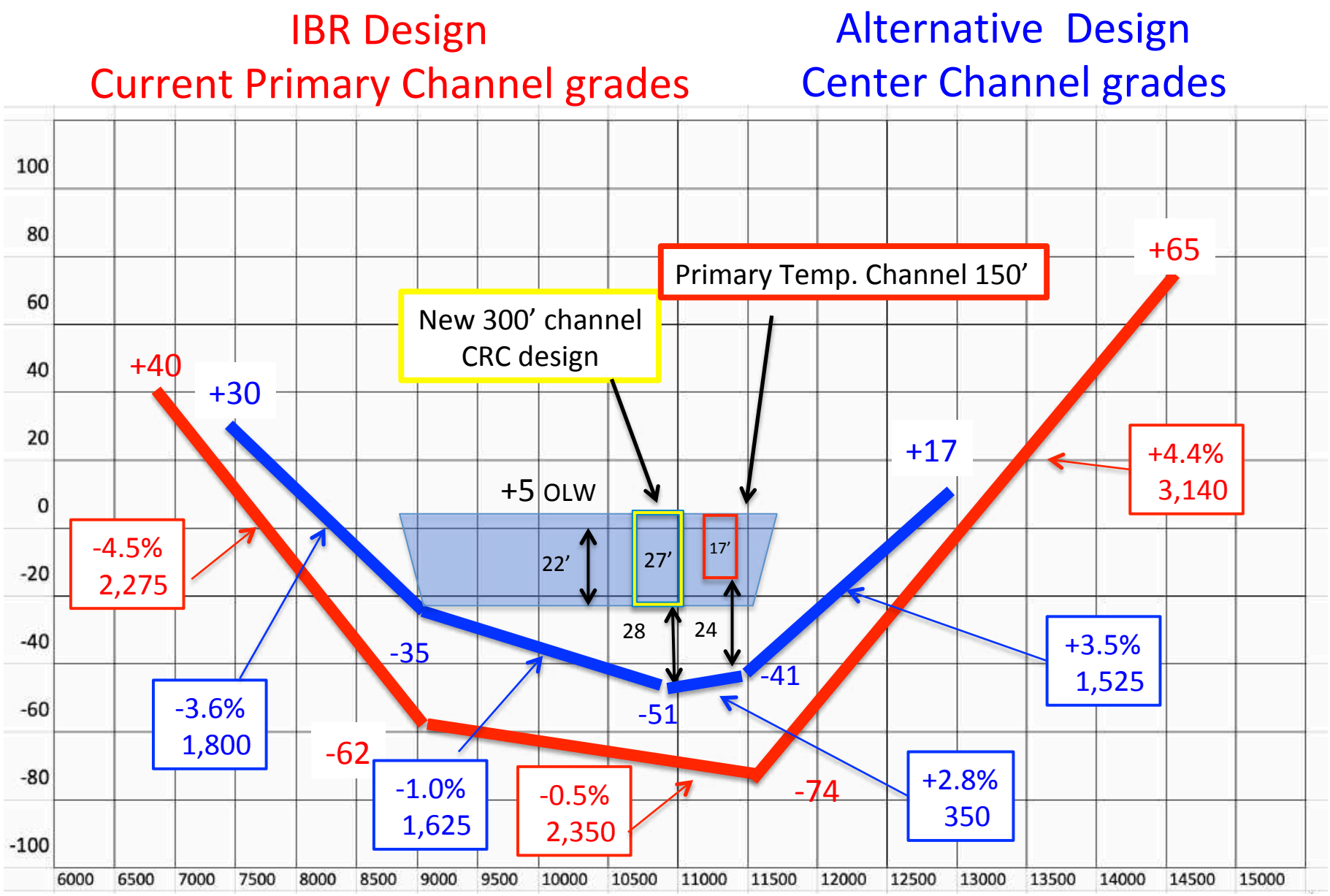
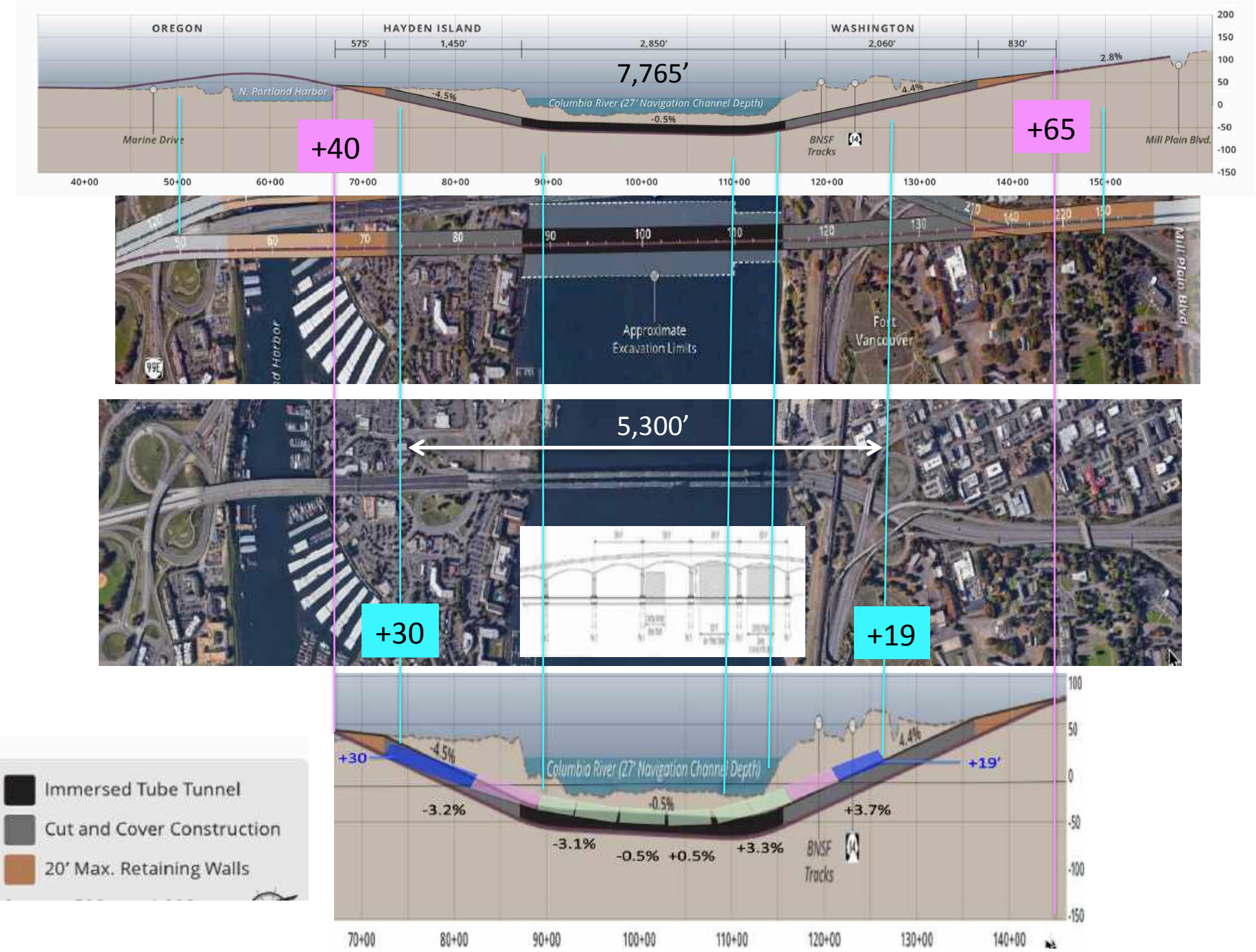


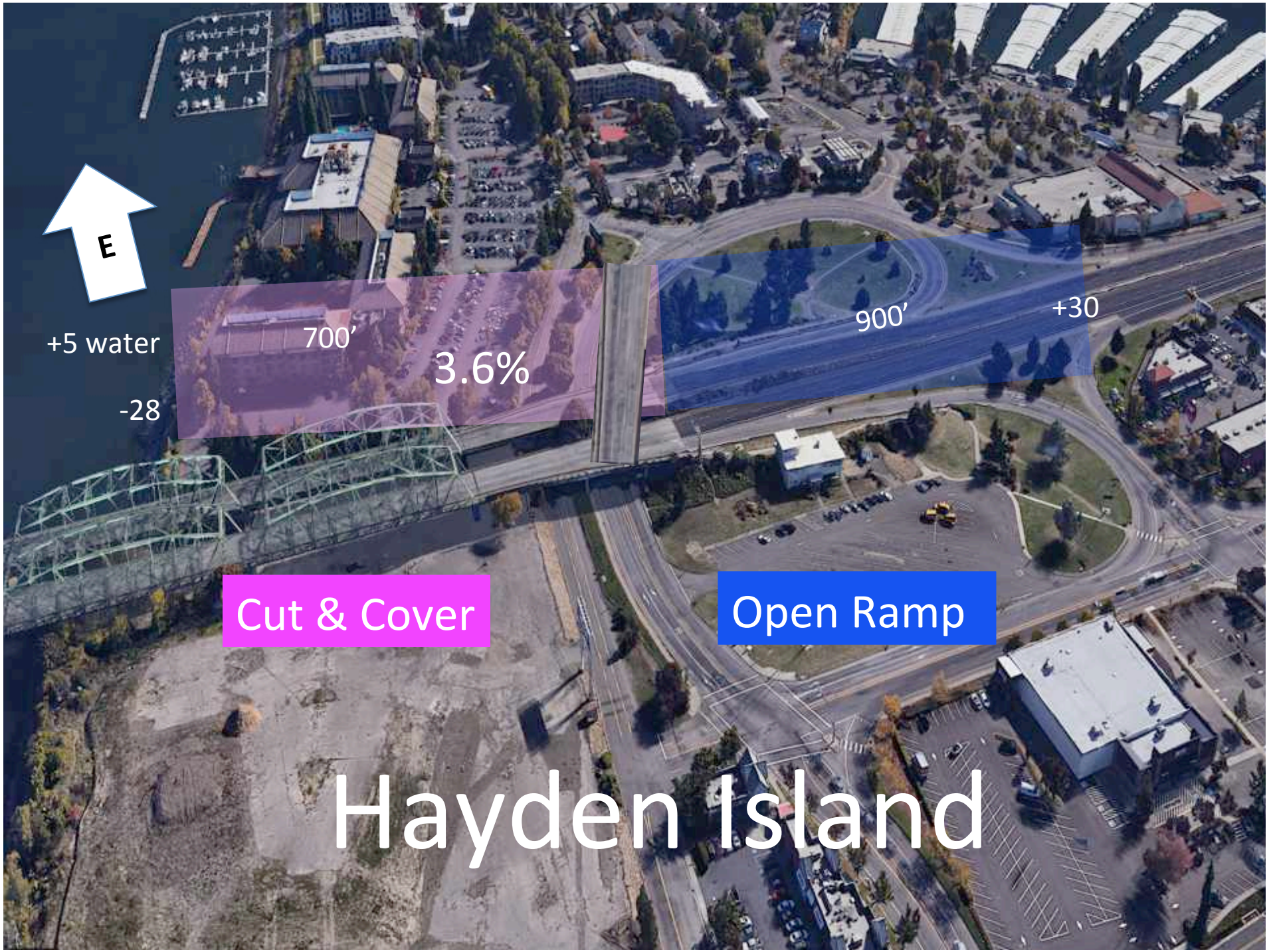
Exhibit 9.3-1
Proposed Replacement Columbia River Bridge Construction Sequence

Columbia River CROSSING

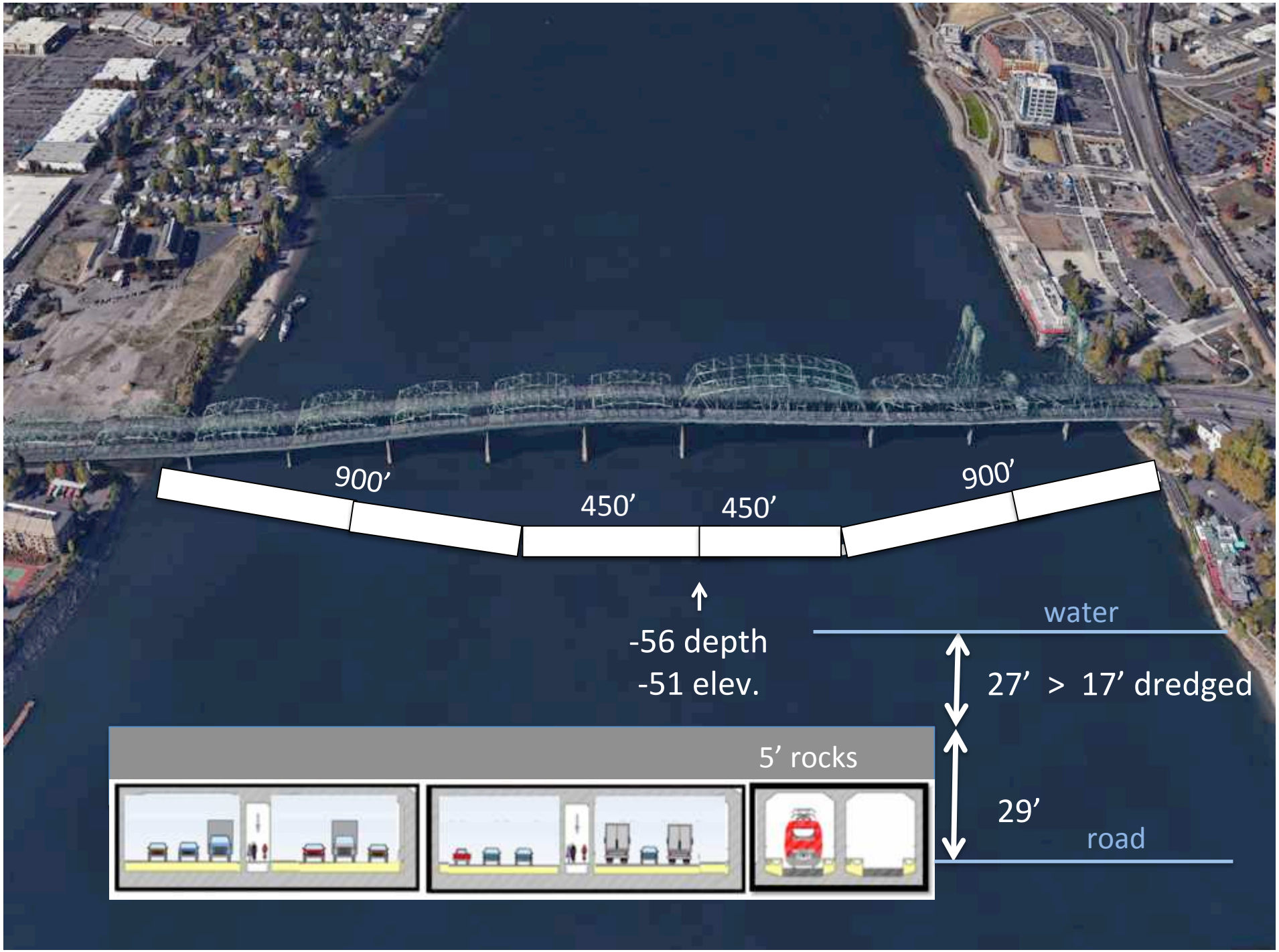

< HAYDEN ISLAND
SHINGTON >
56.1' MIN. VERT. CLR.
84.0' MIN. VERT. CLR.
EL 21.2' OHW
EL. 5.28' OLW (0 CRD)
Alt. Temp. Channel
New Primary Channel CRC design
Primary Temp. Channel
Alternate Barge Channel
Channel
Primary Channel
0 CRD = 5.28 NAVD88
Columbia River
200'
150'
17'
17'
27'
STAGE 4
FINAL CONDITION
CONSTRUCTION SEQUENCE
DOWNSTREAM BRIDGE
500' SPAN

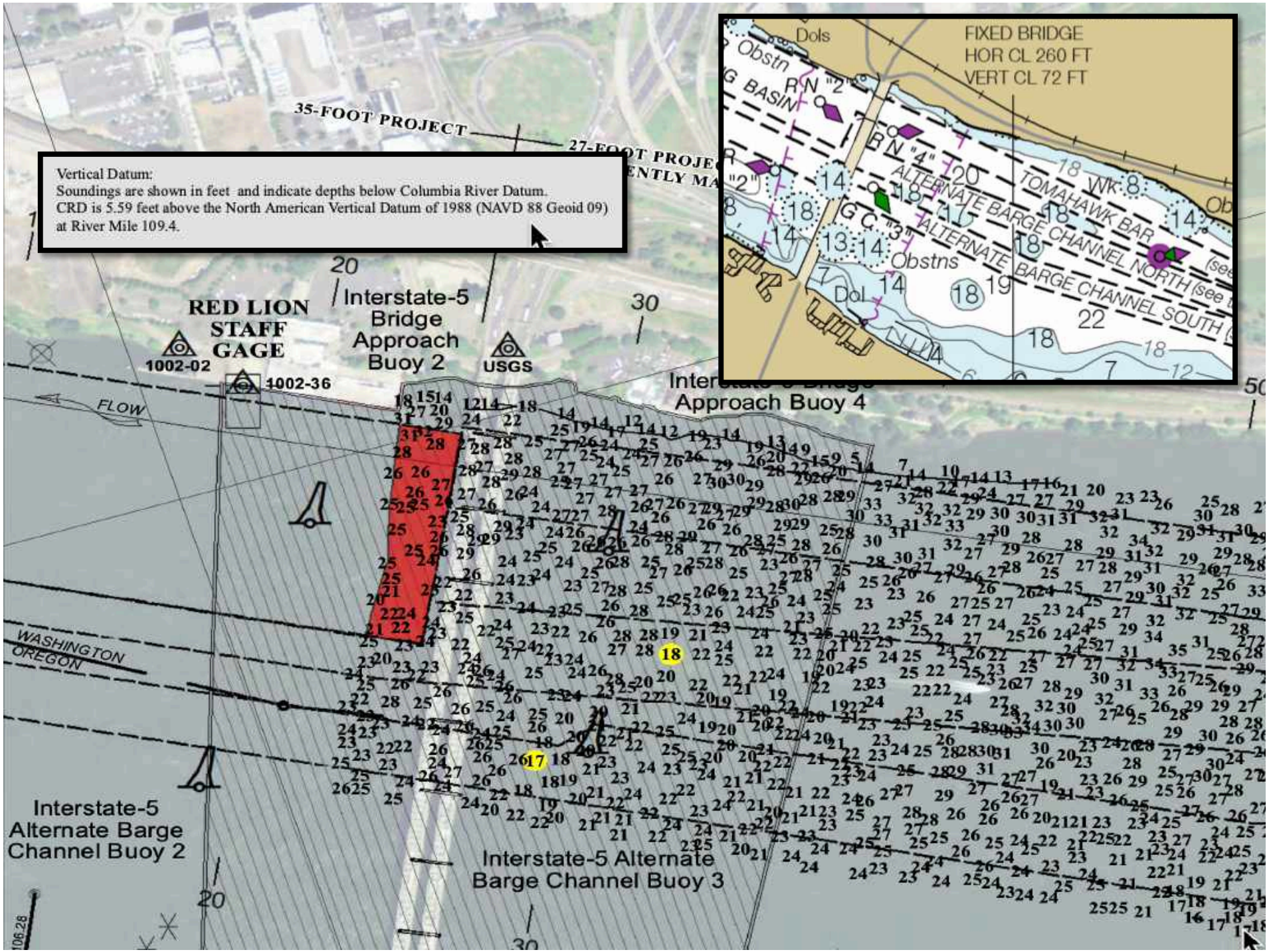

IBR Design
Current Primary Channel grades
Alternative Design
Center Channel grades
Primary Temp. Channel 150’
New 300’ channel
CRC design
+40
+30
+65
+17
+5 OLW
22’
27’
17’
28
24
-4.5%
2,275
-3.6%
1,800
-35
-62
-1.0%
1,625
-0.5%
2,350
-51
-41
-74
+4.4%
3,140
+3.5%
1,525
+2.8%
350
100
80
60
40
20
0
-20
-40
-60
-80
-100
6000
6500
7000
7500
8000
8500
9000
9500
10000
10500
11000
11500
12000
12500
13000
13500
14000
14500
15000


OREGON
HAYDEN ISLAND
WASHINGTON
575'
1,450'
2,850'
2,060'
830'
7,765'
N. Portland Harbor
Columbia River (27' Navigation Channel Depth)
Marine Drive
BNSF Tracks
Mill Plain Blvd.
-4.5%
-0.5%
4.4%
2.8%
+40
+65
40+00
50+00
60+00
70+00
80+00
90+00
100+00
110+00
120+00
130+00
140+00
150+00
200
150
100
50
0
-50
-100
-150
Approximate Excavation Limits
Fort Vancouver
5,300'
+30
+19
+30'
+19'
-3.2%
-3.1%
-0.5%
+0.5%
+3.3%
+3.7%
Immersed Tube Tunnel
Cut and Cover Construction
20' Max. Retaining Walls


E
+5 water
-28
700’
3.6%
900’
+30
Cut & Cover
Open Ramp
Hayden Island


Saves current highway and ramps
Open Ramp
+17’
500’
3.5%
500’
Cut & Cover
EXIT
14
+6 water
-18


900’
450’
450’
900’
-56 depth
-51 elev.
water
27’ > 17’ dredged
5’ rocks
29’
road


Vertical Datum:
Soundings are shown in feet and indicate depths below Columbia River Datum.
CRD is 5.59 feet above the North American Vertical Datum of 1988 (NAVD 88 Geoid 09) at River Mile 109.4.
35-FOOT PROJECT
27-FOOT PROJE
RED LION STAFF GAGE
1002-02
1002-36
Interstate-5 Bridge Approach Buoy 2
USGS
Interstate-5 Bridge Approach Buoy 4
FLOW
WASHINGTON
OREGON
Interstate-5 Alternate Barge Channel Buoy 2
Interstate-5 Alternate Barge Channel Buoy 3
FIXED BRIDGE
HOR CL 260 FT
VERT CL 72 FT
Dols
Obstn
R N "2"
G BASIN
B N "4"
G C "3"
ALTERNATE BARGE CHANNEL NORTH
ALTERNATE BARGE CHANNEL SOUTH
TOMAHAWK BAR
Wk
Obstns
DoL