NOTES:

1. A MULTIBEAM BATHYMETRIC SURVEY OF THE ICE HARBOR CUT NAVIGATION CHANNEL WAS CONDUCTED BY TERRASOND LIMITED ON OCTOBER 23-25, 2019.
2. HORIZONTAL DATUM IS NAD27, PROJECTION IS WASHINGTON STATE PLANE SOUTH, VERTICAL DATUM IS NGVD29. ALL UNITS ARE IN US SURVEY FEET.
3. HORIZONTAL AND VERTICAL POSITIONING WAS PROVIDED BY REAL-TIME KINEMATIC (RTK) GPS. RTK CORRECTIONS WERE BROADCAST FROM A LOCAL BASE STATION USING A TRIMBLE R10 GPS RECEIVER ON CONTROL POINT "IH-11" AND "93-01-01."
4. BATHYMETRIC DATA COLLECTION WAS CONDUCTED USING A R2 SONIC 2024 MULTIBEAM ECHOSOUNDER, APPLANIX WAVEMASTER INERTIAL NAVIGATION SYSTEM, AML MINOS-X SOUND VELOCITY PROBE, AND QPS QINSY V8.1 ACQUISITION SOFTWARE. DATA WAS PROCESSED USING CARIS HIPS V10.4.
5. CONTOURS SHOWN HEREON WERE GENERATED FROM A 3-FOOT HORIZONTAL RESOLUTION DATASET USING INVERSE WEIGHTED MEAN OF ALL SOUNDINGS WITHIN A 3-FOOT X 3-FOOT CELL.
6. PLOTTED SOUNDINGS REPRESENT HIGH AND LOW 50-FOOT RADIUS SORT OF THE 3-FOOT X 3-FOOT INVERSE WEIGHTED MEAN SOUNDINGS.
7. THIS MAP REPRESENTS CONDITIONS AT THE TIME OF THE SURVEY.

HORIZONTAL AND VERTICAL CONTROL

93-01-01
1-1/2" ALUMINUM CAP STAMPED "93-01-01"
N 337956.43
E 2404704.10
ELEVATION 403.87

SR-6R
3-1/2" BRASS CAP USACE
STAMPED "SR-6R 1977"
N 334906.47
E 2391562.51
ELEVATION 352.44

IH-11
REBAR WITH 2-½" ALUMINUM CAP
N 335595.01
E 2394914.57
ELEVATION 368.96

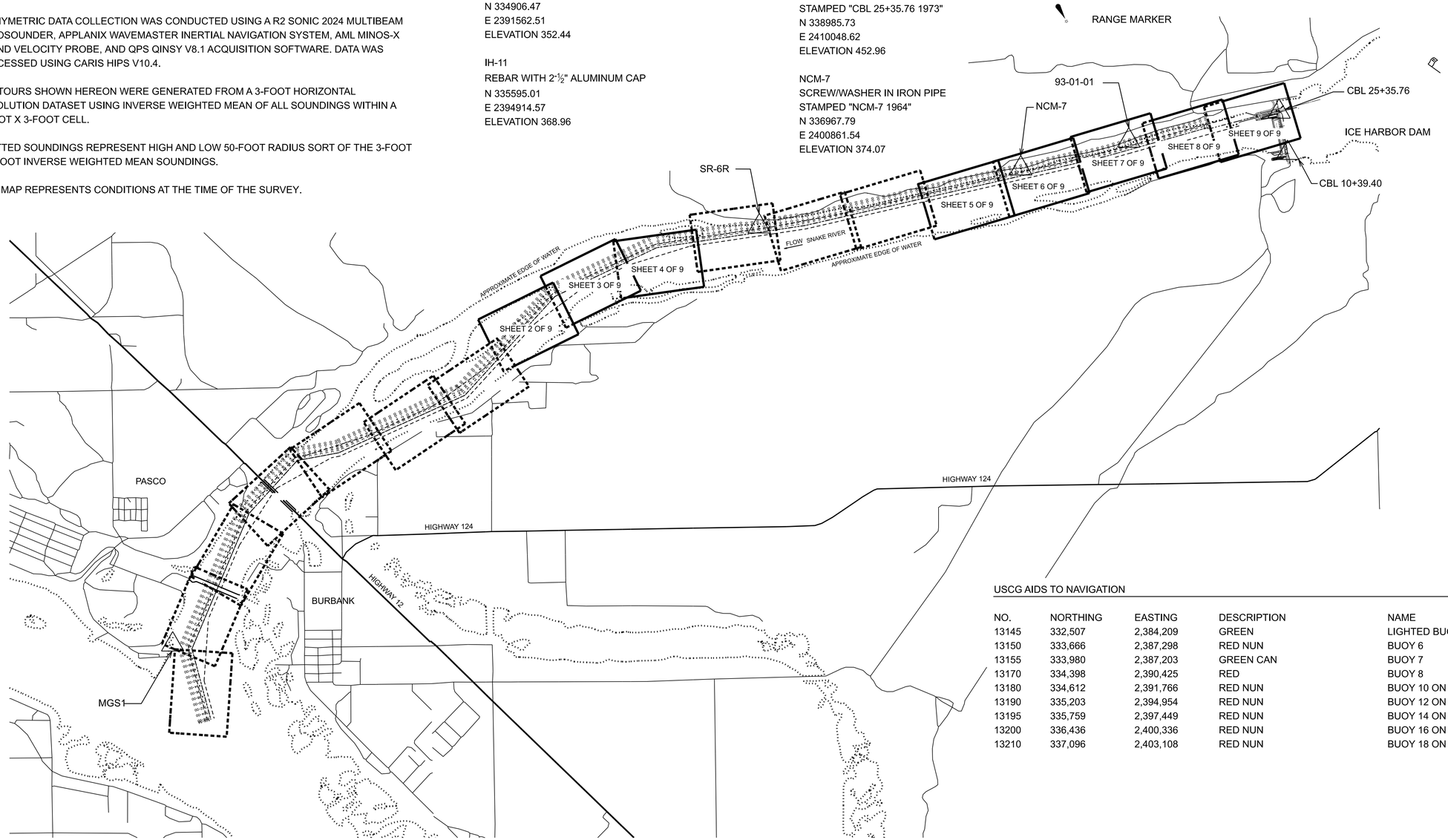
CBL 10+39.40
3-1/2" BRASS DISK USACE
STAMPED "CBL 10+39.40 1973"
N 337519.01
E 2410344.45
ELEVATION 453.00

CBL 25+35.76
3-1/2" BRASS CAP USACE
STAMPED "CBL 25+35.76 1973"
N 338985.73
E 2410048.62
ELEVATION 452.96

NCM-7
SCREW/WASHER IN IRON PIPE
STAMPED "NCM-7 1964"
N 336967.79
E 2400861.54
ELEVATION 374.07

LEGEND

SURVEY CONTROL
RIVER MILE
C BUOY, CAN
N BUOY, NUN
BEACON
RANGE MARKER



USCG AIDS TO NAVIGATION

NO.	NORTHING	EASTING	DESCRIPTION	NAME
13145	332,507	2,384,209	GREEN	LIGHTED BUOY 5
13150	333,666	2,387,298	RED NUN	BUOY 6
13155	333,980	2,387,203	GREEN CAN	BUOY 7
13170	334,398	2,390,425	RED	BUOY 8
13180	334,612	2,391,766	RED NUN	BUOY 10 ON ROCK LEDGE
13190	335,203	2,394,954	RED NUN	BUOY 12 ON ROCK LEDGE
13195	335,759	2,397,449	RED NUN	BUOY 14 ON ROCK LEDGE
13200	336,436	2,400,336	RED NUN	BUOY 16 ON ROCK LEDGE
13210	337,096	2,403,108	RED NUN	BUOY 18 ON ROCK LEDGE

ICE HARBOR CUT GENERAL SITE PLAN

0 2000' 4000'
SCALE IN FEET

N

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MARK	DESCRIPTION	DATE

DESIGNED BY: MEYER
DRAWN BY: LINDBLAD
CHECKED BY: MILDON
SUBMITTED BY: TERRASOND LIMITED
ISSUE DATE: 1/6/2020
SOLICITATION NO.: 9817
CONTRACT NO.: W912EF-16-D-0004
FILE NO.:
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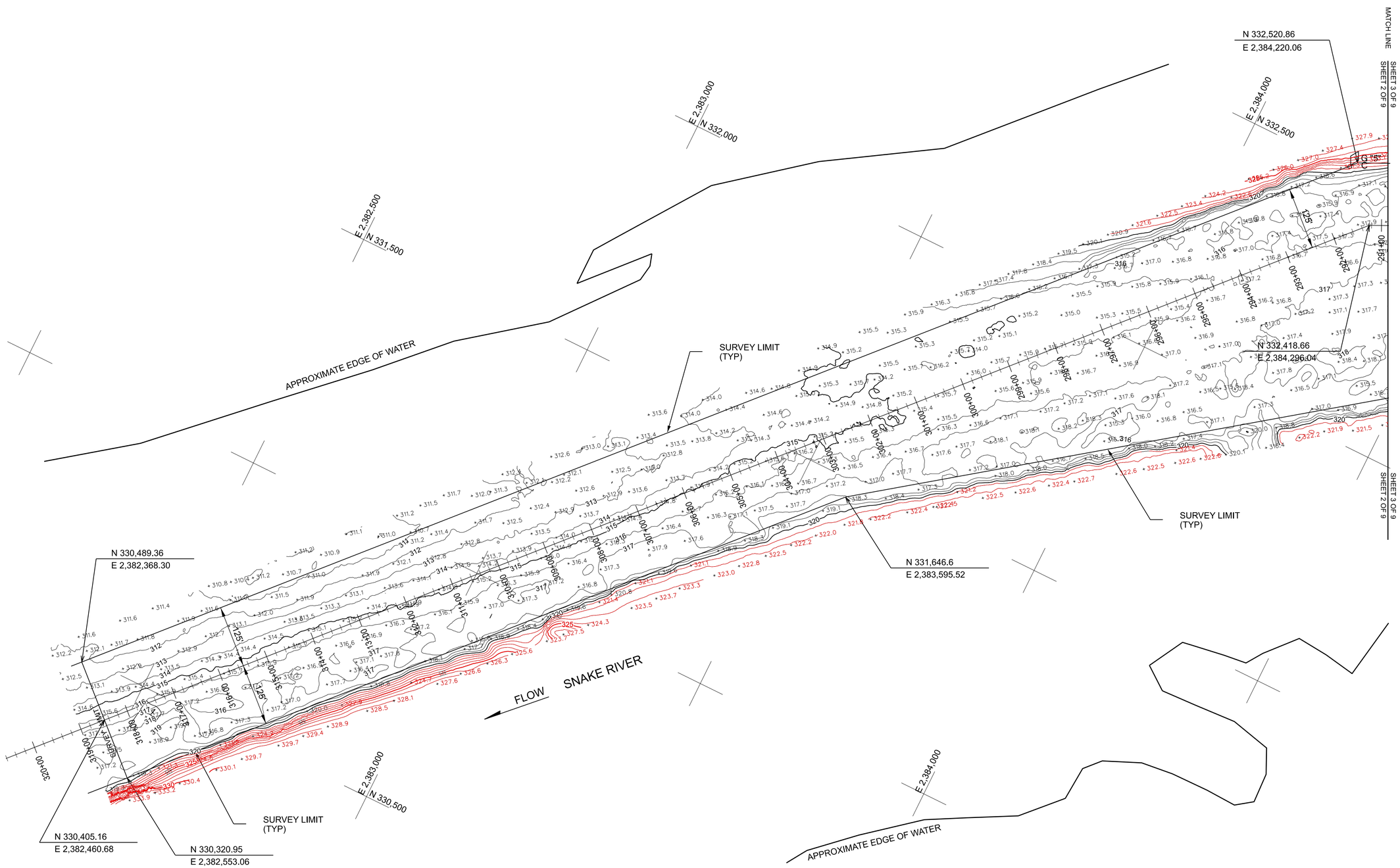
ICE HARBOR CUT
NAVIGATION CHANNEL
MULTI-BEAM BATHYMETRIC SURVEY

SHEET ID
V-101



ICE HARBOR CUT NAVIGATION CHANNEL

0 100' 200'
SCALE IN FEET

NOTES

1. HORIZONTAL DATUM IS NAD27, PROJECTION IS WASHINGTON STATE PLANE SOUTH, VERTICAL DATUM IS NGVD29. ALL UNITS ARE IN U.S. SURVEY FEET.
2. CHANNEL DEPTH IS DESIGNED AT 14 FEET BELOW MINIMUM OPERATING POOL ELEVATION OF 355 FEET. THE DATA REPRESENTED IN RED INDICATES MATERIAL BUILD-UP ABOVE THE DESIGNED CHANNEL DEPTH.

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ICE HARBOR CUT
NAVIGATION CHANNEL
MULTI-BEAM BATHYMETRIC SURVEY

SHEET ID
V-102

DATE AND TIME PLOTTED: 1/6/2020
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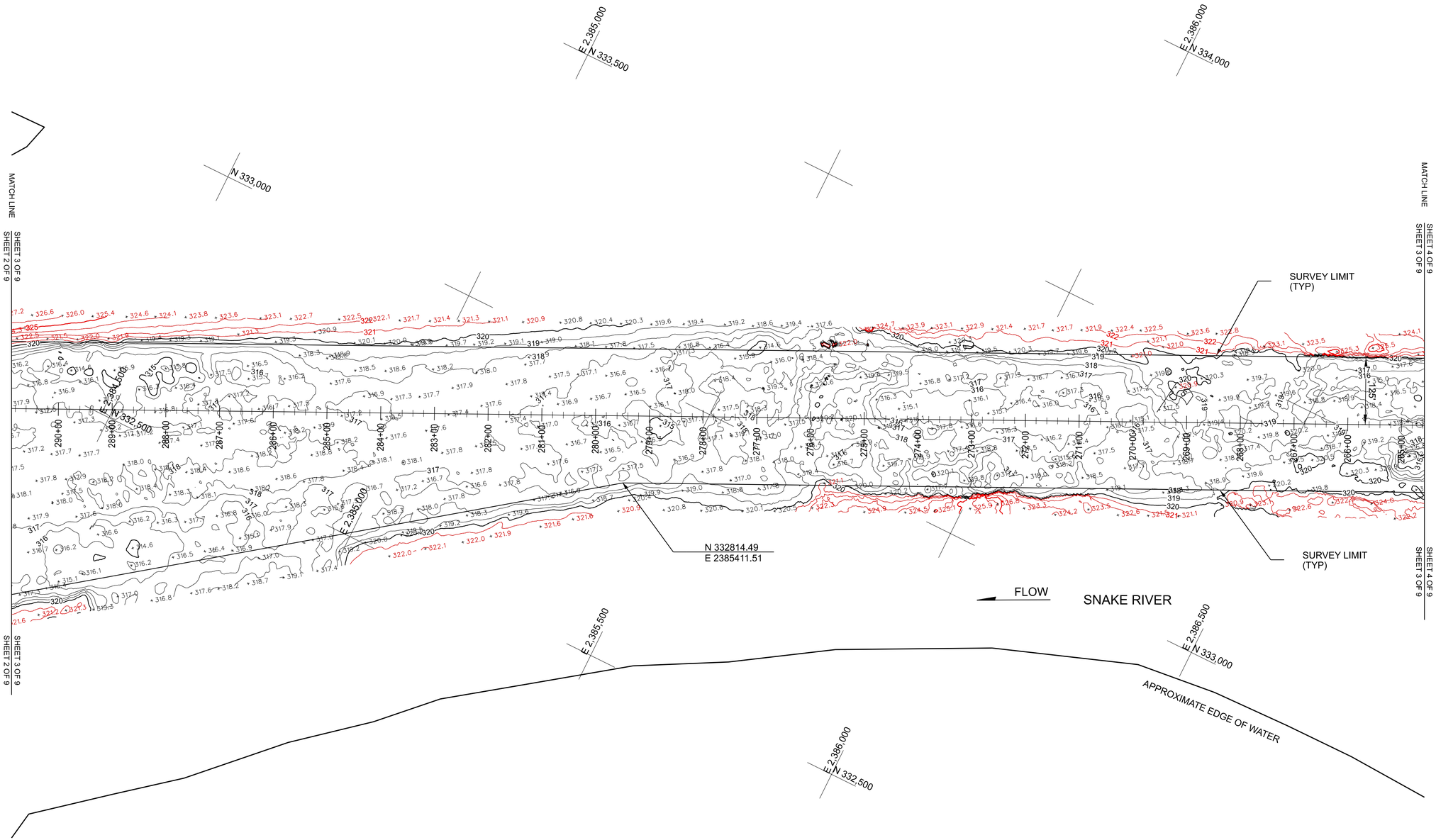

ICE HARBOR CUT NAVIGATION CHANNEL

0 100' 200'
SCALE IN FEET

NOTES

1. HORIZONTAL DATUM IS NAD27, PROJECTION IS WASHINGTON STATE PLANE SOUTH, VERTICAL DATUM IS NGVD29. ALL UNITS ARE IN U.S. SURVEY FEET.
2. CHANNEL DEPTH IS DESIGNED AT 14 FEET BELOW MINIMUM OPERATING POOL ELEVATION OF 335 FEET. THE DATA REPRESENTED IN RED INDICATES MATERIAL BUILD-UP ABOVE THE DESIGNED CHANNEL DEPTH.

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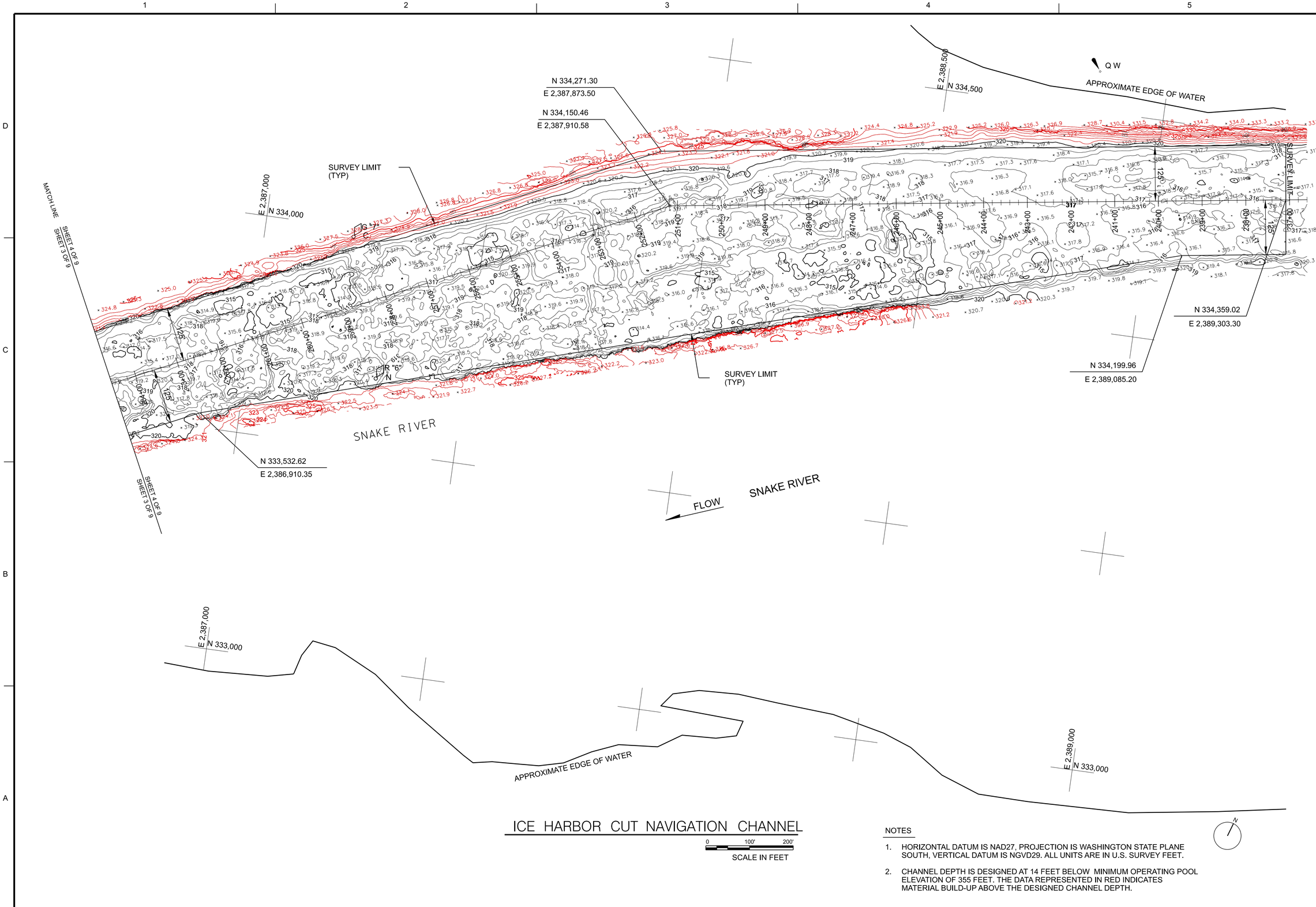
ICE HARBOR CUT
NAVIGATION CHANNEL
MULTI-BEAM BATHYMETRIC SURVEY

SHEET ID
V-103

DATE AND TIME PLOTTED: 1/6/2020

DESIGN FILE: L:\Z_surveys\00Hydro_Condition\2019_Hydro_Condition\25Nov2019_Revised Submittals\Nav Condition Surveys\Drawings and Bathymetry\Ice Harbor Cut\Drawings Bentley Opensite\HLDCutV-103—.dgn



NOTES

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2. CHANNEL DEPTH IS DESIGNED AT 14 FEET BELOW MINIMUM OPERATING POOL ELEVATION OF 355 FEET. THE DATA REPRESENTED IN RED INDICATES MATERIAL BUILD-UP ABOVE THE DESIGNED CHANNEL DEPTH.

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ICE HARBOR CUT
NAVIGATION CHANNEL
MULTI-BEAM BATHYMETRIC SURVEY

SHEET ID
V-104

DATE AND TIME PLOTTED: 1/6/2020

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ICE HARBOR CUT NAVIGATION CHANNEL

0 100' 200'

SCALE IN FEET

NOTES

1. HORIZONTAL DATUM IS NAD27, PROJECTION IS WASHINGTON STATE PLANE SOUTH, VERTICAL DATUM IS NGVD29. ALL UNITS ARE IN U.S. SURVEY FEET.
2. CHANNEL DEPTH IS DESIGNED AT 14 FEET BELOW MINIMUM OPERRATING POOL ELVATION OF 335 FEET. THE DATA REPRESENTED IN RED IDICATES MATERIAL BUILD-UP ABOVE THE DESIGNED CHANNEL DEPTH.

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ICE HARBOR CUT
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MULTI-BEAM BATHYMETRIC SURVEY

SHEET ID

V-105

DATE AND TIME PLOTTED: 1/6/2020

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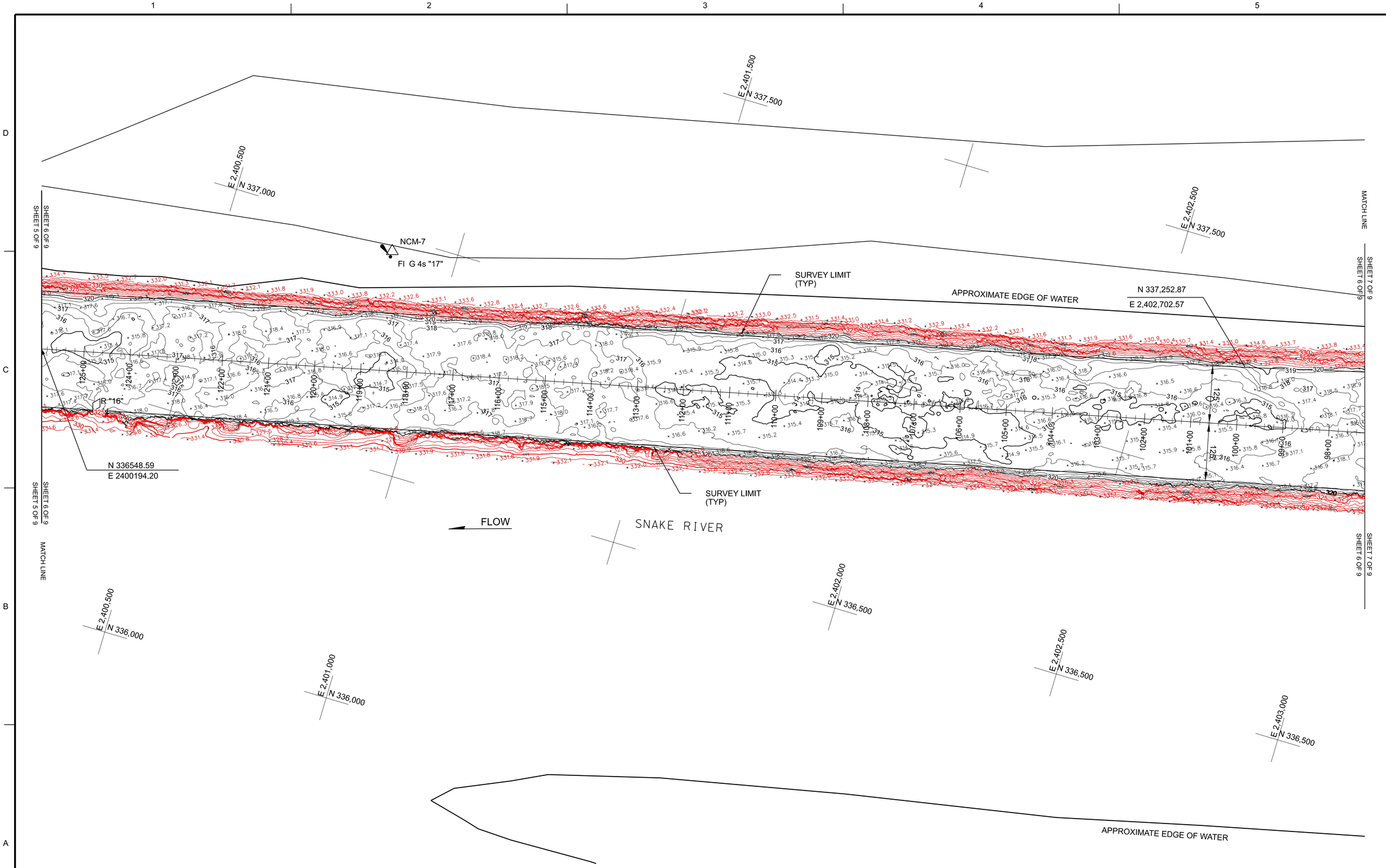

ICE HARBOR CUT NAVIGATION CHANNEL

0 100' 200'

SCALE IN FEET

NOTES:

1. HORIZONTAL DATUM IS NAD27, PROJECTION IS WASHINGTON STATE PLANE SOUTH, VERTICAL DATUM IS NGVD29. ALL UNITS ARE IN U.S. SURVEY FEET.
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ICE HARBOR CUT
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MULTI-BEAM BATHYMETRIC SURVEY

SHEET ID

V-106

DATE AND TIME PLOTTED: 1/6/2020

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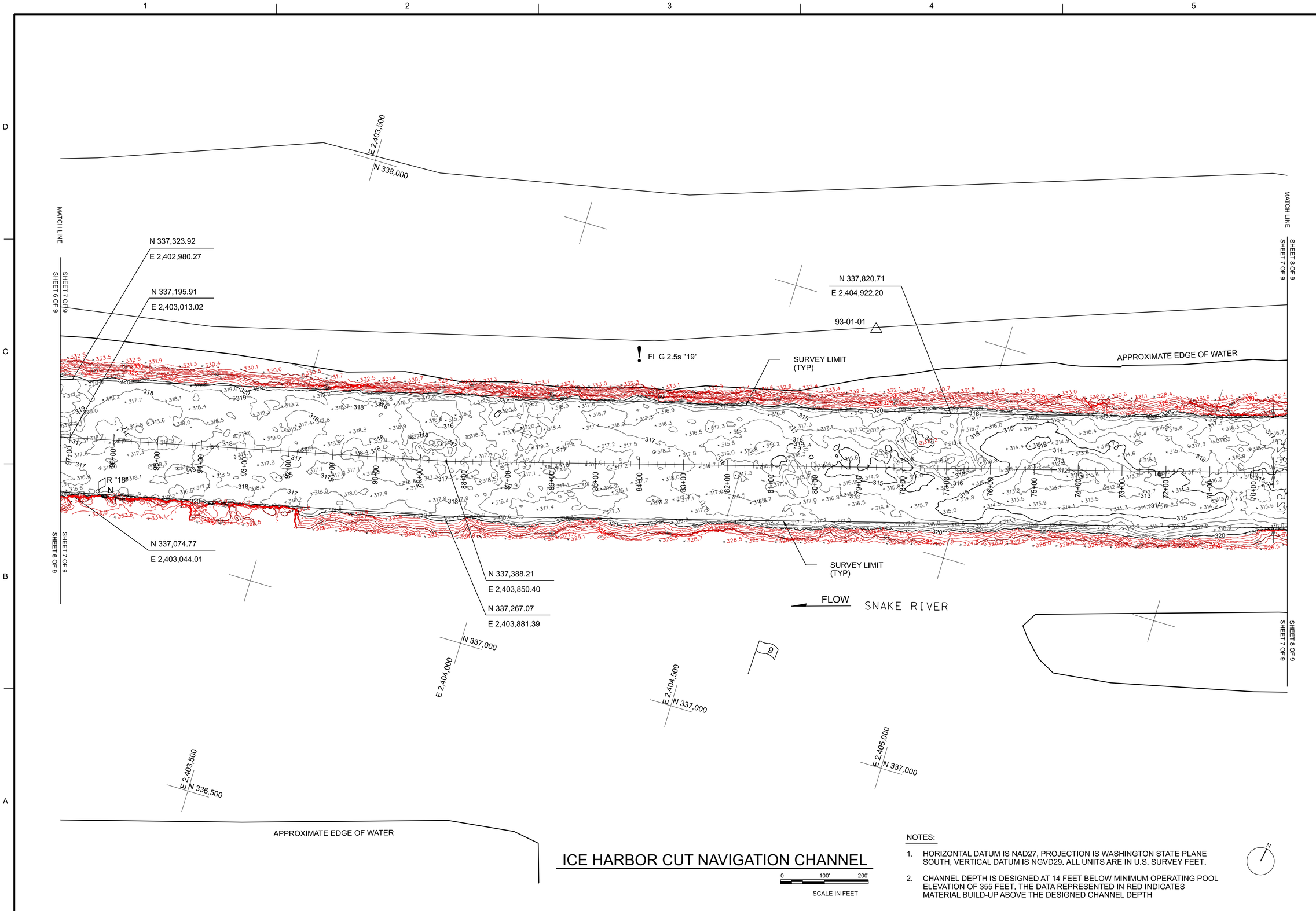

ICE HARBOR CUT NAVIGATION CHANNEL

0 100' 200'
SCALE IN FEET

NOTES:

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ISSUE DATE: 1/6/2020
SOLICITATION NO.: 9817
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ICE HARBOR CUT
NAVIGATION CHANNEL
MULTI-BEAM BATHYMETRIC SURVEY

SHEET ID
V-107

DATE AND TIME PLOTTED: 1/6/2020
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ICE HARBOR CUT NAVIGATION CHANNEL

0 100' 200'
SCALE IN FEET

NOTES:

1. HORIZONTAL DATUM IS NAD27, PROJECTION IS WASHINGTON STATE PLANE SOUTH, VERTICAL DATUM IS NGVD29. ALL UNITS ARE IN U.S. SURVEY FEET.
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ICE HARBOR CUT
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MULTI-BEAM BATHYMETRIC SURVEY

SHEET ID
V-108

DATE AND TIME PLOTTED: 1/6/2020

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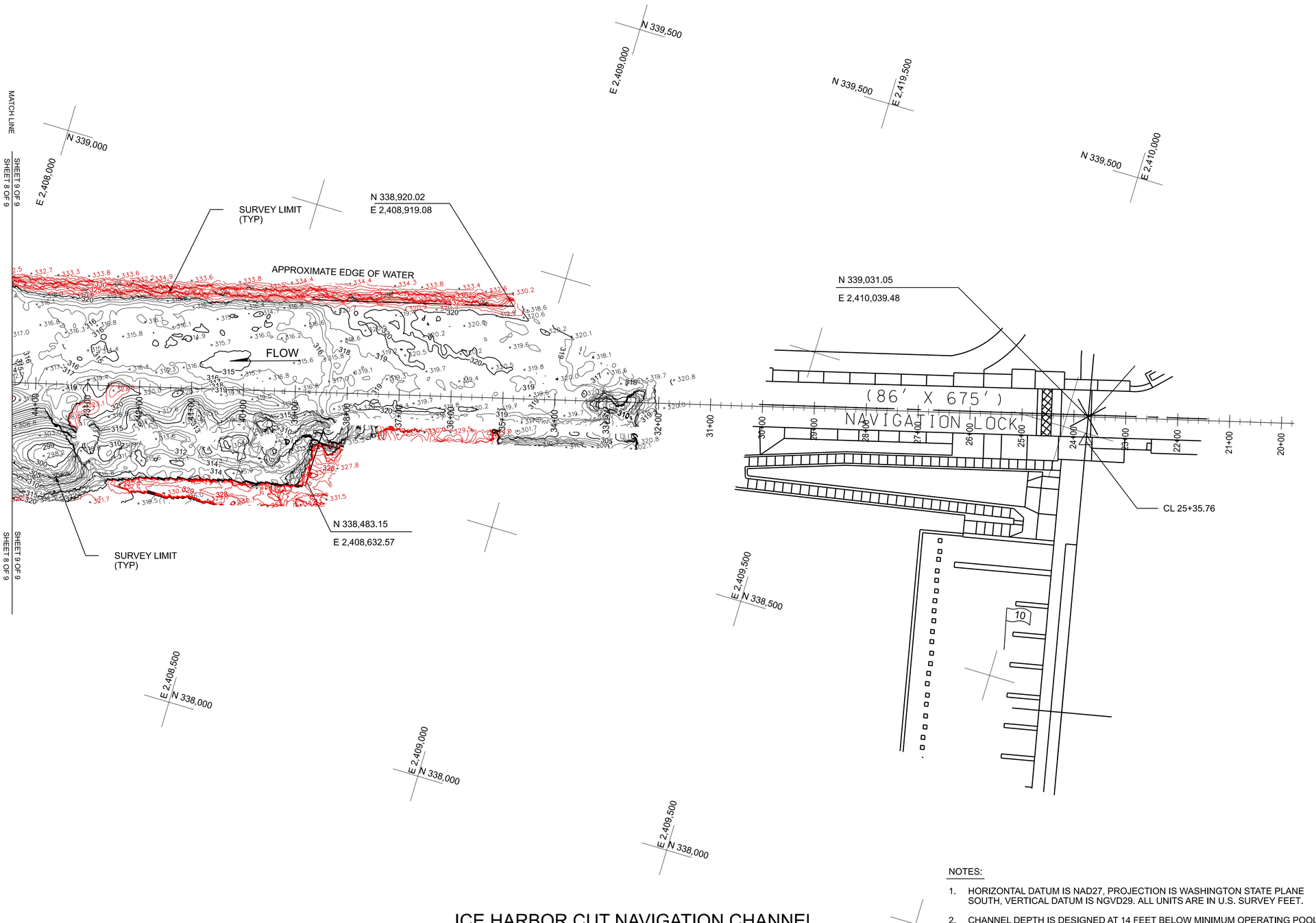

ICE HARBOR CUT NAVIGATION CHANNEL

NOTES:

1. HORIZONTAL DATUM IS NAD27, PROJECTION IS WASHINGTON STATE PLANE SOUTH, VERTICAL DATUM IS NGVD29. ALL UNITS ARE IN U.S. SURVEY FEET.
2. CHANNEL DEPTH IS DESIGNED AT 14 FEET BELOW MINIMUM OPERATING POOL ELEVATION OF 355 FEET. THE DATA REPRESENTED IN RED INDICATES MATERIAL BUILD-UP ABOVE THE DESIGNED CHANNEL DEPTH

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ICE HARBOR CUT
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MULTI-BEAM BATHYMETRIC SURVEY

SHEET ID
V-109

DATE AND TIME PLOTTED: 1/6/2020

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