Item H2:

Port of Anchorage Intermodal Expansion Project

North Extension/Wet Barge Berth Sheet Pile Inspections

Wet Barge Berth and North Extension

Preliminary Inspection Summary Report

Volume 2 of 2

10 December 2010

Port of Anchorage Intermodal Expansion Project

North Extension/Wet Barge Berth Sheet Pile Inspections

Table of Contents

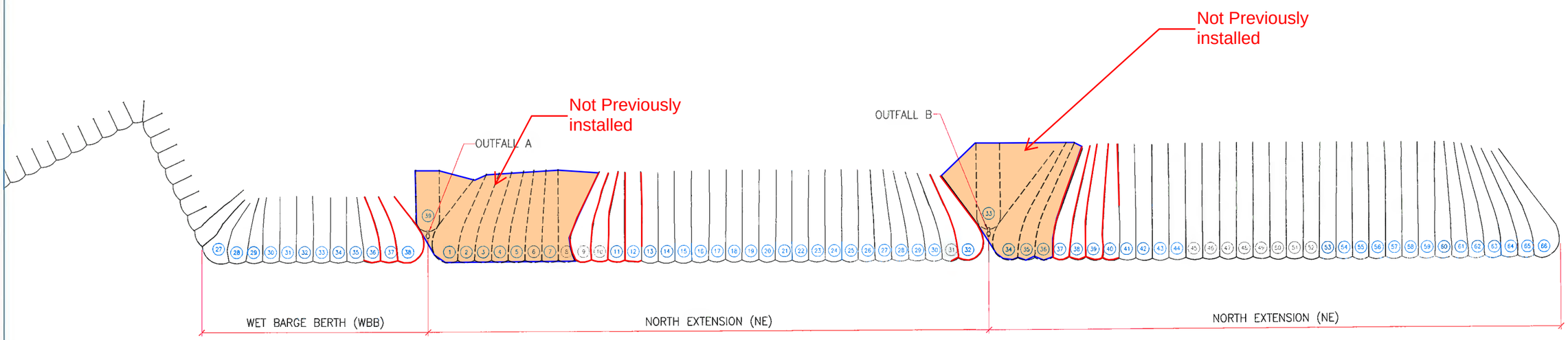
Sheet Pile Inspection Summary – 2010

LEGEND:

CELLS NOT INSTALLED

EXISTING CELLS

SHEETS REMOVED IN 2010



NOTE:

1. DATA REFLECTS INSPECTION FINDINGS OF SHEETS INSTALLED PRIOR TO THE 2010 SEASON, AND PULLED & INSPECTED DURING THE 2010 CONSTRUCTION SEASON (THROUGH 9/30/10). DATA DOES NOT REFLECT SHEETS INSTALLED DURING THE 2010 CONSTRUCTION SEASON.

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2. PULLED SHEETPILE DATA AS OF 9/30/10.

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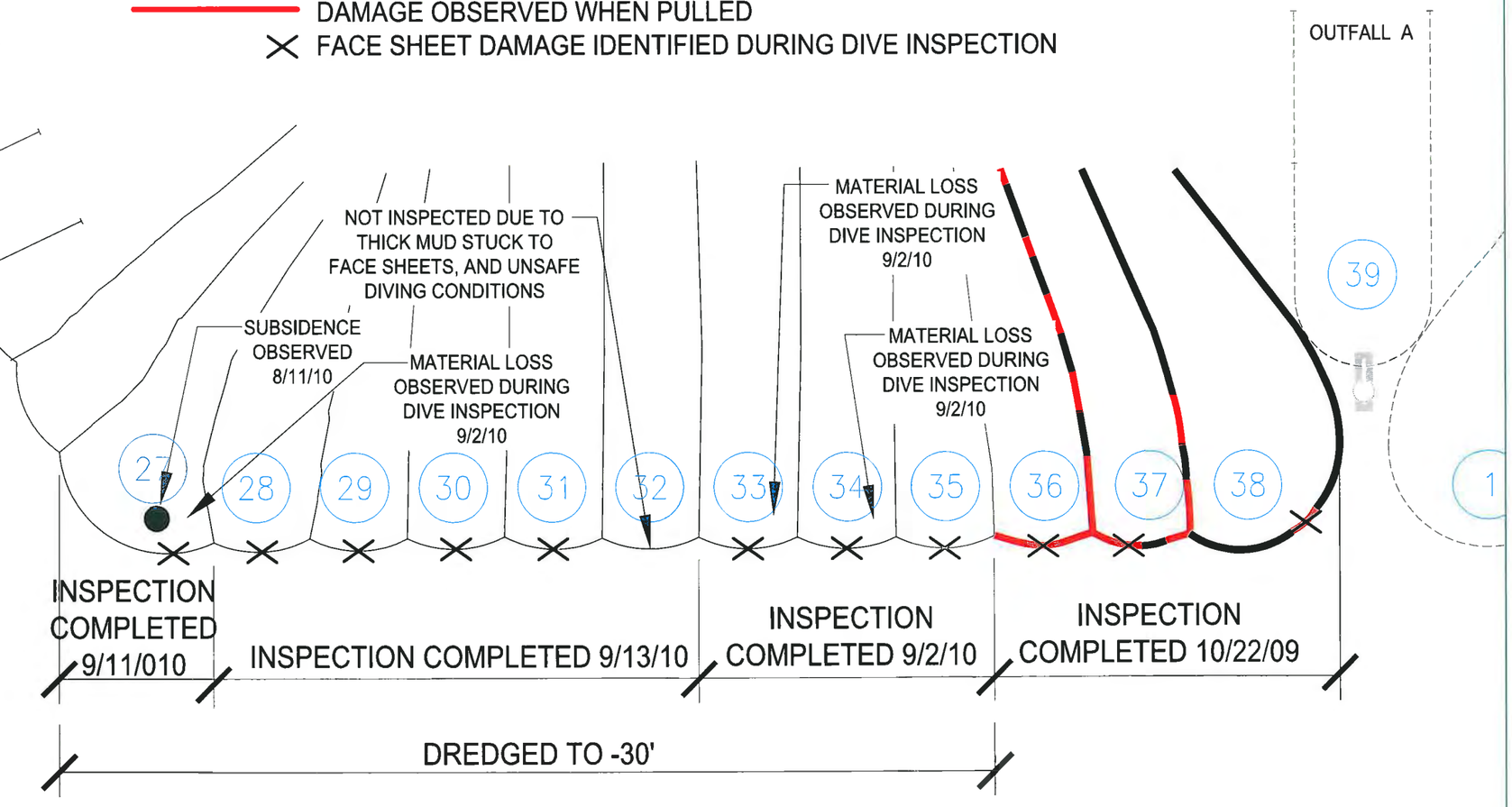
Port of Anchorage Intermodal Expansion Project

2010 Sheetpile Inspection Summary

Project Overview

LEGEND:

- CELLS NOT INSTALLED
- EXISTING CELLS
- NO MAJOR DAMAGE OBSERVED WHEN PULLED
- DAMAGE OBSERVED WHEN PULLED
- FACE SHEET DAMAGE IDENTIFIED DURING DIVE INSPECTION



NOTES:

1. SYMBOLS ARE PLACED AT APPROXIMATE LOCATIONS OF SHEETS. REFER TO FIELD DOCUMENTATION & SHEETPILE RECORD FOR PRECISE DATA.
2. THE APPROXIMATED AREAS AND LOCATIONS IDENTIFIED IN THIS DRAWING REPRESENT PRELIMINARY FIELD DETERMINATIONS OF THE CONDITION OF THE EXTRACTED SHEETPILE.
3. ALL DEPTH ELEVATIONS ARE MEASURED IN FEET MEAN LOWER LOW WATER (MLLW).

NTS

4. PULLED SHEETPILE DATA AS OF 9/30/10.

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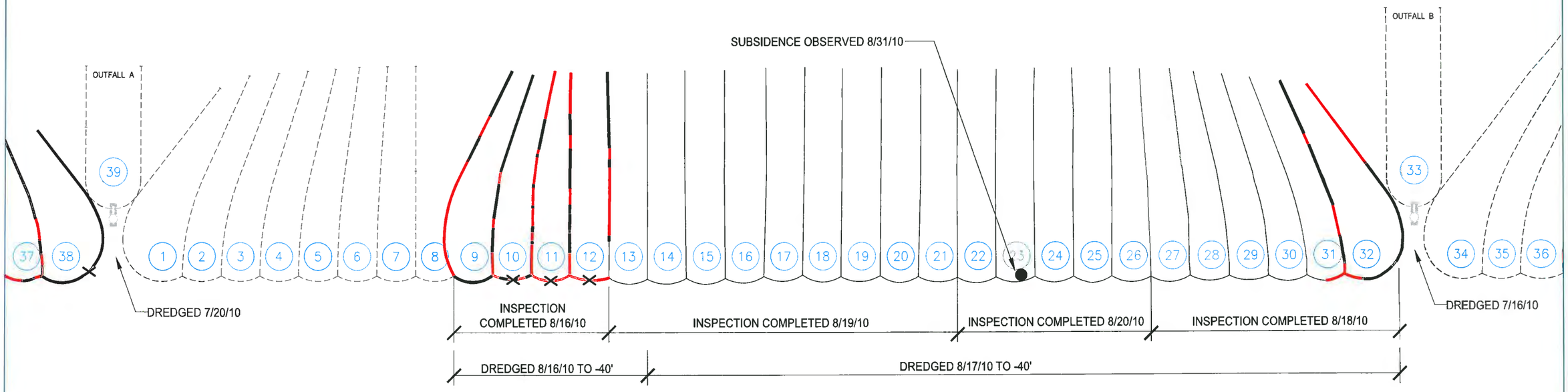
2010 Sheetpile Inspection Summary

Wet Barge Berth (Cells 27-39)

LEGEND:

- CELLS NOT INSTALLED
- EXISTING CELLS
- NO MAJOR DAMAGE OBSERVED WHEN PULLED
- DAMAGE OBSERVED WHEN PULLED
- FACE SHEET DAMAGE IDENTIFIED DURING DIVE INSPECTION



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4. **PULLED SHEETPILE DATA AS OF 9/30/10.**

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2010 Sheetpile Inspection Summary

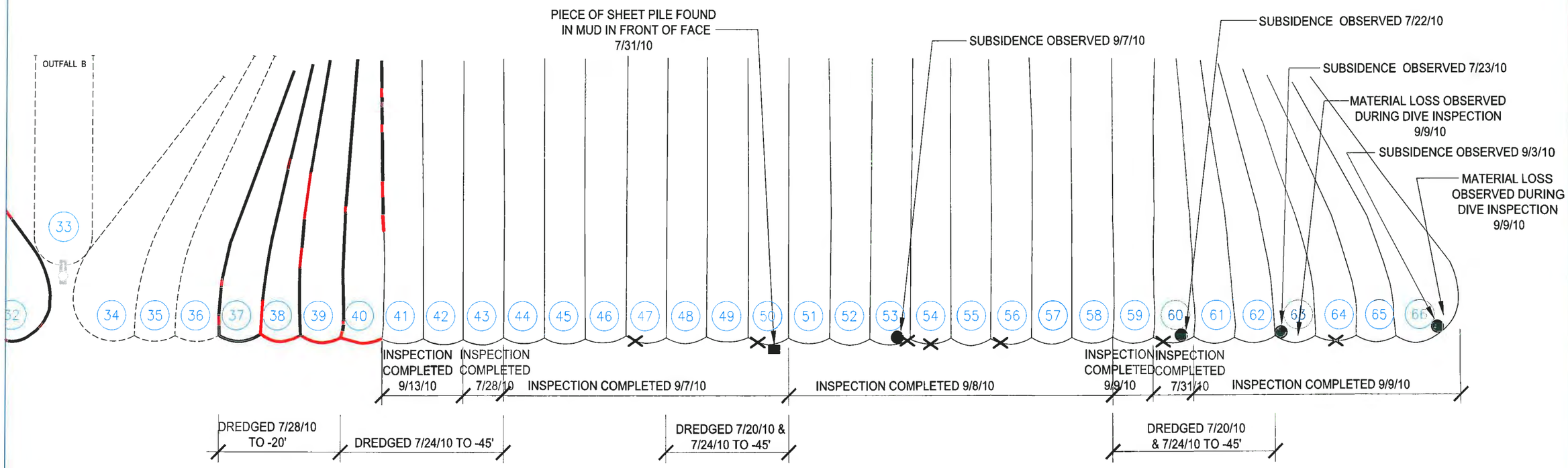
North Extension (Cells 1-33)

Sheet 3 of 4

12-9-10

LEGEND:

- CELLS NOT INSTALLED
- EXISTING CELLS
- NO MAJOR DAMAGE OBSERVED WHEN PULLED
- DAMAGE OBSERVED WHEN PULLED
- FACE SHEET DAMAGE IDENTIFIED DURING DIVE INSPECTION



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3. ALL DEPTH ELEVATIONS ARE MEASURED IN FEET MEAN LOWER LOW WATER (MLLW).
4. **PULLED SHEETPILE DATA AS OF 9/30/10.**

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2010 Sheetpile Inspection Summary

North Extension (Cells 34-66)

Sheet 4 of 4

12-9-10

Dive Inspections

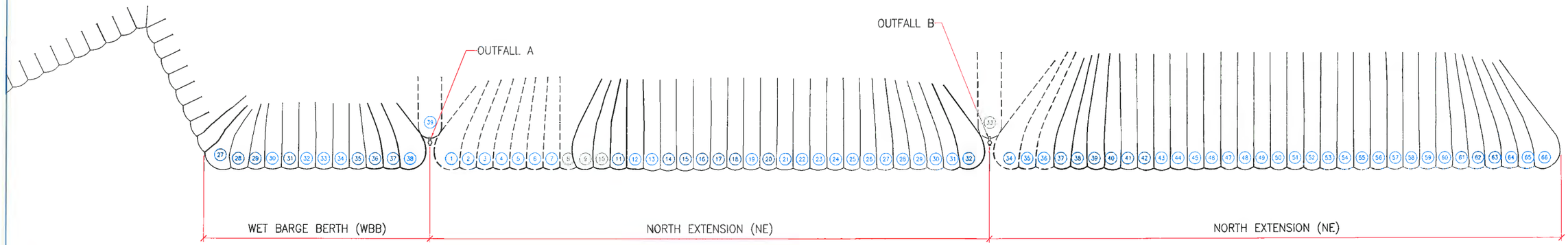
Sheet Pile Inspection Summary – 2010

LEGEND:

CELLS NOT INSTALLED

EXISTING CELLS

SHEETS REMOVED IN 2010



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2. PULLED SHEETPILE DATA AS OF 9/30/10.

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2010 Sheetpile Inspection Summary

Project Overview

12-9-10

LEGEND:

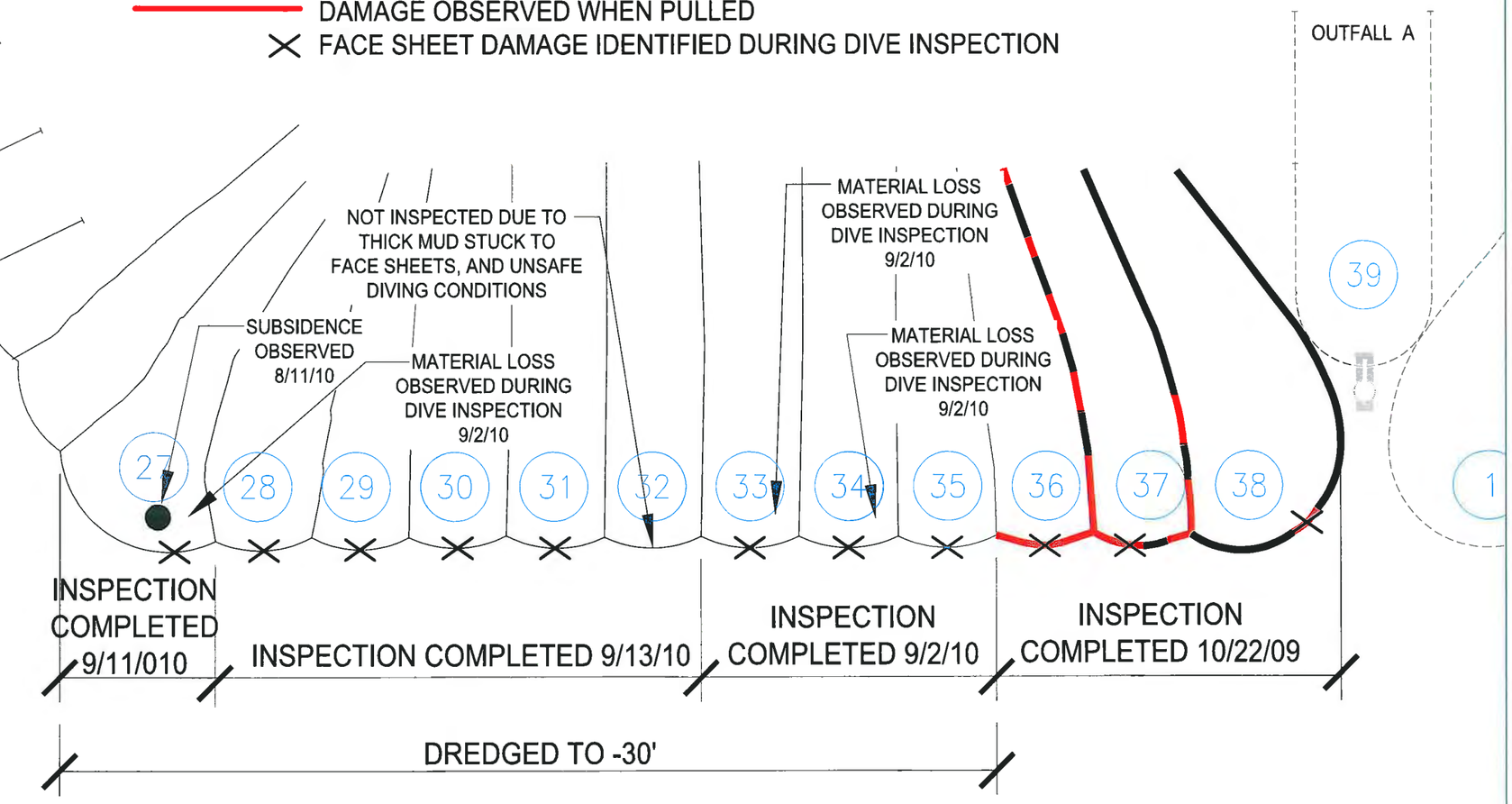
CELLS NOT INSTALLED

EXISTING CELLS

NO MAJOR DAMAGE OBSERVED WHEN PULLED

DAMAGE OBSERVED WHEN PULLED

FACE SHEET DAMAGE IDENTIFIED DURING DIVE INSPECTION



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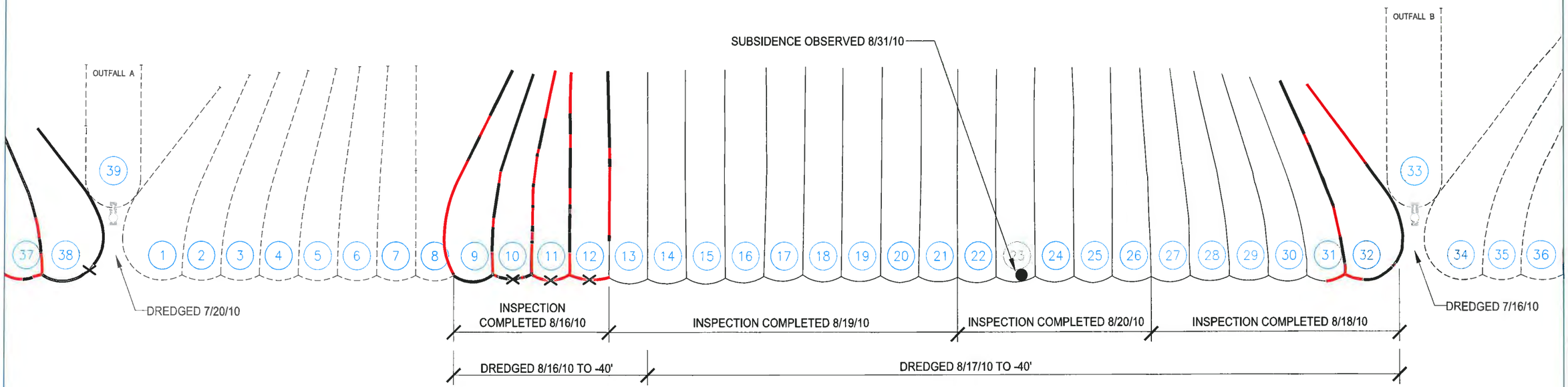
2010 Sheetpile Inspection Summary

Wet Barge Berth (Cells 27-39)

12-9-10

LEGEND:

- CELLS NOT INSTALLED
- EXISTING CELLS
- NO MAJOR DAMAGE OBSERVED WHEN PULLED
- DAMAGE OBSERVED WHEN PULLED
- FACE SHEET DAMAGE IDENTIFIED DURING DIVE INSPECTION



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2010 Sheetpile Inspection Summary

North Extension (Cells 1-33)

LEGEND:

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- DAMAGE OBSERVED WHEN PULLED
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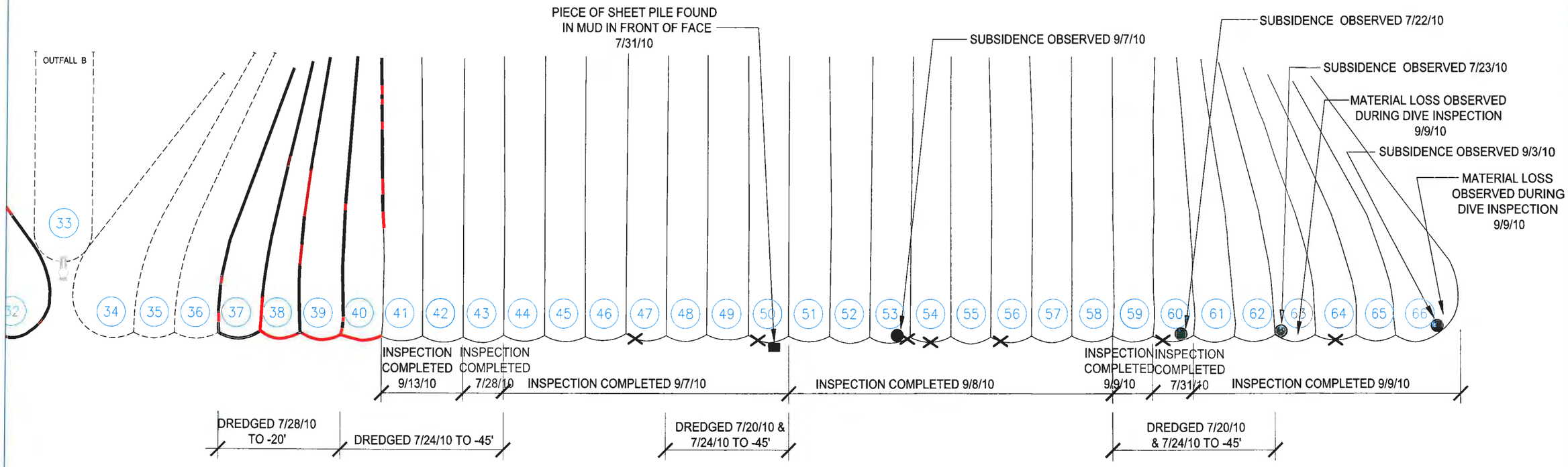

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4. **PULLED SHEETPILE DATA AS OF 9/30/10.**

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Port of Anchorage Intermodal Expansion Project

2010 Sheetpile Inspection Summary

North Extension (Cells 34-66)

Sheet 4 of 4

12-9-10

Dive Inspections

PND ENGINEERS, INC.

October 14, 2010

061028.3406D

Scott Yancey
Construction Group Manager
ICRC - Program & Project Management
421 West 1st Avenue, Suite 200
Anchorage, AK 99501

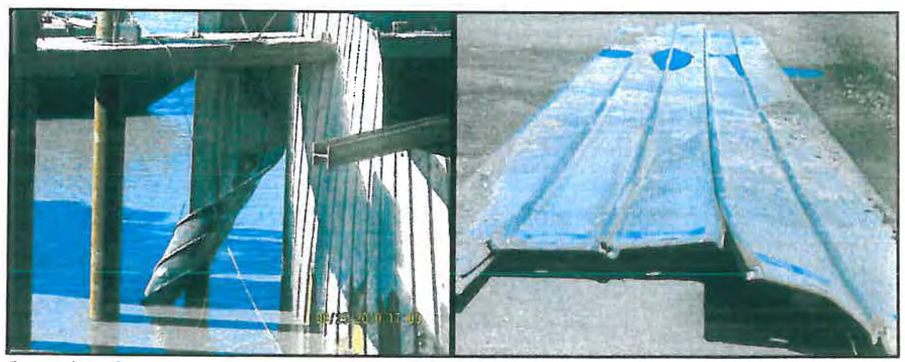
Subject: Port of Anchorage Expansion, Dive Inspection Report

Dear Mr. Yancey:

Please find enclosed the final Dive Inspection Report for the Port of Anchorage Expansion Wet Barge Berth (WBB) and North Extension (NE) sheet pile bulkhead face. You will find a graphical representation of the inspection effort and a narrative of the recorded findings. The field work effort was completed by PND Engineers and Global Offshore Divers with assistance from West Construction Company. Work was completed in October 2009 and July-Aug 2010.

INSPECTION RESULTS

The attached documents provide the findings of dive inspections completed to date. The term "damage" in this report generally refers to partially separated interlocks beginning at the bottom (tip) of the sheet and extending some distance up the sheet. Once an interlock has become separated, secondary damage can easily occur as the unsupported portions of sheets buckle, twist or bend. The length of the interlock separation (how far it extends up the sheet) is the most significant factor.



Examples of separated interlocks – WBB Cell 36 (left), face sheets pulled from NE Cell 39 (right).

For this inspection the seabed in front of the bulkhead face was dredged to approximately 10 feet above tip elevation. Therefore the damage visible during the dive inspection was typically more than 10 feet above the sheet pile tip elevation unless over-dredging increased access or lost fill material through damaged face sheets reduced access.

Key observations are as follows:

1. At the Wet Barge Berth, damage is present in every cell at face sheets or wyes at WBB cells 27-38. WBB cells 36-38 were removed during August-September 2010 and also found to have tailwall sheet damage.
2. At the North Extension cells 13-30, no damaged face sheets were found. NE cells 9-12, 31 and 32 were removed during August-September 2010 and were found to have face and tailwall sheet damage.
3. At the North Extension cells 41-66, damage is present at multiple cells spread throughout the entire area. NE cells 38-40 were removed during August 2010 and also found to have face and tailwall damage.

If you have any questions or desire clarification, please contact us at any time.

Sincerely,
PND Engineers, Inc.

Jim Campbell, P.E.
Senior Engineer

Attachments
- Dive Inspection Report

PND ENGINEERS, INC.

Dive Inspection Report

Port of Anchorage Expansion
Wet Barge Berth and North Extension Bulkhead Project

Prepared for:
ICRC
421 West First Avenue, Suite 200
Anchorage, AK 99501

Prepared by:
PND Engineers, Inc.
1506 W. 36th Ave.
Anchorage, AK 99503

October 2010

TABLE OF CONTENTS

Appendices

Dive Inspection Summary

A dive inspection consists of an underwater diver cleaning a section of the wye piles, sheet pile interlocks, and face sheet pile manually or with a pressure washer. The diver then performs tactile and clear water bag visual inspections of all or a portion of the interlocks and wye pile connections from mud line to as high as the diver can reach. A limited dive inspection was performed in October 2009 at the Port of Anchorage (POA) Expansion. The diver found sheet pile damage at the Wet Barge Berth (WBB) cells 36 and 38. This damage consisted of partially separated interlocks and damage to sheet pile tips (bent or twisted sheet pile tips). Visual and gauge inspections were performed on sheet piles pulled from NE tail wall "I" which West Construction (WCC) was contracted to remove as part of the North Extension Bulkhead (NEB) project.

Based on the results of the October 2009 inspection, PND suggested further inspection of installed sheet piles at locations where similar hard driving conditions were encountered or similar contractor driving methods were used. Several cells in the Wet Barge Berth and North Extension were selected for inspection based on field observation, inspection reports, and contractor pile driving submittals. All of the selected cells encountered hard impact driving conditions, long duration of installation, high rates of fresh heading sheet piles, and variances from design tip elevation. During vibratory or impact driving localized damage to pile tops occasionally occurs prior to reaching planned sheet pile tip elevation. The pile is "fresh headed" to provide a clean, straight profile for the driving hammer to be placed on and pile driving is resumed. All of these conditions were present at WBB cells 36-38. The cells selected for dive inspection were WBB 27-35, NE 13-15, NE 40-43, NE 48-50, and NE 59-62.

U.S. Army Corps of Engineers (USACE) harbor expansion dredging was completed July 22, 2010 to approximately -39 MLLW (Mean Lower Low Water) then contractor inspection dredging to approximately -45 MLLW was performed in pockets in front of cells NE 40-43, NE 48-50, and NE 59-62. Upon completion of the inspection dredging pockets sink holes began forming on July 22 and July 23 in cells NE 60 and NE 63 respectively indicating a loss of fill material from behind the bulkhead. Dredge spoils were immediately returned to the outside of cells NE 59-63 prevent any further loss of material. Dredge spoils were also replaced outside of cells NE 48-50, even though no loss of fill was observed from those cells. Subsequent harbor expansion dredging exposed damaged sheet piles that led to fill loss from the following cells: WBB 27, WBB 33, WBB 34, NE 53, and NE 66.

PND Engineers, Inc. contracted Global Offshore Divers (Global) to perform inspection services. Global suggested use of sector scanning sonar to obtain preliminary images of the existing bulkhead to identify specific areas of interest, gross anomalies in the sheet pile bulkhead, and to assess diver safety and access at these locations. The sector scanning sonar was used to obtain images of cells NE 42-43, NE 48-52, and NE 59-64. The sonar images revealed a sheet (2nd to the south from the wye at 59/60) in cell 60 that was partially out of interlock and a spoils pile on the sea floor that appeared to originate from this location. After the site had stabilized, a diver was able to confirm the sheets were out of interlock beginning at approximately elevation -30 MLLW and provide video footage of the beginning of the separated interlocks. See attached Global dive reports and video.

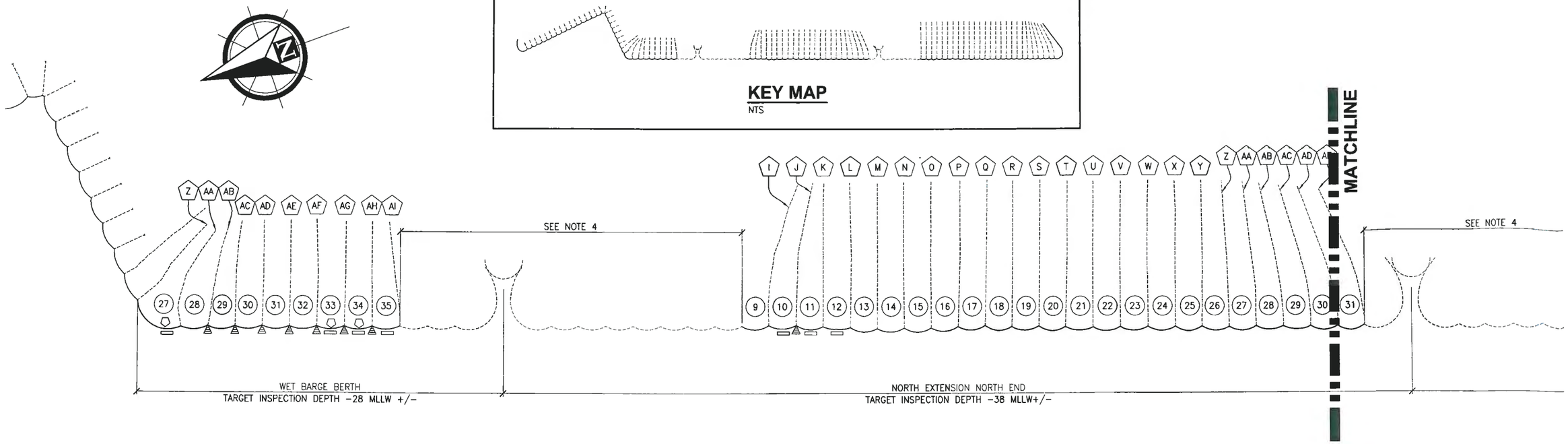
Concurrently, West Construction was removing sheet pile from WBB 36-38, NE 9-11, NE 32 and NE 37-40 under the North Extension Bulkhead project. Many of the sheet piles being removed from these cells exhibited damage. Sheet pile damage generally consists of partially separated interlocks beginning at the bottom (tip) of the sheet and extending some distance up the sheet. Once an interlock has become separated, secondary damage can easily occur as the unsupported portions of sheets buckle, twist or bend. The length of the interlock separation (how far it extends up the sheet) is the most significant factor.

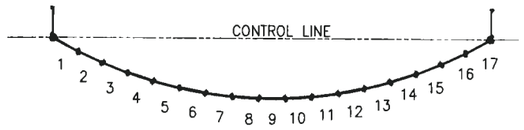
Examples of separated interlocks – WBB Cell 36 (left), face sheets pulled from NE Cell 39 (right).

Due to these findings, the dive inspection scope was expanded to include cells adjacent to WCC's planned work under the NEB project to ensure a competent place to begin building new sheet pile cells. The additional cells included NE 9-12, NE 28-32, and NE 41-43 (at a lower elevation than previously inspected). Damaged face sheet pile were identified by divers at NE 10-12 and at cell 40 by WCC while pulling previously installed sheets.

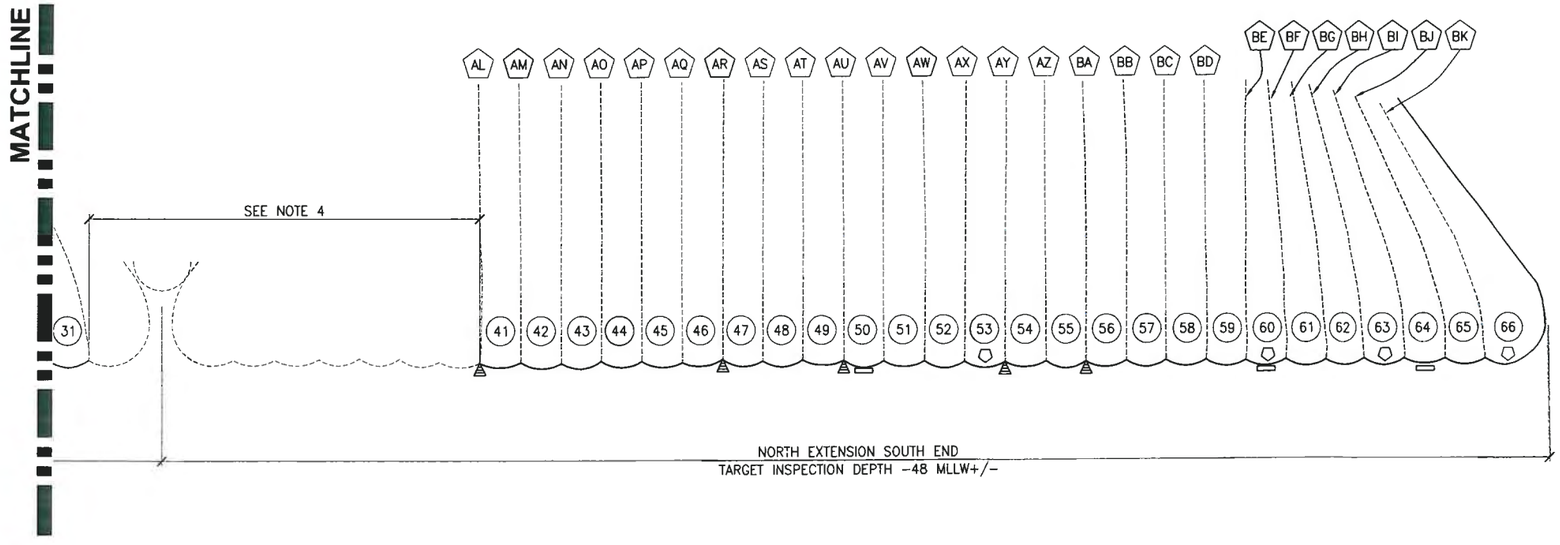
Based on the locations and extents of the damage being identified, the decision was made to dive inspect all existing NE cell faces, WBB cell faces 27-35, and continue monitoring tail wall sheet pile removal performed by WCC. Dive inspections were performed on WBB cells 27-35, NE 9-32, and NE 41-66 at varying depth due to concurrent dredging operations and material remaining against the face of the cells. A figure and summary table of the results of the dive inspection are attached.

KEY MAP
NTS





TYPICAL SHEET PILE NUMBERING SCHEME USED FOR DIVE INSPECTION
NTS



LEGEND

- ○ MATERIAL LOSS FROM CELLS AFTER DREDGING
- ▲ WYE DAMAGE
- ▭ FACE SHEET DAMAGE

NOTES:
1. NORTH EXTENSION AS-BUILT SHEET CELLS SHOWN FROM CONTRACTOR PROVIDED DECEMBER 9, 2009 SURVEY.
2. WET BARGE BERTH WYES BASED ON TWA SURVEY 8-10-2009.
3. DRY BARGE BERTH WYE LOCATIONS AND PARTIAL WET BARGE BERTH TAILWALLS FROM CONTRACTOR SUPPLIED "SHEET PILE AS-BUILT 2008" DXF FILE.
4. CELLS NOT SHOWN WERE NEVER CONSTRUCTED OR PULLED DUE TO KNOWN DAMAGE AS OF 9-20-2010.

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Anchorage Port Expansion Team

REV	DATE	DESCRIPTION

DATE: _____

DATE: _____

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Anchorage, Alaska 99503
Phone: 907.561.1011
Fax: 907.563.4220
www.pndengineers.com

P N D ENGINEERS, INC.

PROJECT: **PORT OF ANCHORAGE EXPANSION PROJECT**

TITLE: NORTH EXTENSION BULKHEAD PROJECT
DIVE INSPECTION MAP

DESIGNED BY:	KV	DATE:	10/13/10
CHECKED BY:	JC	PROJECT NO:	61028

SHEET NO: 1 OF 1

TABLE 1. PORT OF ANCHORAGE NORTH EXTENSION BULKHEAD PROJECT - DIVE INSPECTION RESULTS

Inspection Date	Cell	Damage Type	Damage Location and Description	Estimated Elevation of Damage * (ft MLLW)	Estimated Mudline Elevation During Inspection * (feet MLLW)
9/11/2010	WBB 27	Split interlock and Fill lost from inside cell	Sheet 5-6 split interlock starts 12" off mud line. 4" gap at mud line. Fill lost from inside cell.	-18	-16 to -29 **
9/11/2010	WBB 27	Split interlock	Sheet 12 appeared buckled out seaward, Sheets covered in mud unable to determine extents of damage.	-16	-
9/13/2010	WBB 28	Split interlock at wye	Sheet 17 connection to 28/29 wye out of interlock 3 feet up from mud line. 3" gap at mud line. Sheet appeared pushed out to west side.	-14	-17 to -27 **
9/13/2010	WBB 29	Split interlock at wye	Sheet 17 connection to 29/30 wye out of interlock 12 feet up from mud line. 18" gap at mud line. Sheet appeared pushed out to the west side.	-16	-17 to -28 **
9/13/2010	WBB 30	Split interlock at wye	Sheet 17 connection to 30/31 wye out of interlock 2 feet up from mud line. 2" gap at mud line. Sheet appeared pushed in to the east side.	-16	-22 to -28 **
9/13/2010	WBB 31	Split interlock at wye	Sheet 17 connection to 31/32 wye out of interlock 4 feet up from mud line. 4" gap at mud line.	-10	-18 to -22 **
9/13/2010	WBB 32	N/A	WBB 32 not fully inspected due to thick mud stuck to face.	N/A	-18 to -27 **
9/2/2010	WBB 33	Split interlock at wye and Fill lost from inside cell	Sheet 1 connection to 32/33 wye out of interlock 14" up from mud line. 1.5" gap at mud line. Fill lost from inside cell.	-19	-20 to-25 **
9/2/2010	WBB 33	Split interlock	Sheet 11-12 starts 6 feet off mud line. 7" gap at mud line.	-19	-
9/2/2010	WBB 34	Split interlock at wye and Fill lost from inside cell	Sheet 1 connection to 33/34 wye out of interlock 5 feet up from mud line. 12" gap at mud line. Fill lost from inside cell.	-20	-25 to -26 **
9/2/2010	WBB 34	Split interlock	Sheet 3-4 starts 2.5 feet off mud line. 4" gap at mud line.	-23	-
9/2/2010	WBB 34	Split interlock	Sheet 9 bent out and south. Starts 2 feet off mud line. 3" gap at mud line.	-24	-
9/2/2010	WBB 34	Split interlock at wye	Sheet 17 connection to 34/35 wye out of interlock 10 feet up from mud line. 3-ft gap at mud line. Fill coming out of hole during inspection.	-15	-
9/2/2010	WBB 35	Bent sheets at wye	Sheets 1 and 2 were bent in toward the east. Wye damaged 10 feet up from mud line. Diver safety prevented further investigation.	-15	-26 **
10/22/2009	WBB 36	Split interlock(s)	Multiple damaged sheets found when cell was pulled by WCC during August 2010. See separate inspection records of pulled sheets.	-	-
10/22/2009	WBB 37	Split interlock(s)	Multiple damaged sheets found when cell was pulled by WCC during August 2010. See separate inspection records of pulled sheets.	-	-
10/22/2009	WBB 38	Split interlock(s)	Multiple damaged sheets found when cell was pulled by WCC during August 2010. See separate inspection records of pulled sheets.	-	-
8/16/2010	NE 9	N/A	All interlocks and wye connections intact to mud line.	N/A	-32 to -36 ***

TABLE 1. PORT OF ANCHORAGE NORTH EXTENSION BULKHEAD PROJECT - DIVE INSPECTION RESULTS

Inspection Date	Cell	Damage Type	Damage Location and Description	Estimated Elevation of Damage * (ft MLLW)	Estimated Mudline Elevation During Inspection * (feet MLLW)
8/16/2010	NE 10	Split interlock	Sheet 13-14 split interlock starts 4 feet off mud line. 1.5" gap at mud line.	-26	-30 to -36 ***
8/16/2010	NE 11	Bent sheets at wye	Sheet 1 is bent out 1.5 feet to the west side. Sheet appears wrinkled to 4 feet above mud line.	-26	-29 to -31 ***
8/16/2010	NE 11	Sheet out of both interlocks	The interlock between sheets 2 and 3 is ripped. Sheet 2 is bent out to the west side 6" and twisted.	-27	-
8/16/2010	NE 11	Horizontal rip in sheets	Sheets 11-14 ripped horizontally across the sheets and interlocks. Rip is approximately 3 feet above mud line. Center sheets are bent out to west side.	-27	-
8/16/2010	NE 11	Split interlock	Sheet 16-17 split interlock starts 3" below mud line.	-29	-
8/16/2010	NE 12	Sheet out of both interlocks	Sheet 1 appears bowed out to west side. Sheet 2 is out of both interlocks, bent 180 degrees and sticking up out of mud line 2 feet.	-26	-25 to -26 ***
8/19/2010	NE 13	N/A	All interlocks and wye connections intact to mud line.	N/A	-35 ***
8/19/2010	NE 14	N/A	All interlocks and wye connections intact to mud line.	N/A	-36 ***
8/19/2010	NE 15	N/A	All interlocks and wye connections intact to mud line.	N/A	-36 to -38 ***
8/19/2010	NE 16	N/A	All interlocks and wye connections intact to mud line.	N/A	-35 to -39 ***
8/19/2010	NE 17	N/A	All interlocks and wye connections intact to mud line.	N/A	-37 to -39 ***
8/19/2010	NE 18	N/A	All interlocks and wye connections intact to mud line.	N/A	-39 to -40 ***
8/19/2010	NE 19	N/A	All interlocks and wye connections intact to mud line.	N/A	-37 to -40 ***
8/19/2010	NE 20	N/A	All interlocks and wye connections intact to mud line.	N/A	-36 to -38 ***
8/19/2010	NE 21	N/A	All interlocks and wye connections intact to mud line.	N/A	-36 to -38 ***
8/20/2010	NE 22	N/A	All interlocks and wye connections intact to mud line.	N/A	-36 to -38 ***
8/20/2010	NE 23	N/A	All interlocks and wye connections intact to mud line.	N/A	-36 to -38 ***
8/20/2010	NE 24	N/A	All interlocks and wye connections intact to mud line.	N/A	-36 ***

TABLE 1. PORT OF ANCHORAGE NORTH EXTENSION BULKHEAD PROJECT - DIVE INSPECTION RESULTS

Inspection Date	Cell	Damage Type	Damage Location and Description	Estimated Elevation of Damage * (ft MLLW)	Estimated Mudline Elevation During Inspection * (feet MLLW)
8/20/2010	NE 25	N/A	All interlocks and wye connections intact to mud line.	N/A	-36 to -37 ***
8/20/2010	NE 26	N/A	All interlocks and wye connections intact to mud line.	N/A	-35 to -37 ***
8/18/2010	NE 27	N/A	All interlocks and wye connections intact to mud line.	N/A	-35 to -39 ***
8/18/2010	NE 28	N/A	All interlocks and wye connections intact to mud line.	N/A	-35 to -38 ***
8/18/2010	NE 29	N/A	All interlocks and wye connections intact to mud line.	N/A	-35 to -36 ***
8/18/2010	NE 30	N/A	All interlocks and wye connections intact to mud line.	N/A	-35 to -37 ***
8/18/2010	NE 31	N/A	All interlocks and wye connections intact to mud line.	N/A	-31 ***
8/18/2010	NE 32	N/A	All interlocks and wye connections intact to mud line.	N/A	-24 to -35 ***
9/13/2010	NE 41	N/A	All interlocks and wye connections intact to mud line.	N/A	-37 to -47 ***
9/13/2010	NE 42	N/A	All interlocks and wye connections intact to mud line.	N/A	-46 to -47 ***
7/28/2010	NE 43	N/A	All interlocks and wye connections intact to mud line.	N/A	-46 to -48 ***
9/7/2010	NE 44	N/A	All interlocks and wye connections intact to mud line.	N/A	-46 to -49 ***
9/7/2010	NE 45	N/A	All interlocks and wye connections intact to mud line.	N/A	-45 to -47 ***
9/7/2010	NE 46	N/A	All interlocks and wye connections intact to mud line.	N/A	-43 to -47 ***
9/7/2010	NE 47	Split interlock at wye	Sheet 1 connection to 46/47 wye out of interlock 2 feet up from mud line. 14" up from mud line sheet and wye bent in toward the east side. 12" gap at mudline	-38	-43 to -49 ***
9/7/2010	NE 48	N/A	All interlocks and wye connections intact to mud line.	N/A	-43 to -46 ***
9/7/2010	NE 49	N/A	All interlocks and wye connections intact to mud line.	N/A	-43 to -46 ***
9/7/2010	NE 50	Split interlock at wye	Sheet 1 connection to 49/50 wye out of interlock 6 feet up from mud line. 4" gap at mud line.	-40	-46 to -49 ***

TABLE 1. PORT OF ANCHORAGE NORTH EXTENSION BULKHEAD PROJECT - DIVE INSPECTION RESULTS

Inspection Date	Cell	Damage Type	Damage Location and Description	Estimated Elevation of Damage * (ft MLLW)	Estimated Mudline Elevation During Inspection * (feet MLLW)
9/7/2010	NE 50	Split interlock	Sheet 9-10 split interlock starts 18" off mud line. 8" gap at mud line.	-48	-
9/7/2010	NE 50	Bent sheet	Sheet 10 bent out at 5 feet above mud line. Sheet turns out to west side then back down into the mud 5 feet from the face of the cell.	-41	-
9/8/2010	NE 51	N/A	All interlocks and wye connections intact to mud line.	N/A	-44 to -48 ***
9/8/2010	NE 52	N/A	All interlocks and wye connections intact to mud line.	N/A	-44 to -51 ***
9/8/2010	NE 53	Split interlock at wye	Sheet 17 connection to 53/54 wye out of interlock 6 feet up from mud line. Sheet is buckled out from wye, ripped and bent. Fill lost from inside cell after dredging.	-34	-40 to -51 ***
9/8/2010	NE 54	N/A	All interlocks and wye connections intact to mud line. Spoils pile originating at cell 53 extends partially around cell 54. Sheet 1 may be deformed to East.	N/A	-40 to -45 ***
9/8/2010	NE 55	N/A	All interlocks and wye connections intact to mud line.	N/A	-44 to -46 ***
9/8/2010	NE 56	Split interlock at wye	Sheet 1 connection to 55/56 wye out of interlock 1 foot up from mud line. 8" gap at mud line. Sheet 1 is bent in toward the east side.	-43	-44 ***
9/8/2010	NE 57	N/A	All interlocks and wye connections intact to mud line.	N/A	-46 ***
9/8/2010	NE 58	N/A	All interlocks and wye connections intact to mud line.	N/A	-42 to -46 ***
9/9/2010	NE 59	N/A	All interlocks and wye connections intact to mud line. Spoils pile originating at cell 60 increased mud line elevation 8 feet from center of cell 59 to 59/60 wye.	N/A	-30 to -43 ***
7/31/2010	NE 60	Sheet out of both interlocks	Sheet 2 is out of both interlocks. The sheet is bent out to the west side for 15 feet then bends back toward the sea floor for 10 feet. Fill lost from inside cell.	-31	-30 to -40 ***
9/9/2010	NE 61	N/A	All interlocks and wye connections intact to mud line.	N/A	-42 to -46 ***
9/9/2010	NE 62	N/A	All interlocks and wye connections intact to mud line.	N/A	-45 to -48 ***
9/9/2010	NE 63	Fill lost from inside cell	Divers found all interlocks and wye joints intact to mud line. Fill lost from cell during dredging. Damage to sheets is likely below spoils pile from lost fill.	below -45	-45 to -47 ***
9/9/2010	NE 64	Split interlock	Sheet 13-14 split interlock starts 7 feet off mud line. 2.5" gap at mud line.	-40	-46 to -48 ***
9/9/2010	NE 65	N/A	All interlocks and wye connections intact to mud line.	N/A	-46 to -48 ***

TABLE 1. PORT OF ANCHORAGE NORTH EXTENSION BULKHEAD PROJECT - DIVE INSPECTION RESULTS

Inspection Date	Cell	Damage Type	Damage Location and Description	Estimated Elevation of Damage * (ft MLLW)	Estimated Mudline Elevation During Inspection * (feet MLLW)
9/9/2010	NE 66	Fill lost from inside cell	Divers found all interlocks and wye joints intact to mud line. Damage to sheets is likely below spoils pile from lost fill and south revetment fill sloughing after dredging. Mudline elevations increase as diver moved south along the face and then east around the cell.	below -40	-3 to -43 ***

TABLE NOTES:

a. Inspection work was completed by Global Offshore Divers and PND Engineers, Inc. Cells WBB 27-35, NE 9-32 and NE 41-66 were inspected during Aug-Sept 2010. Cells WBB 36-38 were inspected during Oct 2009. Outfall cells, cells NE 1-8 and cells NE 33-40 have not been installed as of the inspection date. Cells NE 38-40 were partially installed but were not inspected and have since been removed. All inspected sheet piles were installed by QAP/MKB.

b. This report does not include any results of tailwall inspections. Additional undiscovered damage may be present in tailwalls and face sheets beneath the mudline elevation at the time of the diver inspection. Generally, bulkhead face was dredged to within 10 feet of face sheet tip elevations prior to diver inspection. In some instances, sloughing, deposition or loss of fill through damaged face sheets resulted in partial in-filling of dredged areas before diver inspection was completed, resulting in reduced face sheet inspection depths.

c. Diver inspection of cells WBB 36, 37 and 38 found damage at WBB cells 36 and 38. These three cells were removed during August 2010 by West Construction Company to implement repairs. Inspection of pulled sheets at that time found significant damage to face sheets in all three cells, and is documented in records from that work.

d. Where damaged sheets are found it always involves split interlocks (sheets separated at the interlock) extending at least up to the mudline (10 feet +/- above tip of sheet), and associated bending or twisting of sheets.

* Estimated elevations are based on a compilation of lead line soundings, pneumofathometer readings measuring water depth of the diver, and NOAA tide gauge readings for station 9455920 located at the Port of Anchorage. Elevations listed are for the highest extent of damage, and damage is assumed to extend below that elevation continuously to the sheet tip.

** Wet Barge Berth inspection depth varied significantly due to a 2 to 5-ft-thick wall of silt and clay that remained against the face of the sheets after dredging.

*** The range of mudline elevations for cells NE 9-66 varied due to material being left behind after dredging in the areas approaching the wye piles.

NE = North Extension
WBB = Wet Barge Berth
WCC = West Construction Company

Daily Dive Reports

APPENDIX A –PND DAILY REPORTS

P | N | D
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OCSP® Field Inspection Report

Project: POA North Extension- OCSP®		**Date: 8-16-2010**		**Reviewed By**	
PND Project No.: 061028		**Day**	**Monday**	**Reviewed Date**	
CONTRACTOR:	West Construction	**WEATHER**	Overcast	**SHEET PILE CELL #'s**	9-12
Project Manager	George Tipner	**WIND**	Light	**TAIL WALL #'s**	
Superintendant	Paul Johnson	**TEMP**	60 degrees F	**TIME ON JOBSITE**	(10hrs)

OBSERVED PROGRESS, UNUSUAL CONDITIONS, MEETINGS:

Items Inspected/Locations/Comments

- Arrival on site 6:00 am. Low tide 7:05 am.Attended WCC Monday morning tool box safety talk.
- On site to coordinate Global Divers inspection of NE cell 9-12. Divers first entered the water at 10:38 am and worked from cell 12 North toward cell 9. Manson had dredged out the area in front of these cells to -35 to -40 MLLW. Some material remained piled against the wall causing the inspection depth to vary. For the purposes of this report face sheets inspected were numbered 1-17 from South to North.
- Cell 9 sheets were previously driven 10-15' from grade. The assumed sheet pile tip elevations varied from -32 to -36' MLLW based on survey provided by QAP in 2009.Due to the dredging on the outside of the cells some of the sheet tips were exposed. The 18 sheets that were at the face of the cell had all the interlocks checked from mud line to as high as the diver could reach (about 6' up) all interlocks appeared to be intact and at least 5 of the sheets in the center of the cell were within about an inch of the mud line. In some cases the diver was able to feel the tips of the sheets and identify the picking holes.
- Cell 10 sheets were previously driven 10-15' from grade. The assumed sheet pile tip elevations varied from -31 to -37' MLLW based on survey provided by QAP in 2009. Due to the dredging outside the cell some of the sheet tips were exposed. On cell 10 the fifth sheet from the south wye (10/11) had one interlock (south) that was separated about 4' above mud line and had about 1.5" gap between interlocks at the mud line. The north interlock of that sheet appeared different to the diver. He thought that the interlock may have been starting to separate but showed no gap to mud line. The remaining sheets were also high and the diver was able to see up to a foot of gap below the tips of these sheets and mud line. All tips and the remainder of the interlocks were ok.
- Cell 11 sheets were driven to 1 to 12 feet above grade. The assumed sheet pile tip elevations varied from -47 to -36' MLLW based on survey provided by QAP in 2009. Multiple damaged sheets were located in this cell. The second sheet from the 11/12 wye had a separated interlock just below mud line that the diver could fit his gloved hand through. Sheets 5, 6, 7 were ripped and twisted away from the wall 3 feet up from mud line. Sheets 16 and 17 from (south to north) were also ripped and curled out like a corkscrew about 3 feet above mud line and small spoils pile formed outside the wall.
- Cell 12 sheets were assumed to be driven to grade with an estimated sheet tip elevation of -48 MLLW, no survey data was available for cell 12. Cell 12 had one sheet (#16) bent up and seaward for approximately 8 feet at the bottom. The diver initially noted the corner of a sheet sticking out of the mud but was unable to move it or uncover it. Another diver with a pressure washer was able to clear off some of the material covering the sheet and identify the 8' length of sheet was bent out from the wall. Global Offshore Divers report to follow.
- Sheets pulled from cell 9 return wall were removed from Manson barge and placed on shore. One sheet showed a split interlock approximately 4' from tip to the end of the sheets. The others sheets showed no major damage at the tip and varying degrees of damage due to pulling sheets with dredge bucket. See photos attached.

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OCSP® Field Inspection Report

PND is not responsible for Contractors safety programs, QC program, Contractors equipment, methods or procedures of operation.

Photographs

Cell 9 return cell sheets after pulling.

Cells 9 sheet after pulling with dredge bucket.

Separated interlock at tip of sheets.

Separated interlock.

BY Kai Vedenoja TITLE PND Staff Engineer

All work monitored was performed in accordance with the plans and specifications to the best of my knowledge, unless noted otherwise in this report.

Project: POA North Extension- OCSP®		**Date: 8-18-2010**		**Reviewed By**	
PND Project No.: 061028		**Day**	**Wednesday**	**Reviewed Date**	
CONTRACTOR:	West Construction	**WEATHER**	Partly Cloudy	**SHEET PILE CELL #'s**	27-32
Project Manager	George Tipner	**WIND**	Light	**TAIL WALL #'s**	
Superintendant	Paul Johnson	**TEMP**	65 degrees F	**TIME ON JOBSITE**	**(10hrs)**

OBSERVED PROGRESS, UNUSUAL CONDITIONS, MEETINGS:

Items Inspected/Locations/Comments

- Arrival on site 7:00 am. Low tide 9:10 am.
- On site to coordinate Global Divers inspection of NE cell 27-32. Divers first entered the water at 9:07 am and worked from cell 29 South toward cell 32. Divers performed tactile and clear water bag visual inspections of all or a portion of the interlocks and wye pile connections from mud line to as high as each diver could reach. Manson had dredged out the area in front of these cells to -35 to -40 MLLW. Some material remained piled against the wall causing the inspection depth to vary. Checked depths along accessible cells with the depth varying from approximately -35 MLLW at the wyes to -39 MLLW at the center of the cells. Approximate elevations based on weighted tape measurements and QAP supplied sheet pile top elevation surveys. Pneumofathometer readings from divers correlate to within 2 ft +/-. Verified depths on cells 27-30. Cell 31 and 32 were not accessible from the landside. For this report all diver comments are as heard over dive speaker. Diver report to follow.

- Cell 27-31: 17 face sheets interlocks and two wye pile connections in each cell were inspected by divers. The diver reported that all interlocks were intact and not deformed in the region inspected in all cells. Both wye piles were found to be intact and not deformed in the regions inspected in all cells.

- Cell 32 had a large pile of fill starting at the center of the cell and extending toward the south at roughly a 2 to 1 slope. This was the fill from the outfall B area spreading out and around the face of the cell. Based on pneumofathometer readings the sheets were inspected from approximately -35 to -24 MLLW starting at sheet 8 moving toward sheet 17 from North to South. 17 face sheets interlocks and one wye pile connections were inspected by divers. The diver reported that all interlocks were intact and not deformed in the region inspected.

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Photographs

Divers setting up dive station in cell 28

Divers skiff working outside cell 29.

Manson Viking barge dredging to the North of cell 25.

BY Kai Vedenoja **TITLE** PND Staff Engineer

All work monitored was performed in accordance with the plans and specifications to the best of my knowledge, unless noted otherwise in this report.

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OCSP® Field Inspection Report

Project: POA North Extension- OCSP®		**Date: 8-19-2010**		**Reviewed By**	
PND Project No.: 061028		**Day**	**Thursday**	**Reviewed Date**	
CONTRACTOR:	West Construction	**WEATHER**	Sunny	**SHEET PILE CELL #'s**	13-21
Project Manager	George Tipner	**WIND**	Light	**TAIL WALL #'s**	
Superintendant	Paul Johnson	**TEMP**	65 degrees F	**TIME ON JOBSITE**	**(10hrs)**

OBSERVED PROGRESS, UNUSUAL CONDITIONS, MEETINGS:

Items Inspected/Locations/Comments

- Arrival on site 7:00 am. Low tide 10:43 am.
- On site to coordinate Global Divers inspection of NE cell 13-21. Divers first entered the water at 8:50 am and worked from cell 13-18 South with a pressure washer cleaning interlocks and face sheets down to mudline. Divers performed tactile and clear water bag visual inspections of all or a portion of the interlocks and wye pile connections from mud line to as high as each diver could reach. Manson had dredged out the area in front of these cells to -35 to -40 MLLW. Some material remained piled against the wall causing the inspection depth to vary. Checked depths along accessible cells with the depth varying from approximately -36 MLLW at the wyes to -39 MLLW at the center of the cells. Approximate elevations based on weighted tape measurements and QAP supplied sheet pile top elevation surveys. Pneumofathometer readings from divers correlate to within 2 ft +/-. Verified depths on cells 15-21. Cell 13 and 14 were not accessible from the landside. For this report all diver comments are as heard over dive speaker. Diver report to follow.

- Cell 13-21: 17 face sheets interlocks and two wye pile connections in each cell were pressure washed and inspected by divers. The diver reported that all interlocks were intact and not deformed in the region inspected in all cells. Both wye piles were found to be intact and not deformed in the regions inspected in all cells.

- Cell 22 had not been pressure washed and the 4th diver of the day was able to inspect the first 6 interlocks from the 21-22 wye. The diver's clear water bag was punctured so no further interlocks were inspected. Cell 22-26 will be completed Friday 8-20-10.

BY Kai Vedenoja **TITLE** PND Staff Engineer

All work monitored was performed in accordance with the plans and specifications to the best of my knowledge, unless noted otherwise in this report.

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OCSP® Field Inspection Report

Project: POA North Extension- OCSP®		**Date: 8-20-2010**		**Reviewed By**	
PND Project No.: 061028		**Day**	**Friday**	**Reviewed Date**	
CONTRACTOR:	West Construction	**WEATHER**	Sunny	**SHEET PILE CELL #'s**	22-26
Project Manager	George Tipner	**WIND**	Light	**TAIL WALL #'s**	
Superintendant	Paul Johnson	**TEMP**	65 degrees F	**TIME ON JOBSITE**	**(6hrs)**

OBSERVED PROGRESS, UNUSUAL CONDITIONS, MEETINGS:

Items Inspected/Locations/Comments

- Arrival on site 7:00 am. Low tide 12:00 pm.
- On site to coordinate Global Divers inspection of NE cell 22-26. Divers first entered the water at 8:25 am and worked from cell 22-26 South with a pressure washer cleaning interlocks and face sheets down to mudline. Divers performed tactile and clear water bag visual inspections of all or a portion of the interlocks and wye pile connections from mud line to as high as each diver could reach. Manson had dredged out the area in front of these cells to -35 to -40 MLLW. Some material remained piled against the wall causing the inspection depth to vary. Checked depths along accessible cells with the depth varying from approximately -36 MLLW at the wyes to -38 MLLW at the center of the cells. Approximate elevations based on weighted tape measurements and QAP supplied sheet pile top elevation surveys. Pneumofathometer readings from divers correlate to within 2 ft +/-. Verified depths on cells 22-25. Cell 26 was not accessible from the landside. For this report all diver comments are as heard over dive speaker. 5 cells were completed today. Diver report to follow.

- Cell 22-26: 17 face sheets interlocks and two wye pile connections in each cell were pressure washed and inspected by divers. The diver reported that all interlocks were intact and not deformed in the region inspected in all cells. Both wye piles were found to be intact and not deformed in the regions inspected in all cells.

- WBB cells 27-35 are scheduled to be dredged over the weekend and will be dive inspected Monday and Tuesday (8/23-8/24).

BY Kai Vedenoja **TITLE** PND Staff Engineer

All work monitored was performed in accordance with the plans and specifications to the best of my knowledge, unless noted otherwise in this report.

Project: POA North Extension- OCSP®		**Date: 9-2-2010**		**Reviewed By**	
PND Project No.: 061028		**Day**	**Thursday**	**Reviewed Date**	
CONTRACTOR:	West Construction	**WEATHER**	Partly Cloudy	**SHEET PILE CELL #'s**	WBB 33-35
Project Manager	George Tipner	**WIND**	Light	**TAIL WALL #'s**	
Superintendant	Paul Johnson	**TEMP**	63 degrees F	**TIME ON JOBSITE**	**(8hrs)**

OBSERVED PROGRESS, UNUSUAL CONDITIONS, MEETINGS:

Items Inspected/Locations/Comments

- Arrival on site 7:00 am. Low tide 08:09.

- For the purposes of this report all diver comments are as heard over dive speaker. All face sheets are numbed 1-17 from North to South. Sheet pile interlocks were found to be intact unless noted otherwise in this report. Diver report to follow.

- On site to coordinate Global Divers inspection of WBB cell 27-35. It was reported that Manson had dredged out the area in front of WBB cells 27-35 to -25 to -30 MLLW. Preliminary depth measurements in Cells 27, 28, and 32 indicated material remaining against the sheet pile wall at elevations -6 to -8 MLLW. Depth measurements were taken on the inboard side of the dive skiff against the face of the sheets and outboard of the skiff approximately 7 feet off the face of the sheet pile in cells 33-35. These measurements indicated the material elevations at the face of cells 33-35 was approximately -25 to -26 MLLW with a small ledge then dropping off to approximately -28 to -30 MLLW roughly 7 feet off the wall. Pneumofathometer readings from divers correlate bottom elevations to within 2 ft +/-. Cells 33-35 were excavated to an unknown depth below the low tide line (approximately 0 MLLW) and had been seen flexing due to tidal in and out flow. This flexing may have led to the material on the outside of these cells being pushed and sloughed off. Some material loss from the inside of WBB cells 33 and 34 had been reported by ICRC and PND field reps.

- Diver 1 first entered the water at 9:24 am at cell 32 and reported an 8 to 12 inch ledge at the face of the sheets that dropped off steeply for up to 20 feet (measured by pneumofathometer on the diver). Divers worked from cell 33-35 South with a pressure washer cleaning interlocks and face sheets down to mudline. Divers performed tactile and clear water bag visual inspections of all or a portion of the interlocks and wye pile connections from mud line to as high as each diver could reach. An underwater camera and clear water bag were used to shoot video footage of multiple interlock separations. Some areas were unable to be videotaped due to poor visibility or loose sediments sloughing out of the displaced joints.

- WBB Cell 33: The first sheet that connects to the WBB cell 32/33 wye was observed to be out of interlock with the wye. The interlock was separated approximately 14 inches above mudline (approximately -20 MLLW). The gap between the interlock and wye was estimated to be 1.5 inches at mudline. The interlocks on Sheets 2-10 were reported to be intact to mudline. The interlock between sheets 11 and 12 was separated starting approximately 6 feet up from mudline (-25 MLLW) and the gap at mudline was estimated at 7 inches wide. The interlocks on Sheets 13-16 were reported to be intact to mudline. The interlock between sheet 17 and the 33/34 wye were separated starting approximately 5 feet above mudline (-25 MLLW). The gap at mudline was estimated to be 12 inches wide.

- WBB Cell 34: The first sheet was attached to the 33/34 wye. The interlock between sheets 1 and 2 had a 4" vertical crack in the knuckle approximately 3 feet above mudline (-25 MLLW). The interlock between sheets 3 and 4 were found to be separated 2.5 feet above mudline (-25 MLLW) with an estimated 4 inch gap at mudline. Sheet 9 was out of both interlocks approximately 2 feet above mudline with the sheet apparently bent out from the face tending to the South. Video images were taken of interlock separation. The interlock between sheets 11 and 12 was noted to be separated at mudline. No estimate of width or length was made. As the diver was cleaning sheets with the pressure washer he noted loose sediment sloughing and falling out of a large hole that originated at the 34/35 wye the diver began to retreat to the north to avoid this material.

- WBB Cell 35: The diver then surfaced to avoid the rubble pile and moved to the 35/36 wye and began cleaning and approaching the area from the south. The wye at cell 35/36 and sheets 3-17 were intact. The diver noted that sheets 1 and 2 were bent in toward the landside extending approximately 10 feet up from mudline (-25 MLLW). The gap was approximately 3 feet wide and the diver was able to reach through and feel loose sediment and rocks inside the cell. No further investigation of the area was performed due to diver safety concerns.

- WBB Cell 27-32: Due to the material remaining standing against the face sheets in this area no dive inspection was performed. Additional measures will be required to remove this material for further inspection.

PND is not responsible for Contractors safety programs, QC program, Contractors equipment, methods or procedures of operation.

BY Kai Vedenoja **TITLE** PND Staff Engineer

All work monitored was performed in accordance with the plans and specifications to the best of my knowledge, unless noted otherwise in this report.

Project: POA North Extension- OCSP®		**Date: 9-7-2010**		**Reviewed By**	
PND Project No.: 061028		**Day**	**Tuesday**	**Reviewed Date**	
CONTRACTOR:	West Construction	**WEATHER**	Overcast	**SHEET PILE CELL #'s**	NE 43-51
Project Manager	George Tipner	**WIND**	Light	**TAIL WALL #'s**	
Superintendant	Paul Johnson	**TEMP**	63 degrees F	**TIME ON JOBSITE**	**(9hrs)**

OBSERVED PROGRESS, UNUSUAL CONDITIONS, MEETINGS:

Items Inspected/Locations/Comments

- Arrival on site 8:00 am. Low tide 13:48.
- For the purposes of this report all diver comments are as heard over dive speaker. All face sheets are numbed 1-17 from North to South. Sheet pile interlocks were found to be intact unless noted otherwise in this report. Diver report to follow.
- On site to coordinate Global Divers inspection of NE cell 43-51. It was reported that Manson had dredged out the area in front of NE cells 41-66 to -50 MLLW. Preliminary depth measurements in Cells 41-42 indicated material remaining against the sheet pile wall at elevations -18 to -26 MLLW. The granular fill from the open section of the bulkhead between NE Cells 32 and 40 was likely eroding and being transported into this area after dredging operations. Depth measurements were taken on the inboard side of the dive skiff against the face of the sheets in cells 40-50. These measurements indicated the material elevations at the face of cells 43-50 was approximately -45 to -49 MLLW with a small amount of material stacked against the face of the sheet wall and the areas approaching the wye piles being slightly higher. Pneumofathometer readings from divers correlate bottom elevations to within 2 ft +/-. Some material loss from the inside of NE cells 53 had been reported by ICRC and PND field reps and will be further investigated as soon as possible.
- Diver 1 first entered the water at 10:54 am at cell 43. Divers worked from cell 43-47 South with a pressure washer cleaning interlocks and face sheets down to mudline. Divers performed tactile and clear water bag visual inspections of all or a portion of the interlocks and wye pile connections from mud line to as high as each diver could reach. Divers continued inspections until currents became too strong for divers to hold the bottom. 4 Divers utilized today.
- NE Cells 43-45,48: All interlocks were found to be intact to mudline.

- NE Cell 46-47: The first sheet out of the wye in cell 47 was separated from the wye pile approximately 6' above mudline (-43 MLLW). The gap between the sheets at mudline was estimated to be 12". The wye and sheet were bent in toward shore at approximately 14" above mudline.

- NE Cell 49-50: the first sheet out of the wye in cell 50 separated from the wye pile approximately 6' up from mudline (-46 MLLW). The gap between sheets at mudline was estimated at 4 inches. Sheets 9 and 10 were both bent out seaward from the face of the bulkhead. Sheet 9 to 10 interlock was split at 18" above mudline with an 8 inch gap. Sheet 9 bend slightly out from the face and penetrates below mudline. Sheet 10 is bent seaward with approximately 5' of the sheet stick out flat to the bottom due west then the sheet is ripped, turns 90 degrees and penetrates below mudline.

- NE Cell 51: Sheet pile interlocks 1-8 and the sheet 1 to wye pile connections were found to be intact to mudline.

PND is not responsible for Contractors safety programs, QC program, Contractors equipment, methods or procedures of operation.

BY Kai Vedenoja **TITLE** PND Staff Engineer

All work monitored was performed in accordance with the plans and specifications to the best of my knowledge, unless noted otherwise in this report.

OCSP® Field Inspection Report

Project: POA North Extension- OCSP®		**Date: 9-9-2010**		**Reviewed By**	
PND Project No.: 061028		**Day**	**Thursday**	**Reviewed Date**	
CONTRACTOR:	West Construction	**WEATHER**	Overcast	**SHEET PILE CELL #'s**	NE 57-66
Project Manager	George Tipner	**WIND**	Light-Moderate	**TAIL WALL #'s**	
Superintendant	Paul Johnson	**TEMP**	60 degrees F	**TIME ON JOBSITE**	**(6 hrs)**

OBSERVED PROGRESS, UNUSUAL CONDITIONS, MEETINGS:

Items Inspected/Locations/Comments

- Arrival on site 10:00 am. Low tide 15:18.

- For the purposes of this report all diver comments are as heard over dive speaker. All face sheets are numbed 1-17 from North to South. Sheet pile interlocks were found to be intact unless noted otherwise in this report. Diver report to follow.

- On site to coordinate Global Divers inspection of NE cell 57-66 not including cell 60 which has had extensive damage identified within it. It was reported that Manson had dredged out the area in front of NE cells 41-66 to -50 MLLW. Depth measurements were taken from the land side at accessible points or from the dive skiff against the face of the sheets in cells 57-66. These measurements indicated the material elevations at the face of cells 57-66 was approximately -45 to -48 MLLW with a small amount of material stacked against the face of the sheet wall and the areas approaching the wye piles being slightly higher. Due to high tidal currents, depths in some areas were not able to be verified with lead line. Pneumofathometer readings from divers correlate bottom elevations to within 2 ft +/-. After dredging operations some material loss from the inside of NE cells 63 and 66 had been reported by ICRC and PND field reps.

- Diver 1 first entered the water at 11:15 am at cell 57. Inspection began on cells 57-59 with nothing to report. Divers then worked from cell 66-61 North with a pressure washer cleaning interlocks and face sheets down to mud line. Divers performed tactile and clear water bag visual inspections of all or a portion of the interlocks and wye pile connections from mud line to as high as each diver could reach. 3 Divers utilized today.

- NE Cells 57-59: All interlocks were found to be intact to mud line (-43 to -46 MLLW). As the diver approached the 59/60 wye he was steadily moving uphill on a spoils pile generated from known damage in cell 60. The spoils pile was approximately 8 feet high at the 59/60 wye.

- NE Cell 61 and 62: All interlocks were found to be intact to mud line (-45 MLLW).

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- NE Cell 63: Upon inspection diver noted approximately 3 feet of material built up as he approached the 62/63 wye. He used the pressure washer to clean the material below mud line (-42 MLLW) an additional 2 feet down and found all the interlocks to be intact. The fill loss previously noted was likely due to interlock damage located below the current mud line.

- NE Cell 64: Sheet pile interlocks 1-12 and the sheet 1 to wye pile connections were found to be intact to mud line. The interlock between sheets 13 and 14 was out of interlock approximately 6 feet up from mud line (-48 MLLW). The gap at mud line was approximately 2.5 inches.

- NE Cell 65: All interlocks were found to be intact to mud line (-48 MLLW).

- NE Cell 66: The elevation outside the cell beginning at the 65/66 wye was approximately -43 MLLW and steadily increased around the cell to -3 MLLW at sheet 39. This is likely due to material from the revetment at the south end of the project being undercut by dredging operations and rock and fill material raveling into the dredge cut. Divers inspected sheets 1 to 34 at mud line up as high as the diver could reach and found all interlocks intact. Two areas of interest were investigated further with the pressure washer used to push additional material from the base of the wall approximately 2 feet below mud line. No further damage was identified. The material loss was likely due to interlock damage located below the current mud line. Evidence of the rock and fill being undercut and raveling into the dredge trench was noted on the south side of cell 66.

PND is not responsible for Contractors safety programs, QC program, Contractors equipment, methods or procedures of operation.

BY Kai Vedenoja **TITLE** PND Staff Engineer

All work monitored was performed in accordance with the plans and specifications to the best of my knowledge, unless noted otherwise in this report.

OCSP® Field Inspection Report

Project: POA North Extension- OCSP®		**Date: 9-9-2010**		**Reviewed By**	
PND Project No.: 061028		**Day**	**Thursday**	**Reviewed Date**	
CONTRACTOR:	West Construction	**WEATHER**	Overcast	**SHEET PILE CELL #'s**	NE 57-66
Project Manager	George Tipner	**WIND**	Light-Moderate	**TAIL WALL #'s**	
Superintendant	Paul Johnson	**TEMP**	60 degrees F	**TIME ON JOBSITE**	**(6 hrs)**

OBSERVED PROGRESS, UNUSUAL CONDITIONS, MEETINGS:

Items Inspected/Locations/Comments

- Arrival on site 10:00 am. Low tide 15:18.

- For the purposes of this report all diver comments are as heard over dive speaker. All face sheets are numbed 1-17 from North to South. Sheet pile interlocks were found to be intact unless noted otherwise in this report. Diver report to follow.

- On site to coordinate Global Divers inspection of NE cell 57-66 not including cell 60 which has had extensive damage identified within it. It was reported that Manson had dredged out the area in front of NE cells 41-66 to -50 MLLW. Depth measurements were taken from the land side at accessible points or from the dive skiff against the face of the sheets in cells 57-66. These measurements indicated the material elevations at the face of cells 57-66 was approximately -45 to -48 MLLW with a small amount of material stacked against the face of the sheet wall and the areas approaching the wye piles being slightly higher. Due to high tidal currents, depths in some areas were not able to be verified with lead line. Pneumofathometer readings from divers correlate bottom elevations to within 2 ft +/-. After dredging operations some material loss from the inside of NE cells 63 and 66 had been reported by ICRC and PND field reps.

- Diver 1 first entered the water at 11:15 am at cell 57. Inspection began on cells 57-59 with nothing to report. Divers then worked from cell 66-61 North with a pressure washer cleaning interlocks and face sheets down to mud line. Divers performed tactile and clear water bag visual inspections of all or a portion of the interlocks and wye pile connections from mud line to as high as each diver could reach. 3 Divers utilized today.

- NE Cells 57-59: All interlocks were found to be intact to mud line (-43 to -46 MLLW). As the diver approached the 59/60 wye he was steadily moving uphill on a spoils pile generated from known damage in cell 60. The spoils pile was approximately 8 feet high at the 59/60 wye.

- NE Cell 61 and 62: All interlocks were found to be intact to mud line (-45 MLLW).

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- NE Cell 63: Upon inspection diver noted approximately 3 feet of material built up as he approached the 62/63 wye. He used the pressure washer to clean the material below mud line (-42 MLLW) an additional 2 feet down and found all the interlocks to be intact. The fill loss previously noted was likely due to interlock damage located below the current mud line.

- NE Cell 64: Sheet pile interlocks 1-12 and the sheet 1 to wye pile connections were found to be intact to mud line. The interlock between sheets 13 and 14 was out of interlock approximately 6 feet up from mud line (-48 MLLW). The gap at mud line was approximately 2.5 inches.

- NE Cell 65: All interlocks were found to be intact to mud line (-48 MLLW).

- NE Cell 66: The elevation outside the cell beginning at the 65/66 wye was approximately -43 MLLW and steadily increased around the cell to -3 MLLW at sheet 39. This is likely due to material from the revetment at the south end of the project being undercut by dredging operations and rock and fill material raveling into the dredge cut. Divers inspected sheets 1 to 34 at mud line up as high as the diver could reach and found all interlocks intact. Two areas of interest were investigated further with the pressure washer used to push additional material from the base of the wall approximately 2 feet below mud line. No further damage was identified. The material loss was likely due to interlock damage located below the current mud line. Evidence of the rock and fill being undercut and raveling into the dredge trench was noted on the south side of cell 66.

PND is not responsible for Contractors safety programs, QC program, Contractors equipment, methods or procedures of operation.

BY Kai Vedenoja **TITLE** PND Staff Engineer

All work monitored was performed in accordance with the plans and specifications to the best of my knowledge, unless noted otherwise in this report.

Project: POA North Extension- OCSP®		**Date: 9-11-2010**		**Reviewed By**	
PND Project No.: 061028		**Day**	**Saturday**	**Reviewed Date**	
CONTRACTOR:	West Construction	**WEATHER**	Sunny	**SHEET PILE CELL #'s**	WBB 27-32
Project Manager	George Tipner	**WIND**	Light-Moderate	**TAIL WALL #'s**	
Superintendant	Paul Johnson	**TEMP**	60 degrees F	**TIME ON JOBSITE**	**(5 hrs)**

OBSERVED PROGRESS, UNUSUAL CONDITIONS, MEETINGS:

Items Inspected/Locations/Comments

- Arrival on site 10:00 am. Low tide 16:38.
- For the purposes of this report all diver comments are as heard over dive speaker. Sheet pile interlocks were found to be intact unless noted otherwise in this report. Diver report to follow.

- On site to coordinate Global Divers inspection of WBB cell 27-32. It was reported that Manson had dredged out the area in front of WBB cells 27-38 to -30 MLLW. Depth measurements were taken from the land side at accessible points or from the dive skiff against the face of the sheets in WBB cells 27-32. These measurements indicated the material elevations at the face of WBB cells 27-32 was approximately -10 to -30 MLLW with a large amount of material stacked against the face of the sheet wall and the areas approaching the wye piles being slightly higher. A large mud wall varying from 8" to 2 feet thick was stacked against the face of the sheets. WCC had been running a spud probe down the face sheets in an attempt to knock this wall of mud off. Their attempts appeared to have knocked 8 to 10 feet of the material off. This left the clear area available for inspection 10 to 20 feet above the target area (-30 MLLW). Pneumofathometer readings from divers correlate bottom elevations to within 2 ft +/-.

- Diver 1 first entered the water at 11:15 am at WBB cell 29. The diver noted a 2 foot ledge at the face of the cells which dropped off steeply toward the west. The mud wall at the face was approximately 10 feet high. The diver was instructed to move south and check if the face of WBB cells 30-32 were clean enough to inspect. The diver found the same mudwall present on all WBB cells checked (WBB 27-32). The mudwall varied in thickness from 8 inches to 2 feet and the top elevation varied from -22 MLLW to -10 MLLW at the north end near cells 27 and 28.

- WBB Cell 27: As the diver was working his way around the ledge on cell 27 he noted a vertical tear at the interlock between sheets 5 and 6 from the south wye. The interlock was separated approximately 12 inches above mudline with a gap of 4 inches at the mudline. The mudline was estimated to be -18 MLLW at the location of the damage. As the diver continued around the wall he noted sheet 12 protruding from the wall near the sheet 12 to 13 interlock. The interlock was separating at approximately -16 MLLW. The damaged area was covered in approximately 6 inches of dense packed clay and silt. The diver was not able to clear enough of the material off to determine the extents of the damage. Diver operations were suspended until more of the material is cleared from the face of the cells.

- I discussed with R. Marsh (ICRC) the need to remove more of the material from the face of the sheets prior to further dive inspection. He indicated that he would provide WCC direction to do so. I provided a sketch to ICRC of the areas of WBB cells 27-32 that needed additional clean up.

PND is not responsible for Contractors safety programs, QC program, Contractors equipment, methods or procedures of operation.

BY Kai Vedenoja **TITLE** PND Staff Engineer

All work monitored was performed in accordance with the plans and specifications to the best of my knowledge, unless noted otherwise in this report.

OCSP® Field Inspection Report

Project: POA North Extension- OCSP®		**Date: 9-13-2010**		**Reviewed By**	
PND Project No.: 061028		**Day**	**Monday**	**Reviewed Date**	
CONTRACTOR:	West Construction	**WEATHER**	Sunny	**SHEET PILE CELL #'s**	NE 41-42, WBB 28-32
Project Manager	George Tipner	**WIND**	Light	**TAIL WALL #'s**	
Superintendant	Paul Johnson	**TEMP**	60 degrees F	**TIME ON JOBSITE**	**(7 hrs)**

OBSERVED PROGRESS, UNUSUAL CONDITIONS, MEETINGS:

Items Inspected/Locations/Comments

- Arrival on site 13:00. Low tide 17:54.
- For the purposes of this report all diver comments are as heard over dive speaker. All face sheets are numbed 1-17 from North to South unless noted otherwise. Sheet pile interlocks were found to be intact unless noted otherwise in this report. Diver report to follow.
- On site to coordinate Global Divers inspection of NE cell 41-42 and WBB cells 28-32. It was reported that Manson had dredged out the area in front of NE cells 41-66 to -50 MLLW. Depth measurements were taken from the land side at accessible points or from the dive skiff against the face of the sheets in cells NE 41-42. These measurements indicated the material elevations at the face of cells 41-42 was approximately -37 to -47 MLLW with a small amount of material stacked against the face of the sheet wall and the areas approaching the wye piles being slightly higher. Pneumofathometer readings from divers correlate bottom elevations to within 2 ft +/-.
- NE Cell 41-42: Diver 1 first entered the water at 14:07 at cell 41. Divers then worked from cell 41 South with a pressure washer cleaning interlocks and face sheets down to mud line. Divers performed tactile and clear water bag visual inspections of all or a portion of the interlocks and wye pile connections from mud line to as high as each diver could reach. Inspection was conducted on cells 41-42 with nothing to report. 2 Divers utilized today.
- WBB Cells 28-32: Previous dive inspection at this location had indicated a mud wall from 8 inches to 2 feet thick at the top remaining against the face sheets after dredging to – 30 MLLW. WCC had been using a modified spud pile to remove the material from the face of the cells. Paul Johnson (West) indicated that the crew was almost complete with its latest effort to remove material from the face of the sheets to be inspected. The divers were relocated to the WBB area and entered the water to try to determine the effectiveness of the material removal operation. Lead line soundings and Pneumofathometer readings indicated that the elevation of the top of the ledge had been lowered considerably in some areas and little in others. Mudline elevations varied from approximately -16 MLLW to -29 MLLW. The decision was made to inspect cells at the current mudline elevations. The diver began cleaning interlocks with the pressure washer near mudline from the 27/28 wye working south. All sheets were cleaned and later inspected on cells 28, 29, and half of 30. At the midpoint of cell 30 the diver encountered a near vertical face of the mud wall remaining against the face of the cells extending up approximately 14 feet. The diver left the pressure washer behind, climbed up the face of the wall and began surveying the elevation and thickness of the top of the ledge. The diver was also performing a brief visual and tactile inspection of interlocks as he progressed south to cell 32/33 wye. Cells to the south of this location were previously inspected. Once the extents of the mud wall and ledge were surveyed the diver returned to cleaning interlocks near the top of the ledge. The diver reported that the ledge was unstable and he was able to push several partially separated chunks loose. The dive supervisor determined there was a risk of large chunks or portions of the wall falling onto the diver or his hoses. Cleaning operations on top of the ledge were stopped and the diver returned to the cleaned areas at the lower elevation and resumed inspection there.

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- WBB Cell 28: Sheet 17 that enters the 28/29 wye interlock was separated to 3 feet above mudline (-17 MLLW). The sheet appeared pushed out to the west with approximately 3 inch gap at mudline.
- WBB Cell 29: Sheet 17 that enters the 29/30 wye interlock was separated to 12 feet above mudline (-28 MLLW). The sheet appeared pushed out to the west with approximately 3 inch gap at mudline.
- WBB Cell 30: Sheet 17 that enters the 30/31 wye interlock was separated to 2 feet above mudline (-20 MLLW). The sheet appeared pushed in to the east with approximately 2 inch gap at mudline.
- WBB Cell 31: Sheet 17 that enters the 31/32 wye interlock was separated to 4 feet above mudline (-18 MLLW). The sheet and wye had approximately 4 inch gap at mudline.
- WBB Cell 32: No damage was reported. The diver did not fully clean and inspect interlocks. The brief inspection that did occur was at elevations -18 MLLW at 31/32 wye and sloped down to -27MLLW at 32/33 wye.

PND is not responsible for Contractors safety programs, QC program, Contractors equipment, methods or procedures of operation.

BY Kai Vedenoja **TITLE** PND Staff Engineer

All work monitored was performed in accordance with the plans and specifications to the best of my knowledge, unless noted otherwise in this report.

APPENDIX B – GLOBAL OFFSHORE DIVERS REPORT, OCTOBER 2009

GLOBAL
OFFSHORE DIVERS

On October 22 2009 Global Offshore Divers preformed a subsea inspection for PN&D at the New Port of Anchorage which is currently under construction, This Inspection was performed on sheet pile cells WBB38, WBB37, WBB36. The areas inspected were the sheet pile interlocks about 2ft off the sea floor.

The New Port of Anchorage is located in the Cook Inlet basin. The water visibility in this area is zero. The inspection diver used two methods for inspecting the sheet pile interlocks First he feels the interlock for uniformity to see if the thumb of the sheet pile was out of the joint. Then he would scrape out debris from the pile interlock using a thin knife blade. The next step is to utilize a clear water bag and an underwater light. The water bag is placed over the joint and the light is shown into the bag. Next the diver presses their face plate against the bag. The bag, light, and diver adjust till the diver can see the joint. This method can be difficult because dirty water can remain in the joint or there can be debris left can make is difficult to see the joint. Also you are looking at a small area. For more thorough inspection, the area can be cleaned using a water blaster that provided a 20,000 psig water stream.

Cell WBB36 was also inspected from the north Y connection to the south Y connection point. At the North Y connection the sheet that connects to the Y was found out the joint. This sheet along with the next sheet to the south were curled in toward the center of the cell. The diver could reach in and touch the tail wall about 3 feet in to the cell. The two sheets were bent in a triangle shape inward. The sheet to the south of Y connection was also out of the interlock joint for about 3 ½ feet running upward. The bottom of the damage was at the mud line. The Y connection interlock was bent or ripped. At the third sheet over from the Y connection the sheet pile appeared to be normal. The balance of the inter locks to the south were also inspected (15 total not counting the two sheets south of the north Y connection) appear to intact.

Cell WBB37 was inspected from the north Y connection to the south Y connection point. 18 interlock were inspected. The fourth interlock from the south Y connection may be showing signs of the sheet coming out of the joint but the diver wasn't able to completely verify.

Cell WBB38 was inspected from the north Y connection to the tail wall in three foot of water. At the North Y connection the sheet that connects to the Y was found out the joint just above the mud line. It was out of the joint for about 3 ½ feet. The sheet was also pushed in about 2 inches and there was a horizontal rip in the sheet for about 6 inches. The area would look like a triangle with the bottom right corner pushed in. A total of 33 interlock were inspected on this cell.

If additional inspections are required it is recommended that the inspections be completed the using high pressure water to clean the joints along with vessel for dive support.

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APPENDIX C – GLOBAL OFFSHORE DIVERS INTERIM REPORT, AUGUST 2010

GLOBAL
OFFSHORE DIVERS

Survey of Sheet Pile on North Extension of the Port of Anchorage – Preliminary Results

Anchorage, Alaska

WORK ORDER NUMBER:
30936

Performed For:

PND Engineers Inc.
1506 W 36th Ave
Anchorage, AK

5400 Eielson Street • Anchorage, AK 99518 • WWW.GDIVING.COM • 24 Hr: (907) 563-9060 • Fax: (907) 563-9061

GLOBAL OFFSHORE DIVERS

Table of Contents

Article I. EXECUTIVE SUMMARY

Global Offshore Divers was requested by PND to survey the sheet pile comprising the retaining wall associated with the North Expansion of the Port of Anchorage.

The survey was accomplished using sector scanning sonar and divers.

The survey was done on July 28th – 31st.

This report compiles the information recovered during both the diver and sonar survey on cells 41-43, 49-51, and 60 – 63.

The areas surveyed had the area on the seaward side of them dredged to an elevation of -45'. A 12" to 24" column of seafloor material remained against the many of the cells above the dredged elevation.

No significant damage was found within any of the surveyed cells except for cell 60, where significant displacement and separation of the individual sheets exist.

The end of a piece of sheet pile was found in front of cell 50, roughly 18" from the wall.

Article II. INTRODUCTION

Global Offshore Divers was requested to investigate the condition of the individual sheets contained in certain cells on the North Expansion of the Port of Anchorage. Initial requests identified cells in the areas of cells 60, 42, and 50 to be surveyed.

Dredging operations on the seaward side of the sheet pile in this area and the resultant sloughing action witnessed from the land side of the sheets caused some concern over diver safety working under sheets with unknown structural integrity. This combined with the ambient in water conditions of no visibility and quick currents prompted Global to recommend using a sector scanning sonar to investigate the sheets prior to a diver survey. Both sonar and divers were used to obtain the results in this survey.

The following information was sought through the efforts of the survey:

- Sheet pile connectivity through the interlocks
- Deviations from plumb or straight as designed conditions
- Separation or gaps between the sheet pile
- Foreign debris or material located at the base of the sheet pile

Elevation information is not calculated in this report, as no datum or baseline was provided to Global at the time of the survey. Depth readings are given in this report along with times taken for elevations to be calculated.

In attendance of the survey at different times throughout the survey were:

Kai Vedenoja – PND Engineers, Inc.
Chris – ICRC
Terry - ICRC

Article III. 3.0 METHODOLOGY

Section 3.01 PERSONNEL

The survey was carried out under the direction of John Juettner for Global Offshore Divers.

J. Juettner	-Lead Diver
W. Posten	-Sonar Technician
J. Ferrier	-Diver
B. Daily	-Diver
J. Pool	-Diver
B. Rosenberger	-Diver
J. Zimmer	-Tender
D. DeVilbiss	-Report Compiler

The following equipment was utilized in the survey of the cells:

Surface Supplied Diving Station utilizing low pressure primary air supply with high pressure back up reserve.

Mesotech 1071 high resolution self calibrating Sector Scanning Sonar with MS 1000 software utilized with standoff bracket. See Exhibit A for details.

Deep Sea Power and Light SeaCam color video system with built in LED lights. See Exhibit B for details.

3-D direct drive pnuemo fathometer gauge

Clear water bag

Section 3.02 Survey Techniques

An overall drawing of the cell locations were provided to Global Offshore Divers and included in this report as Exhibit C. Drawings indicative of each cell were provided to Global Diving by PND. Examples of these drawings are attached in Exhibit D. A different copy of the drawing was established to record the notes and data from each cell. These field notes are included in this report in Exhibit E. The numbering system used in this report follows the numbering system provided on the drawings, with the cells number sequentially from North to South, and the individual sheets in each cell numbered sequentially from North to South.

Earlier dredging activities at the locations under question had indicated the potential for unstable material below water line. After a review, it was determined that it would be safer to perform the diving work after a low tide while the hydrostatic pressure was increasing on the seaward side of the wall as opposed to increasing. In an effort to increase safety for the diver as well as obtain more data, it was also determined to utilize the sector scanning sonar in advance of the diving work.

The sonar survey was accomplished by placing the sonar head unit on a bracket that allowed the unit to be placed horizontally at a set distance out from the wall. The sonar head was placed at set elevations along the wall. Images were obtained at each location. Real time analysis was performed to be able to continue with diving activities. Following the sonar survey, the images were then collaged together to create an image of the wall as a whole on each of the sections. These images are included as a part of this report.

The dive inspection was performed according to the following procedure. The diver would leave surface above the area to be inspected, and travel to the toe of the bank where the mudline met the sheetpile. The diver would orient himself to identify which sheet he was on. The diver would then feel from mudline up as far as he could reach on each interlock of the individual sheets. Any discrepancies or anomalies would then be investigated and reported. The diver would periodically clean an area of joint and use a clear water bag to visually inspect the location. The diver would systematically move along the base of the sheet pile inspecting each sheet until the entire cell was surveyed at the lowest 6 feet available to the diver. Certain joints were not inspected due to material clingage on the sheets, and have been identified as un-surveyed in this report. Underwater video was taken on cell 60, showing the interlock between sheets 2 and 3. This video is included in this report as Exhibit F. Depths of water were obtained using a calibrated pnuemofathometer gauge.

Article IV. REPORT INVESTIGATION RESULTS

Results of the survey are compiled in this section. They are broken out as follows:

- Cell 41
- Cell 42
- Cell 43
- Cell 49
- Cell 50
- Cell 51
- Cell 60
- Cell 61
- Cell 62
- Cell 63

Section 4.01 Cell 41

Survey Technique:	Diver and Sonar
Water depth to mudline:	48'
Time at depth measurement:	1700, July 28th, 2010
Diver results:	All interlocks on the sheets were found to be without damage as well as the connecting joints to each adjacent cell. The joints between sheets 11 and 13 were difficult to clean due to mud and rock clingage. The joint between sheets 15 and 16 was not inspected due to rocks and mud clingage. The mudline against the wall was higher near the connecting joints to the adjacent cells, presumably due to the proximity of the clamshell to that portion of the wall during dredging.
Sonar results:	See Attached Sonar Results

Section 4.02 Cell 42

Survey Technique:	Diver and Sonar
Water depth to mudline:	48'
Time at depth measurement:	1715, July 28th, 2010

Diver results:	All interlocks on the sheets were found to be without damage as well as the connecting joints to each adjacent cell. Heavy buildup of rock material existed against the sheet pile wall. The mudline against the wall was higher near the connecting joints to the adjacent cells, presumably due to the proximity of the clamshell to that portion of the wall during dredging.
Sonar results:	See Attached Sonar Results

Section 4.03 Cell 43

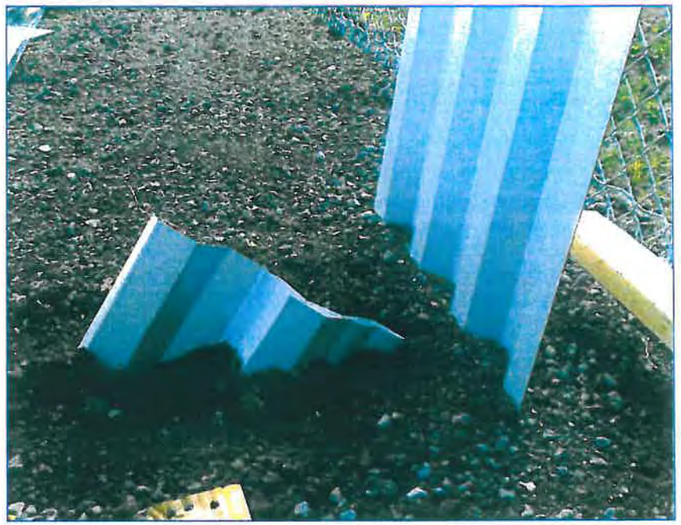
Survey Technique:	Diver and Sonar
Water depth to mudline:	48'
Time at depth measurement:	1725, July 28th, 2010
Diver results:	All interlocks on the sheets were found to be without damage as well as the connecting joints to each adjacent cell. The northern sheets were found to be more free of mud clingage that the southern ones. A slight anomaly was found at the interlock between cell 43 and 44, and was later determined to be an extrusion mark from manufacturing. This anomaly can be seen above waterline at low tide.
Sonar results:	See Attached Sonar Results

Section 4.04 Cell 49

Survey Technique:	Diver and Sonar
Water depth to mudline:	61'
Time at depth measurement:	0830, July 31st, 2010
Diver results:	All interlocks on the sheets were found to be without damage as well as the connecting joints to each adjacent cell. A 12" ledge was observed at mudline against the sheet wall that dropped off into deeper water where the dredging had occurred. A crack like indication was visible on a field splice on the joint between cells 49 and 50, roughly 12' below the top of the sheet pile. This crack like indication was observed by the crew in the skiff and was out of the water.
Sonar results:	See Attached Sonar Results

Section 4.05 Cell 50

Survey Technique:	Diver and Sonar
Water depth to mudline:	61'
Time at depth measurement:	0840, July 31st, 2010
Diver results:	All interlocks on the sheets were found to be without damage as well as the connecting joints to each adjacent cell. A 24" ledge was observed at mudline against the sheet wall that dropped off into deeper water where the dredging had occurred. At sheet 11, an end of a sheet pile was found sticking out of the bottom toward the vertical sheet 11 at a 45 degree angle in the manner indicated by the representative picture below. The end of the sheet was perpendicular to the vertical sheets on the wall and 18" inches away from the sheet pile wall. The diver was not able to move the sheet end, and was unable to determine the sheet's length or connectivity to the wall.



Representative model of sheet pile end found at sheet 11 in cell 50.

At the end of the dive in cell 50, the divers downline was found to be severely shredded and damaged roughly 20' below the surface of the water. This prompted a search for what may have caused the damage. The diver transited across the cell wall in 8' vertical increments from mudline to the surface of the water. No anomaly was found that could have caused this damage.

Sonar results: See attached Sonar Rusults

Section 4.06 Cell 51

Survey Technique:	Diver and Sonar
Water depth to mudline:	61'
Time at depth measurement:	0850, July 31st, 2010
Diver results:	All interlocks on the sheets were found to be without damage as well as the connecting joints to each adjacent cell. An 18" ledge was observed at mudline against the sheet wall that dropped off into deeper water where the dredging had occurred.
Sonar results:	See Attached Sonar Results

Section 4.07 Cell 60

Survey Technique:	Diver and Sonar
Water depth to mudline:	63' outside of spoils pile
Time at depth measurement:	0945, July 31st, 2010
Diver results:	The interlock connection between sheets 1-2 and 2-3 was found to be torn and separated at a water depth of 56' at 1002 on July 31st, 2010. Sheet 2 separates from the wall at that point and makes nearly a 165 degree bend toward the water's surface for 15', and then bends downward at a 45 degree angle towards the sea floor for 10'. The entire sheet is bent roughly 15 degrees to the North as well as having vertical displacement. The end of the pile is exposed in the water column. A spoils pile was observed spilling out from the back side of the cell at the location of the displaced sheet 2. Throughout the rest of the cell not covered by the spoils pile, a 12" ledge was observed against the sheet pile at mudline that drops off into deeper water. All interlocks inspected other than the ones between 1, 2 and 3 were found to be without damage. Sheet #1 and the connection joint to cell #59 were not inspected due to the unknown stability of the spoils pile and obstacle to the diver presented by the deformation of sheet #2. Sheet 3 appeared to be vertical and not displaced. Sheets 17 and 18 on cell 59 were inspected at this time and were found to be without damage.
Sonar results:	See Attached Sonar Results

Section 4.08 Cell 61

Survey Technique:	Diver and Sonar
Water depth to mudline:	60'
Time at depth measurement:	1320, July 31st, 2010
Diver results:	All interlocks on the sheets were found to be without damage as well as the connecting joints to each adjacent cell. An 18" ledge was observed at mudline against the sheet wall that dropped off into deeper water where the dredging had occurred.
Sonar results:	See Attached Sonar Results

Section 4.09 Cell 62

Survey Technique:	Diver and Sonar
Water depth to mudline:	60'
Time at depth measurement:	1340, July 31st, 2010
Diver results:	All interlocks on the sheets were found to be without damage as well as the connecting joints to each adjacent cell. An 18" ledge was observed at mudline against the sheet wall that dropped off into deeper water where the dredging had occurred.
Sonar results:	See Attached Sonar Results

Section 4.10 Cell 63

Survey Technique:	Diver and Sonar
Water depth to mudline:	65'
Time at depth measurement:	1110
Diver results:	All interlocks on the sheets were found to be without damage as well as the connecting joints to each adjacent cell. An 18" ledge was observed at mudline against the sheet wall that dropped off into deeper water where the dredging had occurred.
Sonar results:	See Attached Sonar Results

Submitted Without Prejudice,
David DeVilbiss
Alaska Regional Manager,
Global Offshore Divers

GLOBAL DIVING & SALVAGE
Alaska Regional Manager
David Devilbiss
ANCHORAGE ALASKA

Article V. Attached Sonar Results

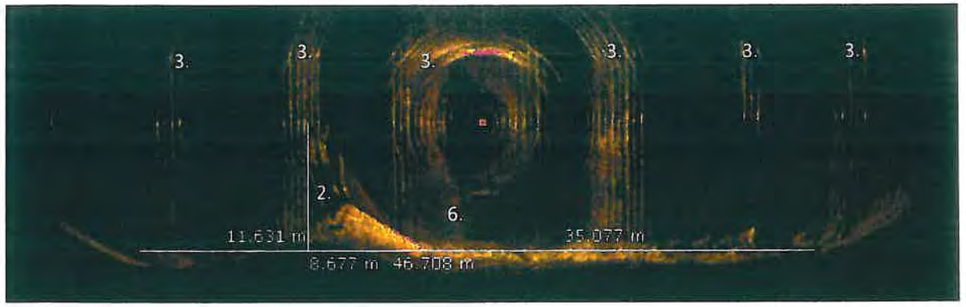
Sonar Image Results

Descriptions of distortions types labeled on sonar images are as follows:
(Applies to all Images)

1. Smearing is due to shape of sheet pile wall
2. False targets are due to back side radiation
3. Reflections always goes through the sonar origin
4. Slant range distortion makes strait targets look bent near the origin
5. Random Bend is distortion due to sonar base movement in strong current wash.
6. Surface reflection causes multipath distortion (ghost images).

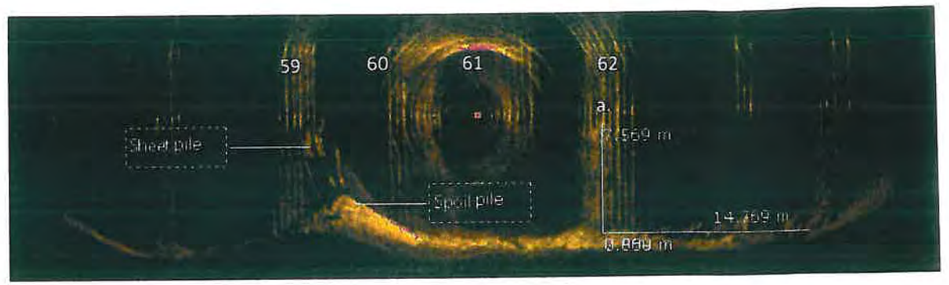
Dim 58-64 Point of interest

1. 30m Range
    a. View 58 through 64 point of interest is at south side of cell 59 with spill pile damage centered a north side of cell 60.
    b. Horizontal dimensions indicate approximate distance in low point in trenched area. Vertical dimensions indicate approximate distance from bottom of trench to top of point of interest.



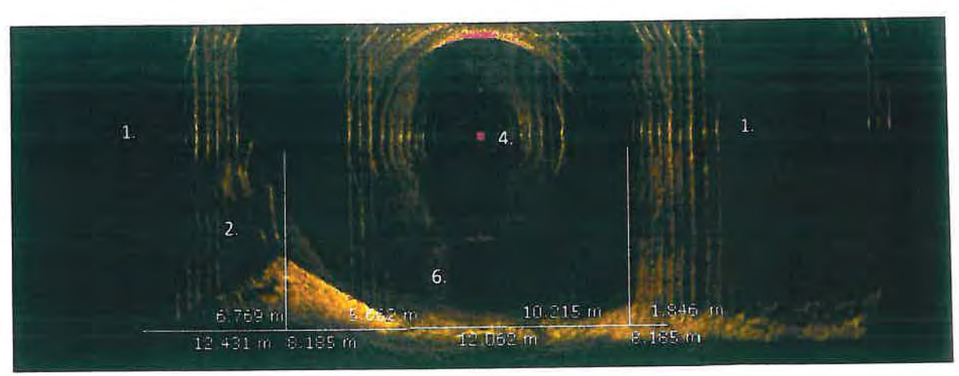
1, 2 Dim 58-64 Point of interest

2. 30m Range
    a. Approximate height of mud line before dredging. Note height of point of interest, marked sheet pile, compaired to height of mud line.



3 Dim 59-61 Point of interest I

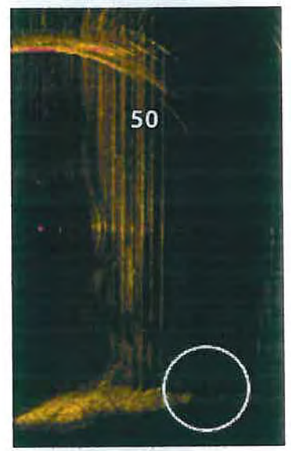
3. 20m Range
    a. Approximate height mud line before dredging and height of Point of interest above trench bottom. Add- top mud line, slab height, surface reflection and distortion.



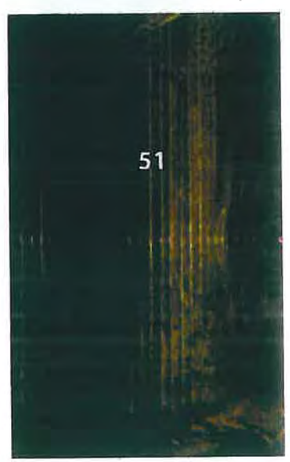
Interlocks on sheets appear to be straight and without gaps. The joints between 11 and 16 are visible on the sonar image.

Interlocks on sheets appear to be straight and without gaps. Note: the mud line was higher to the left of cell 42, as described by the diger.

Interlocks on sheets appear to be straight and without gaps. Cell 44 is visible to the right of cell 43 in the sonar image.

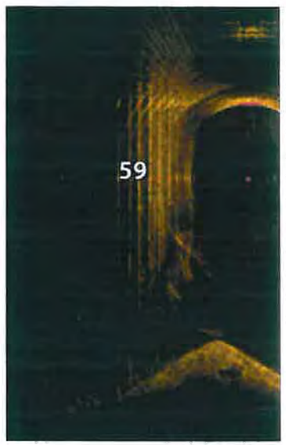


Interlocks on sheets appear to be straight and without gaps. The circled images along the mud line indicate an anomaly near the location that the divers discovered 18" from the pile walls and approximate location of sheet 11.

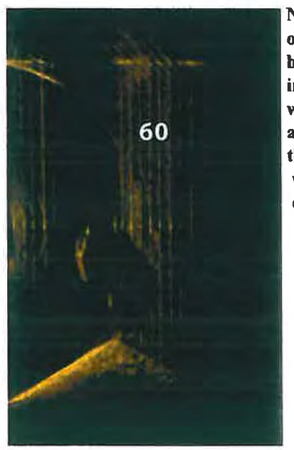


Interlocks on sheets appear to be straight and without gaps.

Interlocks on sheets appear to be straight and without gaps.



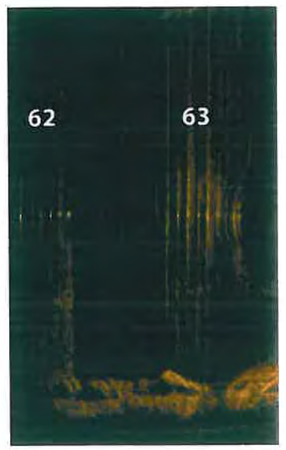
The parturitions shown on the sonar images from the south side of cell 59 are leaving long shadows angling down and to the left. This indicates that the anomalies are standing off the cell wall with approximately the same width as the sheet pile. Observe that the interlocks run continues from the top of the anomaly and come out aligned at the bottom of the anomaly's shadow. This could suggest that the interlocks on cell 59 are continues.



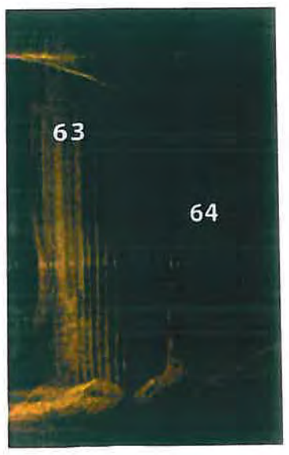
Note: The center of the spill pile is on the north side of cell 60 and is below the protruding anomaly indicating an opening in the cell wall at the intersection of cell 59 and 60. All other cell interlocks on the sheets appear to be straight and without gaps to the right of the top of the spill pile.

Interlocks on sheets appear to be straight and without gaps.

Interlocks on sheets appear to be straight and without gaps.



Interlocks on sheets appear to be straight and without gaps.



Article VI. Exhibit A

MS 1000 Scanning Sonar

KONGSBERG

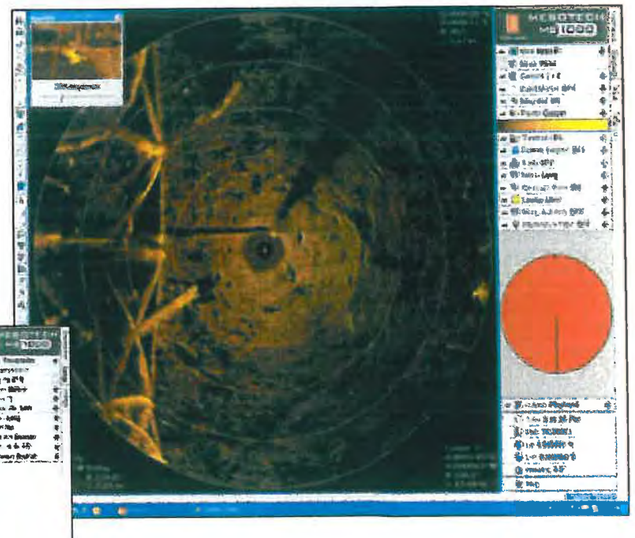
Kongsberg Mesotech Ltd. is the recognized world leader in mechanically scanned sonar systems. The MS 1000 Scanning Sonar Processor confirms our reputation as the supplier of the highest quality, highest resolution products in the market.

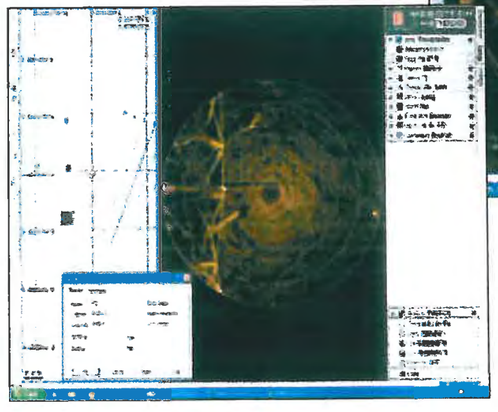
Our MS 1000 software program converts any standard PC into a full-function sonar processor *without the need for additional boards or hardware*, and is designed under ISO standards to ensure compliance to reliability, statutory and regulatory requirements.

MS 1000 is a Windows-based application and can be configured to control the complete digital line of Kongsberg Mesotech's scanning sonar, altimeter, and bathy sensor products via industry-standard telemetry protocols.

MS 1000 key features include:

- Simultaneous multiple scanning sonar head and altimeter operation, and sensor configurations
- Time-tagged recording of all sonar and sensor inputs to the PC's hard-drive or external recording device
- Advanced target measurement and annotation tools
- Track Plotter module allowing the user to pre-plot search and survey lines, and to geo-reference sonar targets
- Networking capability
- Target tracking (optional)





Images courtesy Fugro Chance, Inc.

- Ping synchronization for multiple-head operation; fused data display for dual head profiling
- GeoTiff image format
- 3D profiling with pan device
- Plug-and-play USB keypad

Article VII. Exhibit B

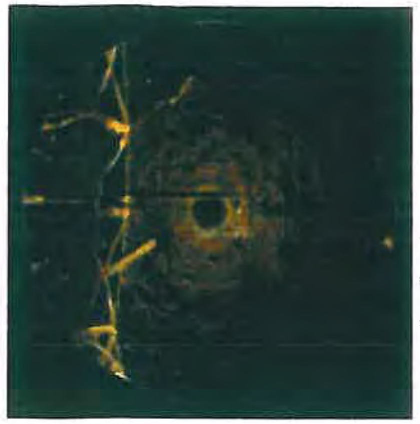


Image courtesy Fugro Chance, Inc.

Oil rig, pipeline, and diver

Image courtesy Tuukritööde oü Commercial Diving, Estonia

WWII shipwreck at 40m

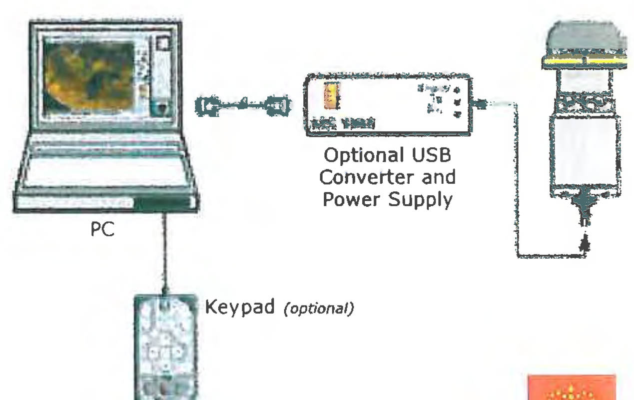
Courtesy Fenstermaker & Associates Inc.

Bridge foundation

Technical Specifications

Minimum System Requirements	1 gHz, Pentium 3, 512 mB of RAM (single head operation), Windows 2000 Pro, Windows XP Pro, or Windows Vista Business Edition
Video Format	Platform dependent; SXGA (1280x1024 or higher recommended)
Image	Dedicated image area for each sonar head; size/position configurable
Palette	Menu selectable
Sonar Control	Pull-down menus for configuring and control of sonar system
Status Readout	Alphanumeric display of cursor positions, range, gain, mode settings
Sensor Readout	Alphanumeric display of position data, sensor outputs
Gain	Menu adjustable; infinite settings
Range	Menu adjustable; customer-defined; 5–500 meters
Sector Width	Adjustable from 7.2° to 360° in 7.2° steps
Sector Center	Adjustable from 0-360° in 0.9° steps
Cursors	Selectable by pointing device; 2 general purpose
Zoom	x2, x4
Magnifier	x1 to x10
Menu Controls	Menu driven control system for display mode, scan speed, scan reverse, threshold, speed of sound, serial I/O, profile or image selection, baud rate selection
Data Recording and Playback	Imaging, profile and time-tagged sensor data storage to hard drive or other PC device; bitmap snapshots to disk; GeoTiff format support
Measurement Tools	Detailed annotation, cursors, tape measure, target area, target height
Printer	Output to any printer recognized by operating system
Telemetry	RS 232, RS 485, RS 422
Telemetry Rates	Down link: 9600 Uplink selectable: 9600, 19K, 38K, 57K, 115K bit/s, 230K, 460K with USB interface box
Power Requirement	Platform dependent
Temperature Range	Platform dependent
Navigation Input	NMEA 0183 Format (232 Levels)
Sensor Interface	RS232

Typical System Configuration



KONGSBERG MESOTECH LTD.

1598 Kebet Way, Port Coquitlam, BC Canada V3C 5M5
Tel: (604) 464-8144 Fax: (604) 941-5423
Website: **www.kongsberg-mesotech.com**
E-mail: km.sales.vancouver@kongsberg.com

KONGSBERG

DEEPSEA POWER & LIGHT

SS-1370C

INTEGRATED COLOR VIDEO/LIGHTING SYSTEM

EXTREMELY DURABLE

ULTRA BRIGHT LED LIGHTS

CRISP, WIDE-ANGLE IMAGE

The SS-1370C color video camera is the newest addition to DeepSea's rugged video inspection series. Packed into a housing 1.37 in. (3.48 cm) in diameter is a 1/3" format color CCD and powerful lighting system. The SS-1370C is designed to withstand the rigors of day-to-day inspection in areas where environmental and mechanical shock are expected and unavoidable.

Features that contribute to SS-1370C durability and reliability include a stainless steel housing and a sapphire crystal lens port (where the camera looks through). The precipitation hardened housing, will resist wear in contact with tough materials, such as cast iron, and the lens port is virtually scratchproof except to diamond or carbide. Thirty-five ultra bright white LEDs protected by a smooth, chip and crack resistant window provide powerful, virtually indestructible lighting for the life of the camera. The 1/3" lens is fixed-focus, meaning there are no moving parts to break loose or wear. Each SS-1370C is pressure-tested and guaranteed to 100 meters (330 ft.) underwater.

The SS-1370C has applications in pipe inspection, borehole inspection, water wells, fixed-mount monitoring (such as observing underwater valves), tank and void inspection, and security and safety monitoring in water-based entertainment and architectural installations. It is suitable wherever a compact camera with built-in lighting is the best solution.

SS-1370C Combined Video & Lighting System

Specifications	
Video	
Image Sensor	1/3" CCD image sensor
Number of Pixels	510 (H) x 492 (V) (NTSC)
Resolution (TV lines)	330 (H) x 480 (V)
Lens	2 mm, f3.5
Focus	Fixed focus, factory set
Minimum Focus	½-inch
Scene Illumination	0.5 lux
Field of View in Air	111 (H) x 95 (V) x 122 (D) deg.
Field of View in Water	76 (H) x 67 (V) x 82 (D) deg.
Lighting	45 white LEDs with variable intensity
Video Output	1.0 volt, peak-to-peak, at 75 ohm
Video Format	Color; NTSC or PAL
Shutter	Electronic, automatic

Electrical	
Power	8 to 13.2 volts DC
Current	130 mA (camera), ~460 mA with LEDs at full illumination
Connector	BHSS3MP
Pin-Out	1 = Ground, 2 = +12 VDC, 3 = Video Signal
Environmental	
Operating Temperature	-10 C to 50 C (14 F to 122 F)
Depth Rating	100 meters (330 ft.)
Weight air/water	88 g/62 g (3.1 oz/2.1 oz)
Mechanical	
Camera Diameter	3.48 cm (1.37 in)
Camera Length	5.46 cm (2.15 in), excluding collar (included)
Housing Materials	Sapphire crystal lens port. Impact-resistant LED window. Stainless Steel housing.

Cables

Camera Connector	Cable Type	Length	Dry-End Termination
740-055-004: Also available as un-terminated whip.	**RG-59 Triax (TRI):** 75 ohm video cable with polyethylene jacket.	**0-1000 feet:** Price is per-foot. Contact DeepSea for pricing.	**TOP/SS:** Standard. Also available on unterminated 18" whip.
	Kevlar Triax (KTRI): 75 ohm video cable with internal Kevlar braid and polyurethane jacket.		**Other:** Please contact DeepSea with requirements.

How to Order: 740-055-004) – ( ) – ( ) – ( )

Power & Viewing

SST-1370 heads are ideally suited to work as a system with our family of controllers, which include the ability to vary the LED light intensity, view the image with high resolution monitors, output the video signal to other monitors and VCRs, or make video recordings with *Hands-Free* audio overlay.

Power+	**(P+)** 120 vac/60 Hz (or 220 vac/50 Hz) to ~12 vdc power supply. Includes direct connection for SS3ILMP terminated cables. RCA video output interfaces with customer-supplied monitors and VCRs. Variable LED intensity controller allows fine adjustment of lighting for different conditions. A Ground Fault Circuit Interrupt (GFCI) is included on the AC cord for added safety.
Monitor+	**(M+)** A P+ with high-resolution surveillance monitor (>850 TV lines) enclosed in a rugged, aluminum case. A metal sunshade folds down to protect the CRT screen and front panel controls during transport. A tilt-stand improves viewing angle when system is on the ground. Includes direct connection for TOP/SS-terminated cables. Variable LED intensity controller allows fine adjustment of lighting for different conditions. Video in/out jacks allow hook up to external devices such as VCRs, camcorders and other remote monitors. A Ground Fault Circuit Interrupt (GFCI) is included on the AC cord for added safety.
Monitor+VCR	**(M+VCR)** (Release pending) An M+ with added VHS VCR and *Hands-Free* audio recording. Video/audio out jacks, CB mike input jacks, front-panel wireless microphone and playback speaker, one-button monitor/record/play.

Specifications subject to change without notice

DEEPSEA POWER & LIGHT • 3855 Ruffin Rd. • San Diego, CA 92123 USA • TEL (858) 576-1261 • FAX (858) 576-0219

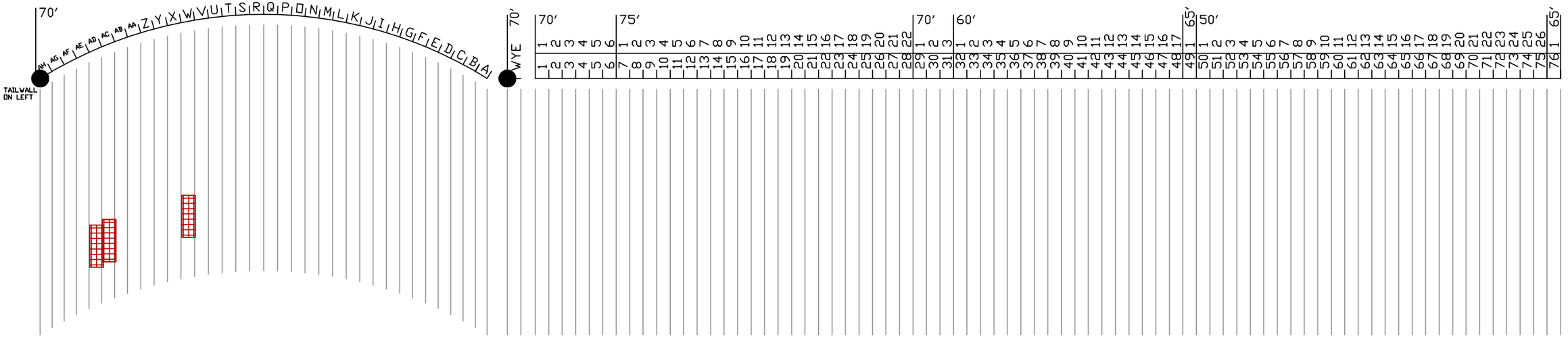
Web: http://www.deepsea.com • e-mail: info@deepsea.com

Rev. 9/21/00

WBB 27

EXISTING

NTS



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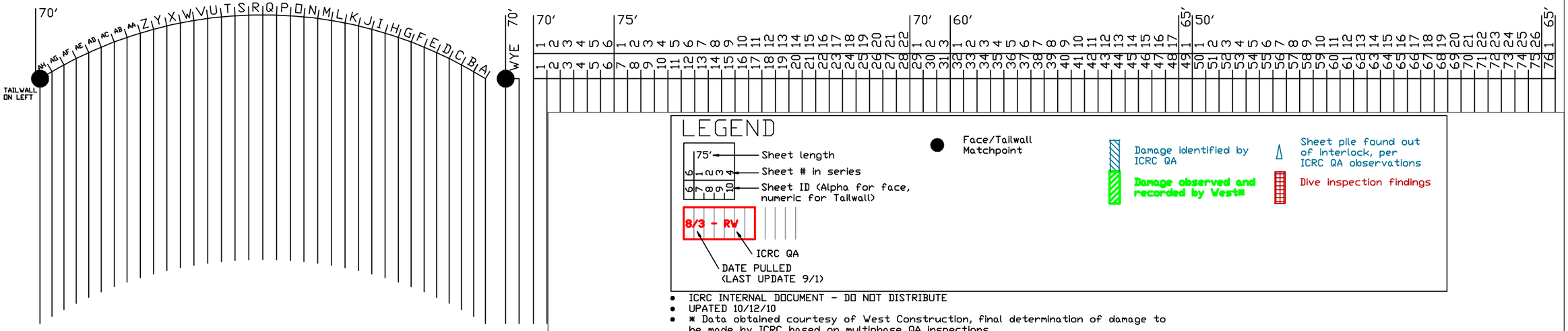


LEGEND

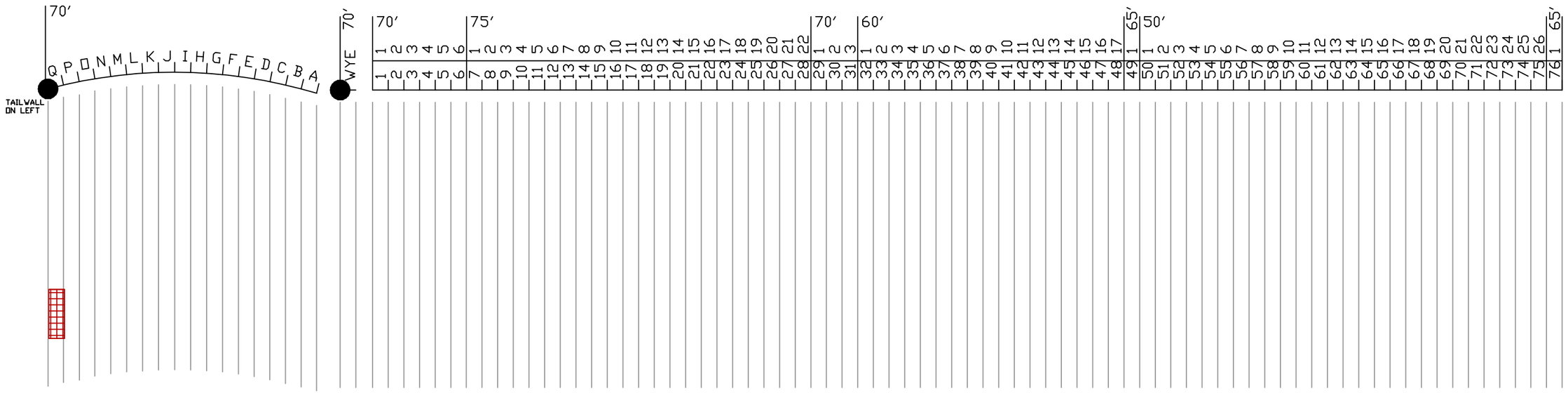
- 75′ — Sheet length
- Sheet # in series
- Sheet ID (Alpha for face, numeric for Tailwall)
- 8/3 - RV — ICRC QA; DATE PULLED (LAST UPDATE 9/1)
- Face/Tailwall Matchpoint
- Damage identified by ICRC QA
- **Damage observed and recorded by West***
- Sheet pile found out of interlock, per ICRC QA observations
- Dive inspection findings

- ICRC INTERNAL DOCUMENT - DO NOT DISTRIBUTE
- UPATED 10/12/10
- * Data obtained courtesy of West Construction, final determination of damage to be made by ICRC based on multiphase QA inspections.
- West data from West cell by cell drawings, courtesy of West.
- ICRC observation data obtained from ICRC 'Drive/Pull Summary Log' updated 09/30/2010.

WBB 28

EXISTING

NTS



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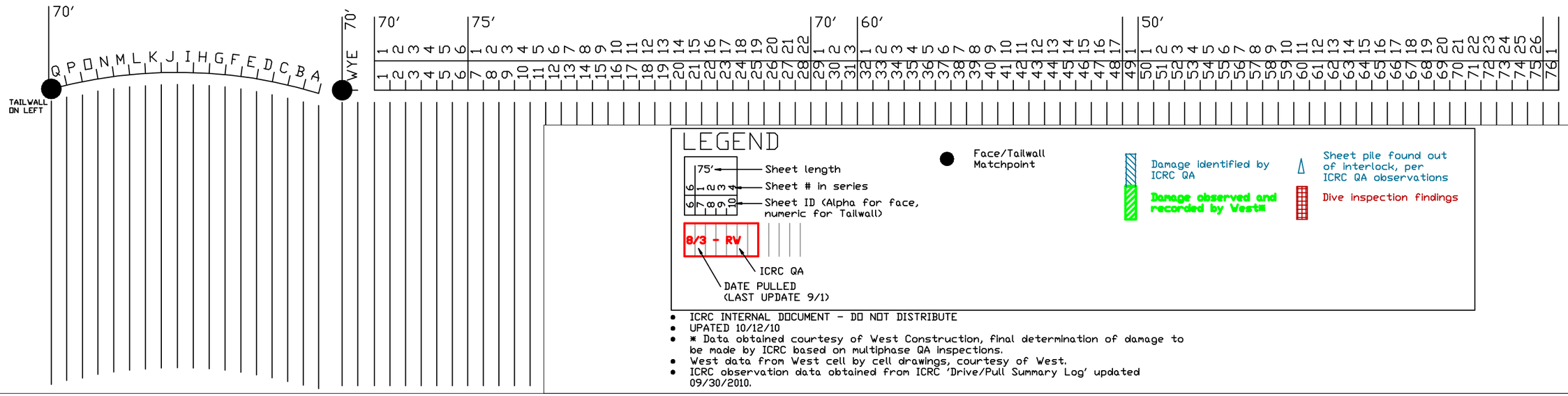

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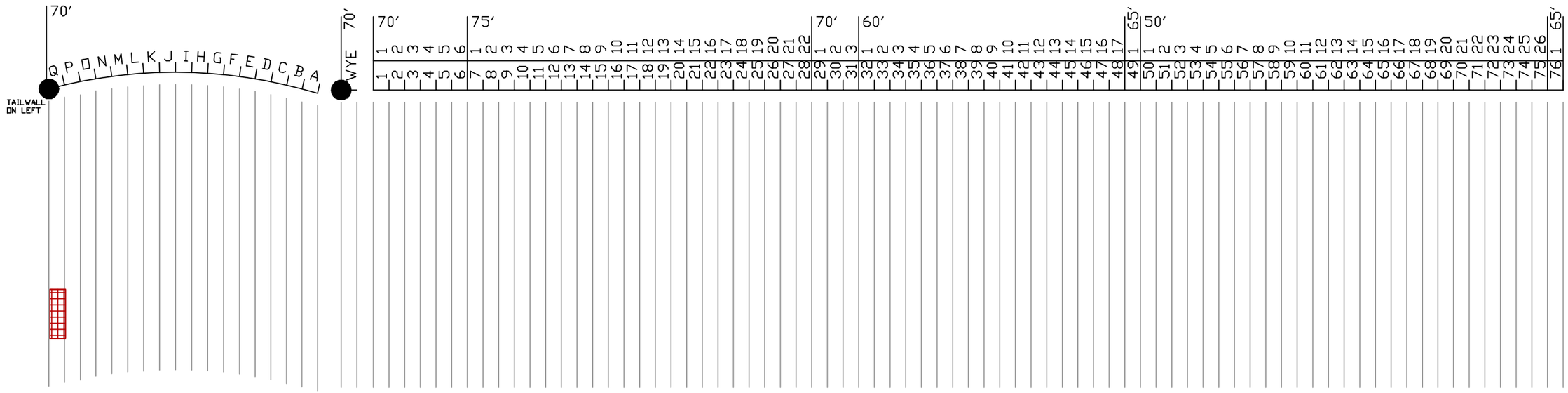
WBB 29

EXISTING

NTS



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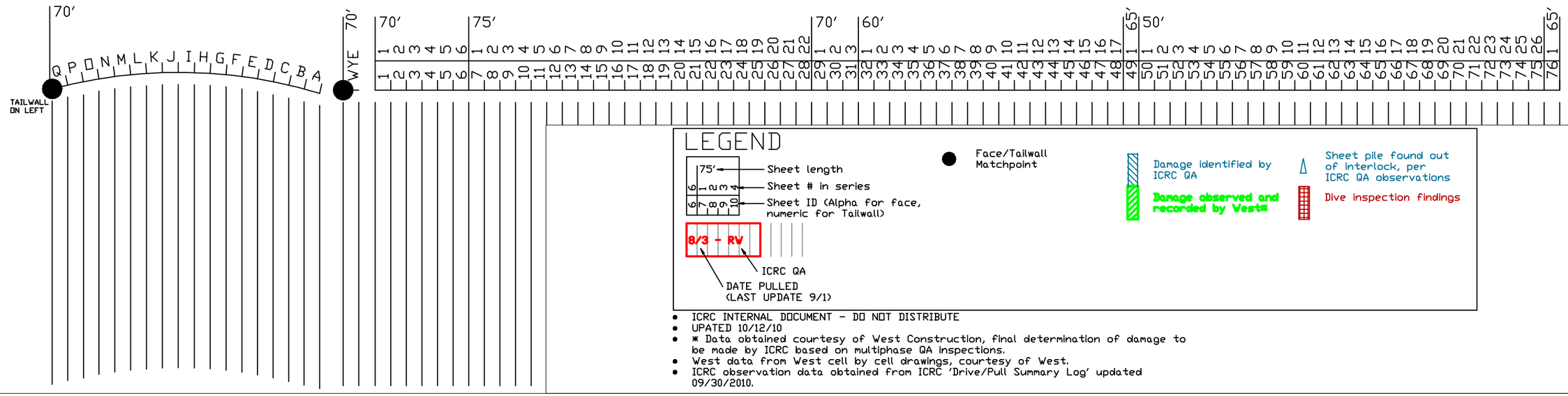

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WBB 30

EXISTING

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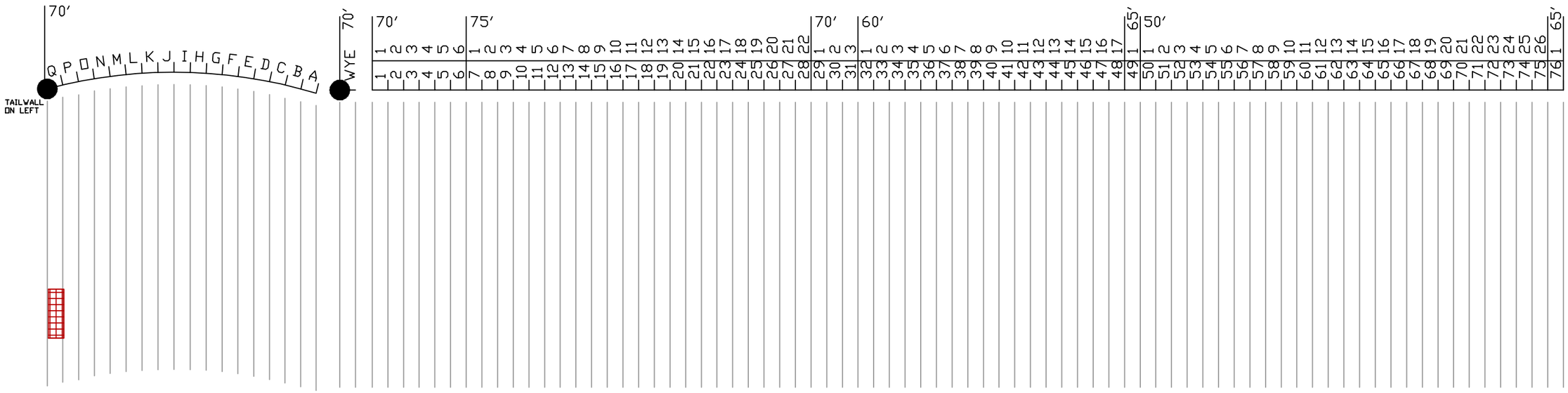

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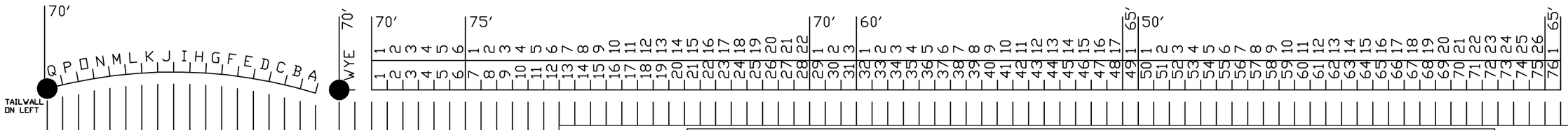

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WBB 31

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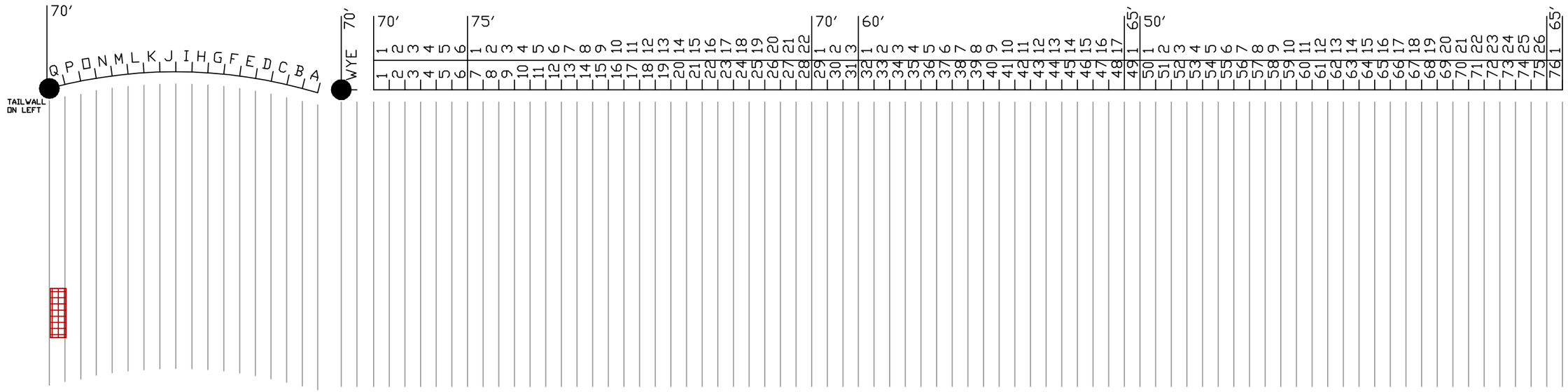

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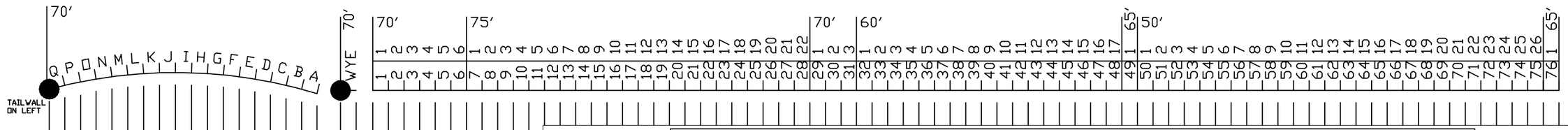

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WBB 32

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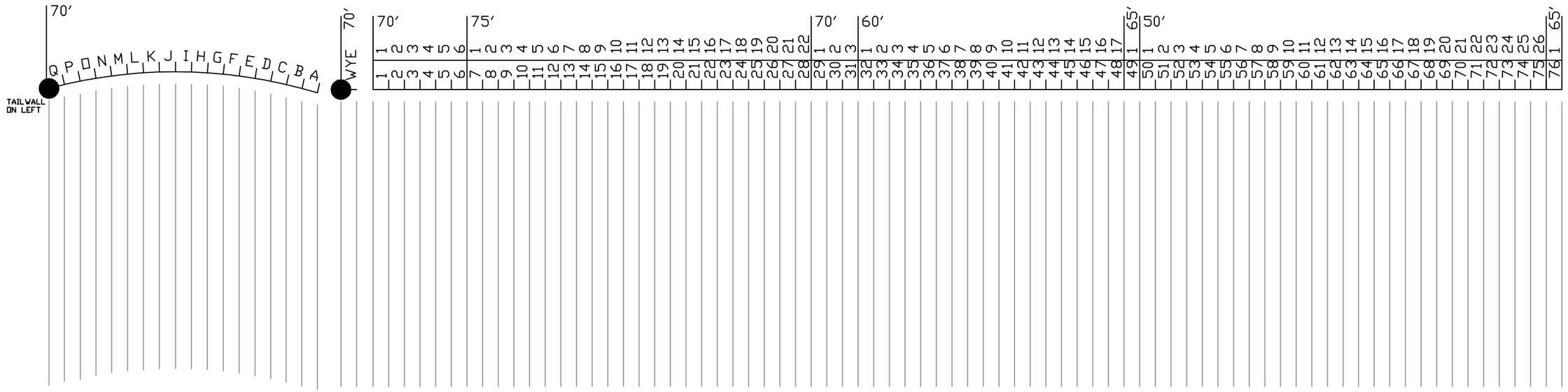
NTS



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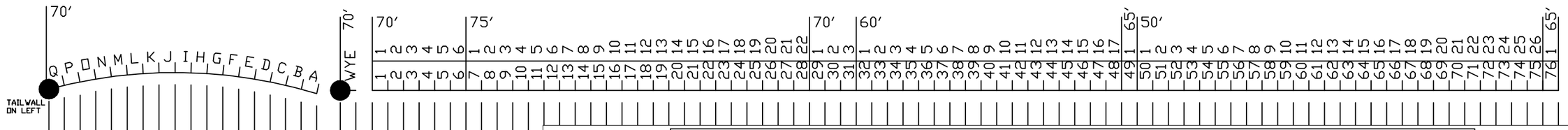

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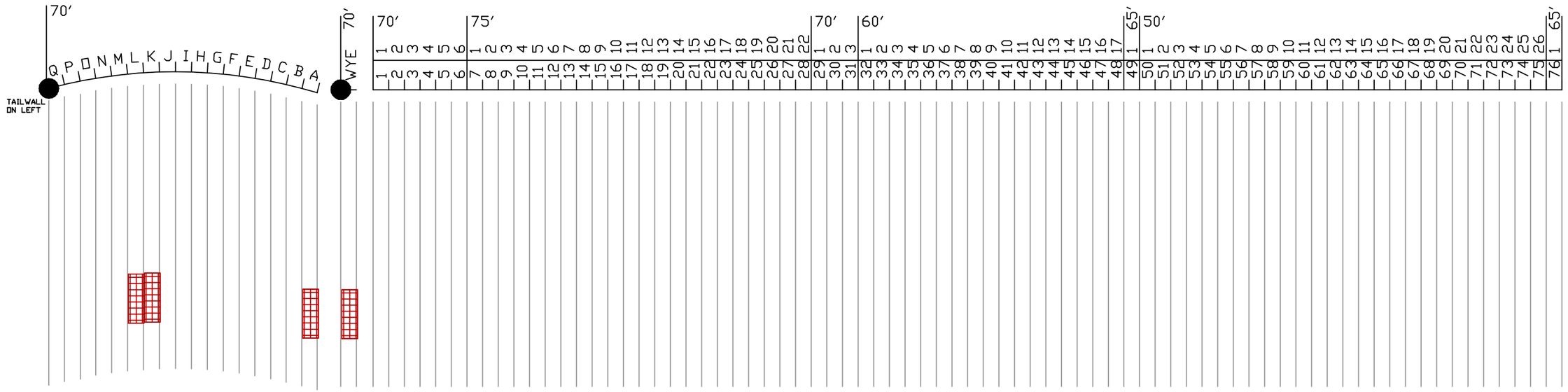
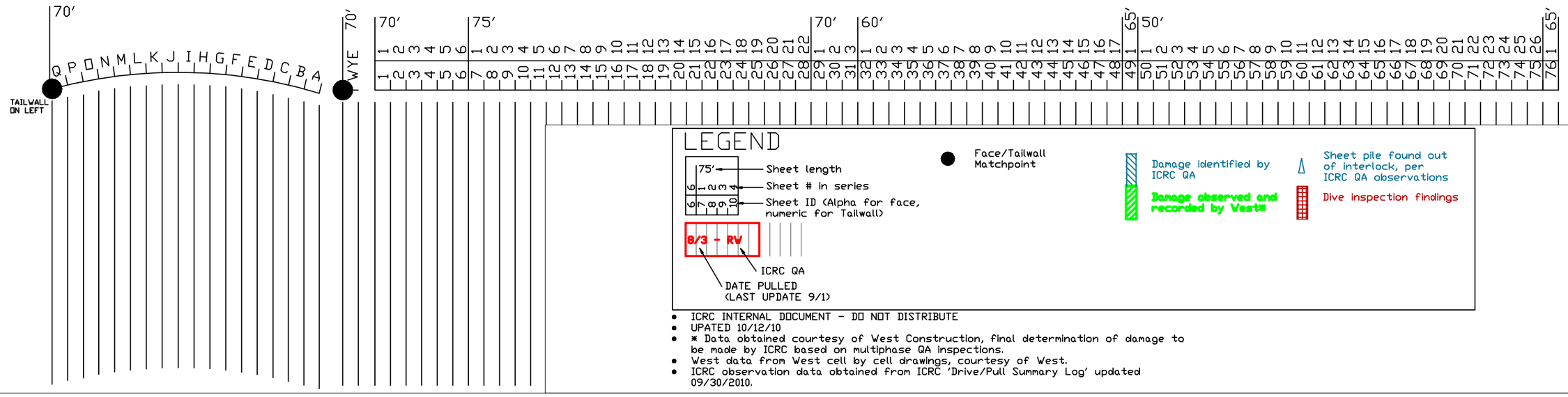
WBB 33

EXISTING

NTS



PLAN



LEGEND

- 75′ — Sheet length
- 6 / 1 2 3 4 — Sheet # in series
- 6 / 7 8 9 10 — Sheet ID (Alpha for face, numeric for Tailwall)
- 8/3 - RV — ICRC QA; DATE PULLED (LAST UPDATE 9/1)
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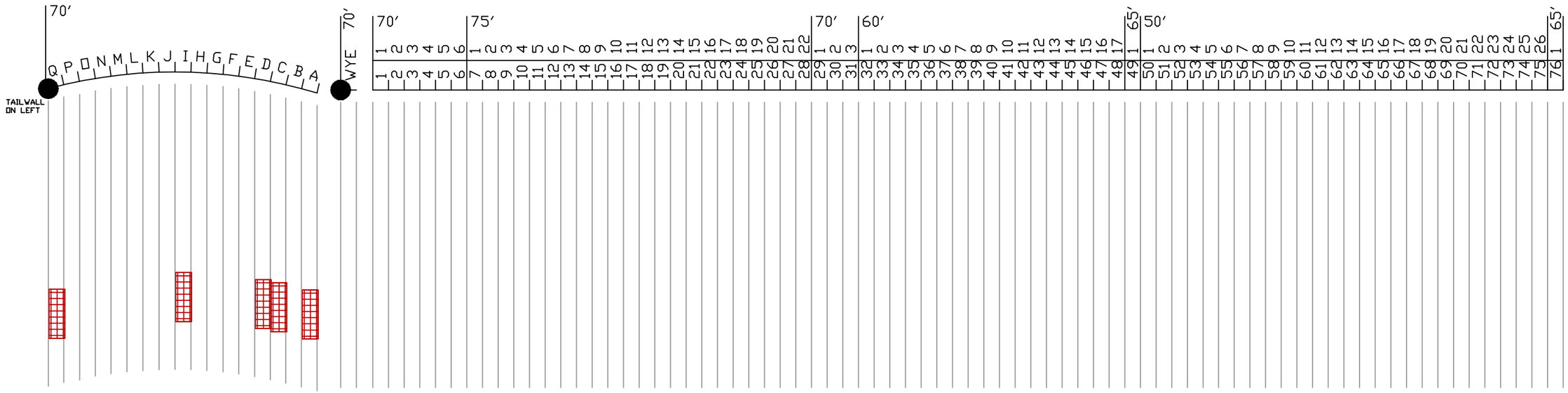
- ICRC observation data obtained from ICRC 'Drive/Pull Summary Log' updated 09/30/2010.

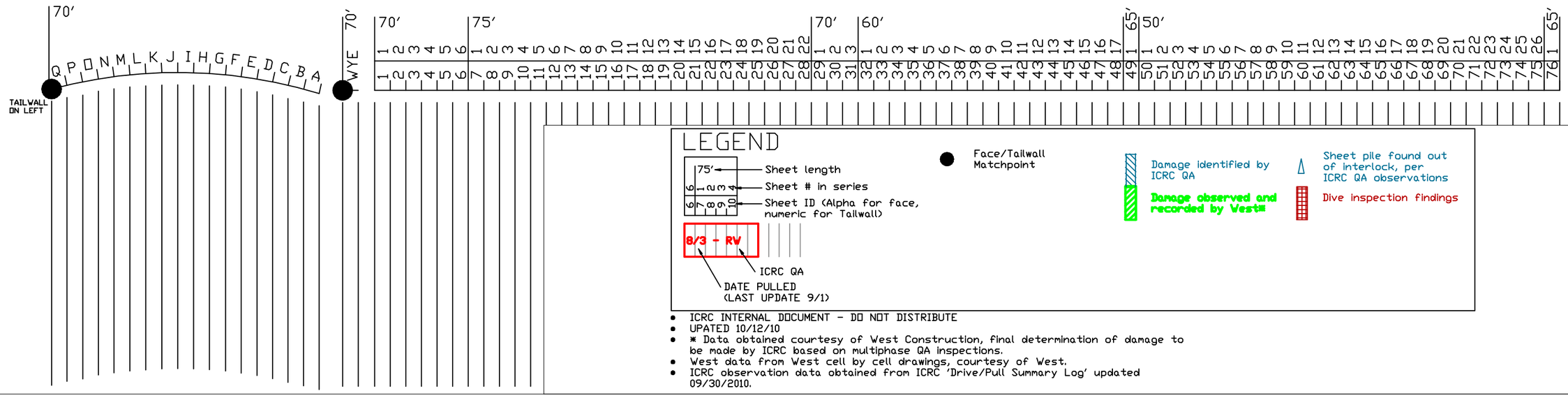
WBB 34

EXISTING

NTS



PLAN



LEGEND

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- 6 | 1 2 3 4 — Sheet # in series
- 6 | 7 8 9 10 — Sheet ID (Alpha for face, numeric for Tailwall)
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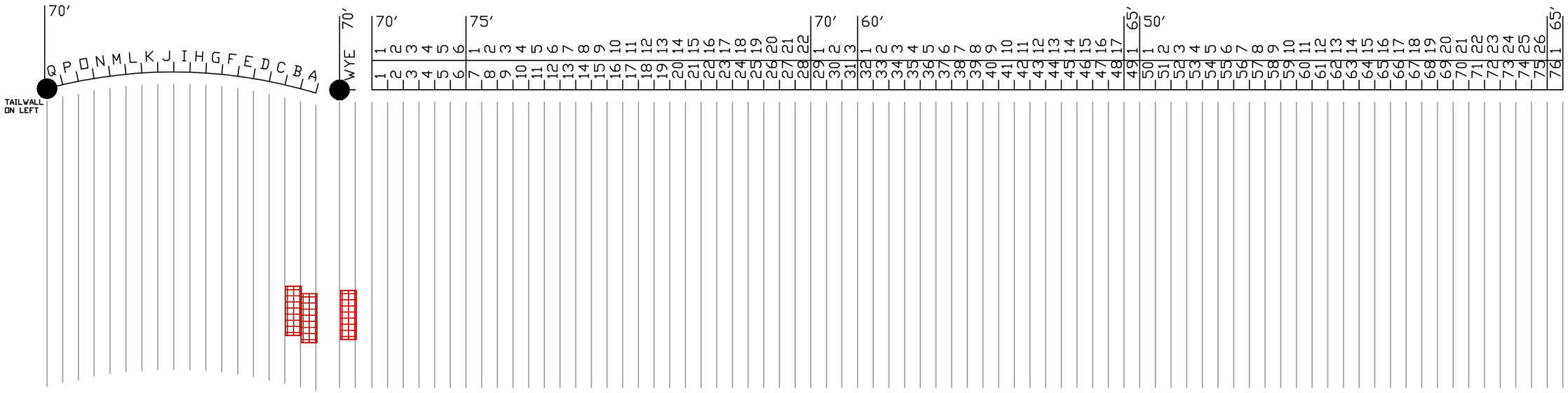
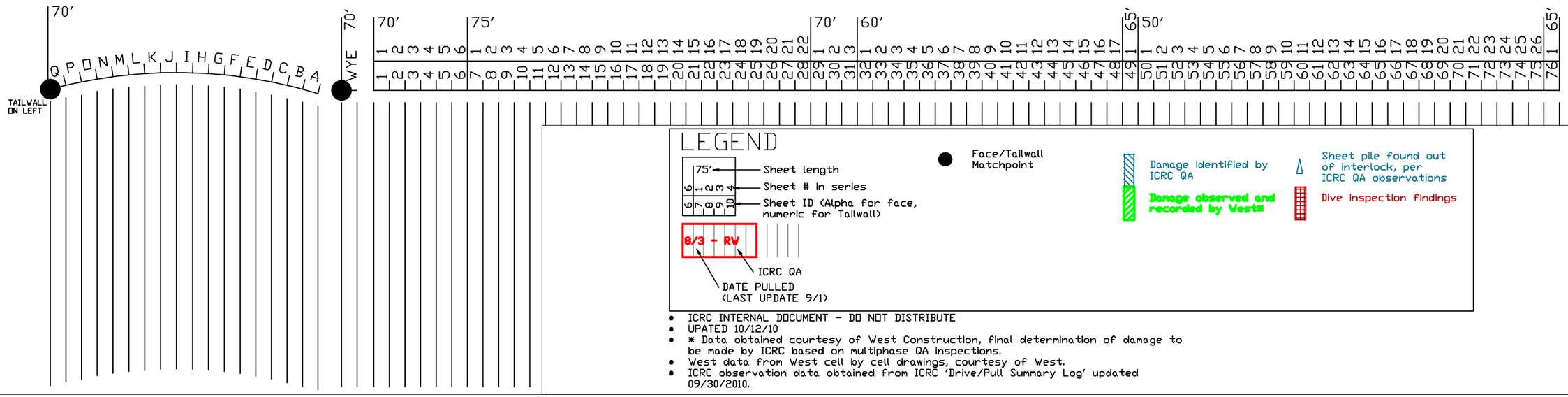
WBB 35

EXISTING

NTS



PLAN



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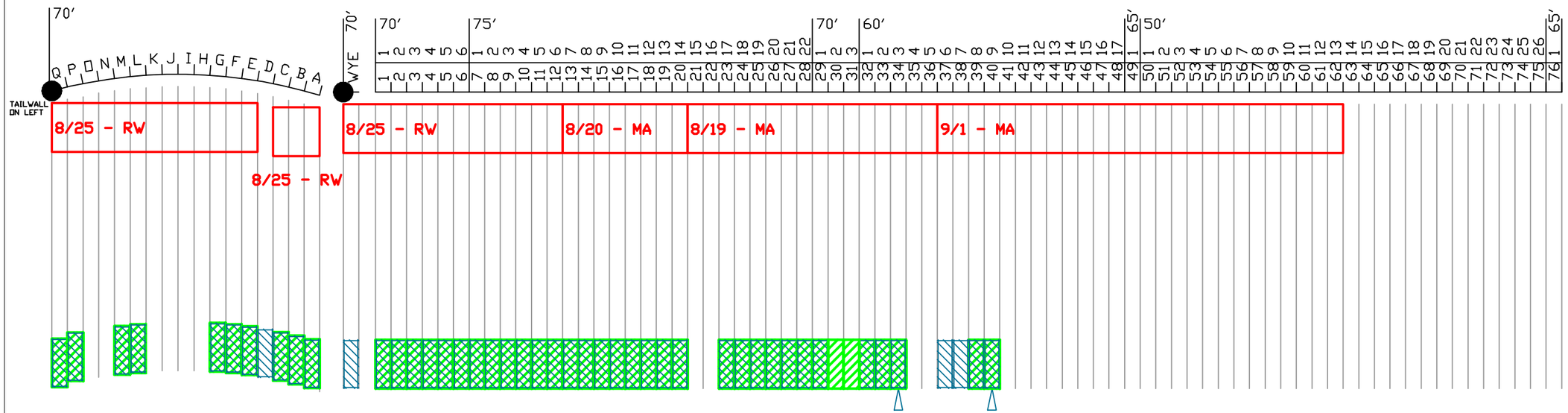
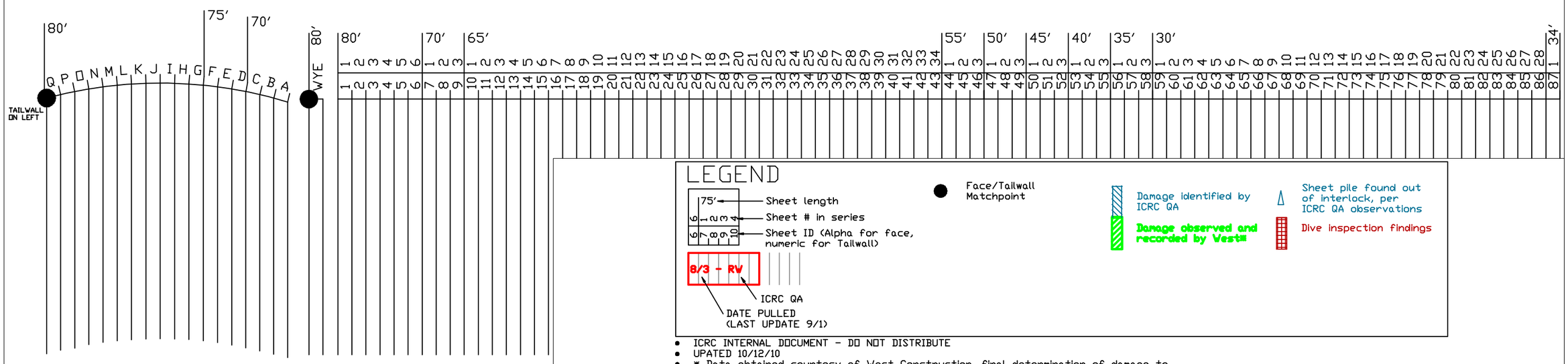
- West data from West cell by cell drawings, courtesy of West.
- ICRC observation data obtained from ICRC 'Drive/Pull Summary Log' updated 09/30/2010.

WBB 36 EXISTING

NTS



WBB 36 PLAN



LEGEND

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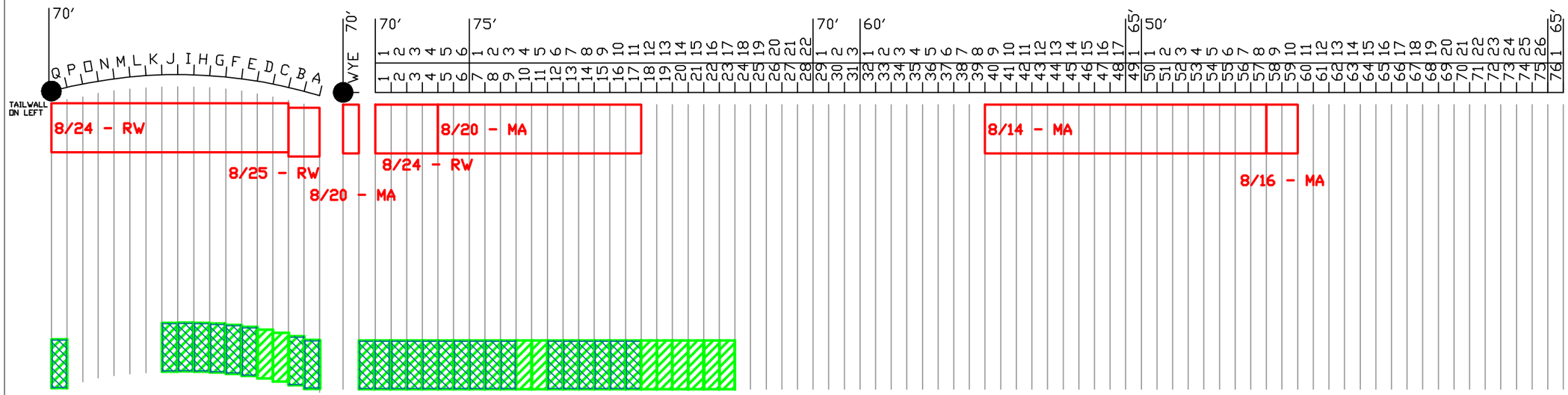
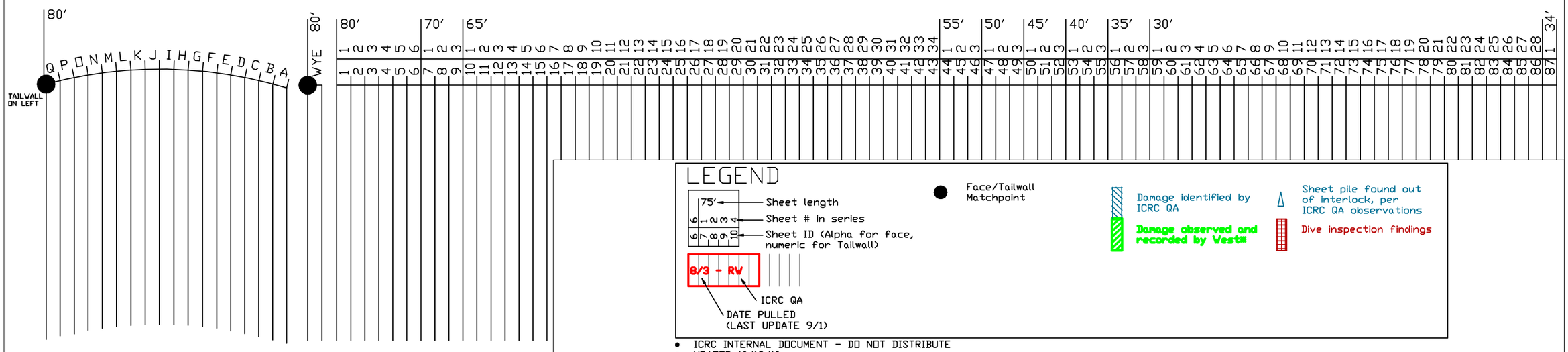
WBB 37
EXISTING

NTS



WBB 37
PLAN



LEGEND

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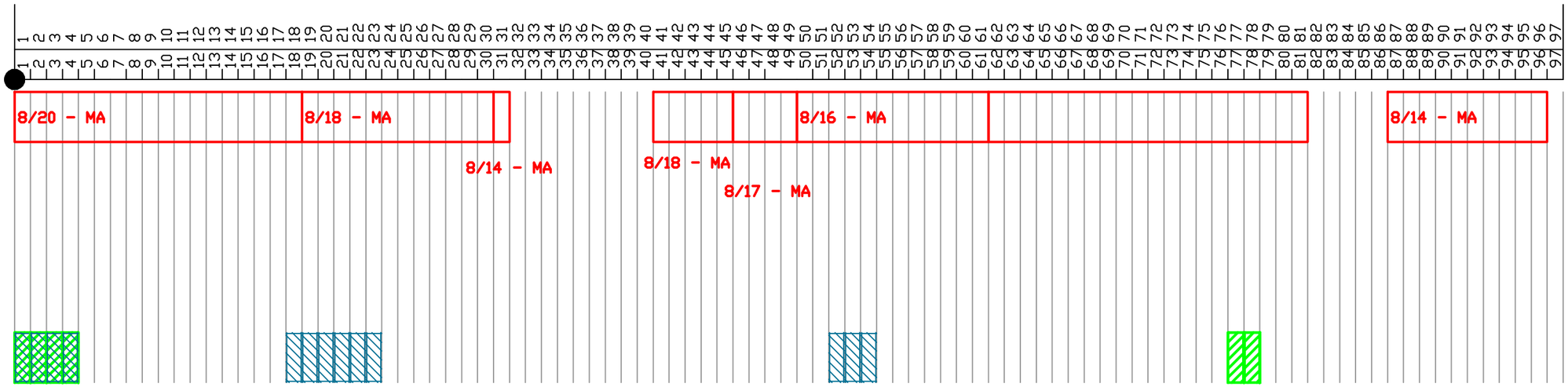
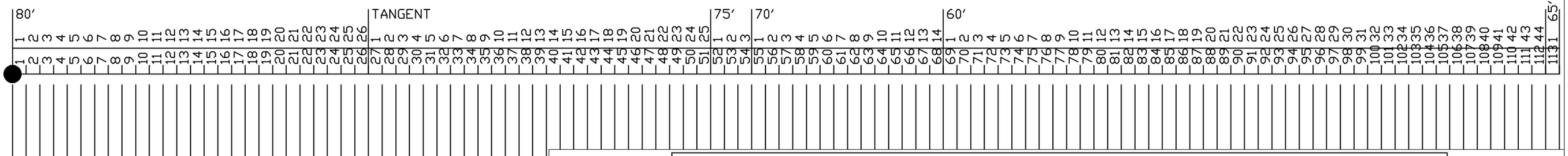
WBB 38
EXISTING

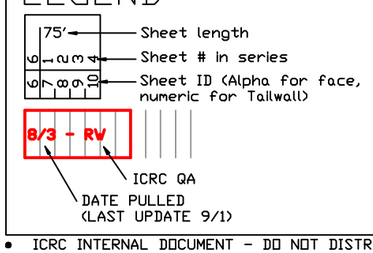
NTS



WBB 38
PLAN



LEGEND



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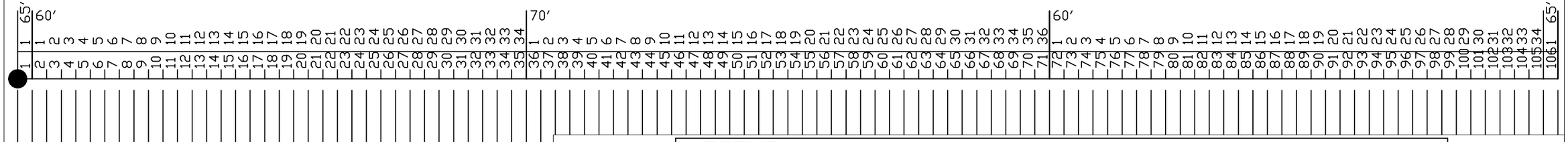
WBB 39
EXISTING

NTS

NO EXISTING

WBB 39
PLAN



LEGEND

75′ — Sheet length

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6 7 8 9 10 — Sheet ID (Alpha for face, numeric for Tailwall)

8/3 - RV
- ICRC QA
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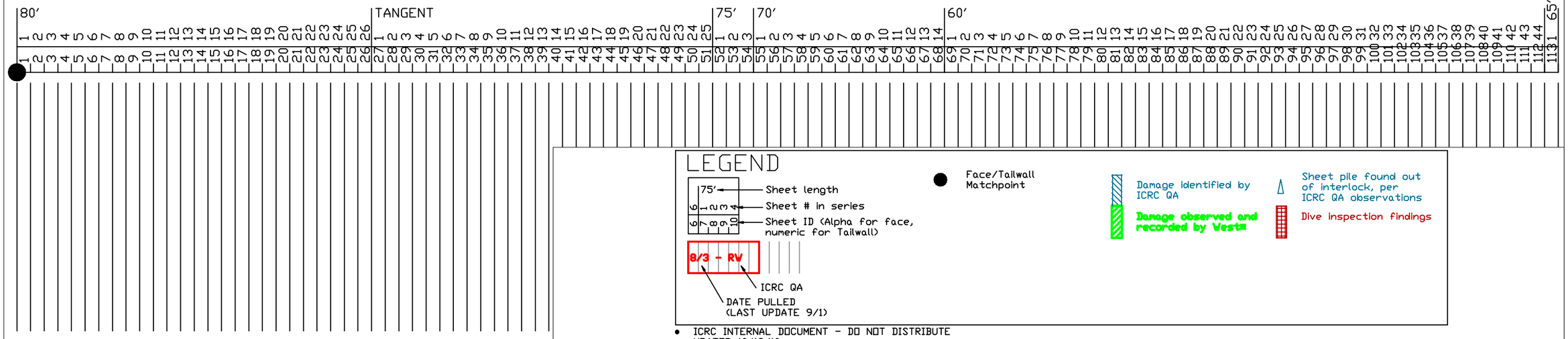
NE 1
EXISTING

NTS

NO EXISTING

NE 1
PLAN



- ICRC INTERNAL DOCUMENT - DO NOT DISTRIBUTE
- UPATED 10/12/10
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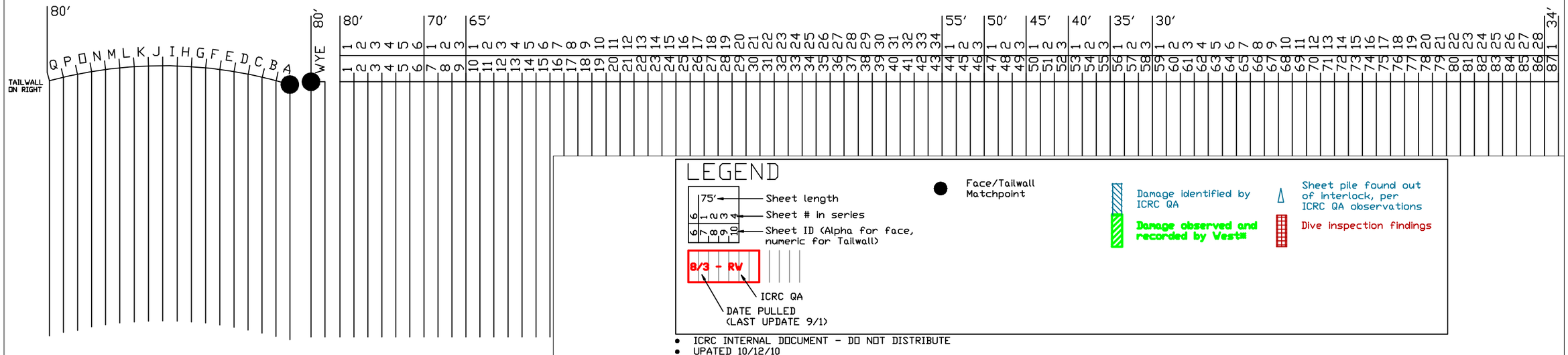
- ICRC observation data obtained from ICRC 'Drive/Pull Summary Log' updated 09/30/2010.

NE 2
EXISTING

NTS

NO EXISTING

NE 2
PLAN



LEGEND

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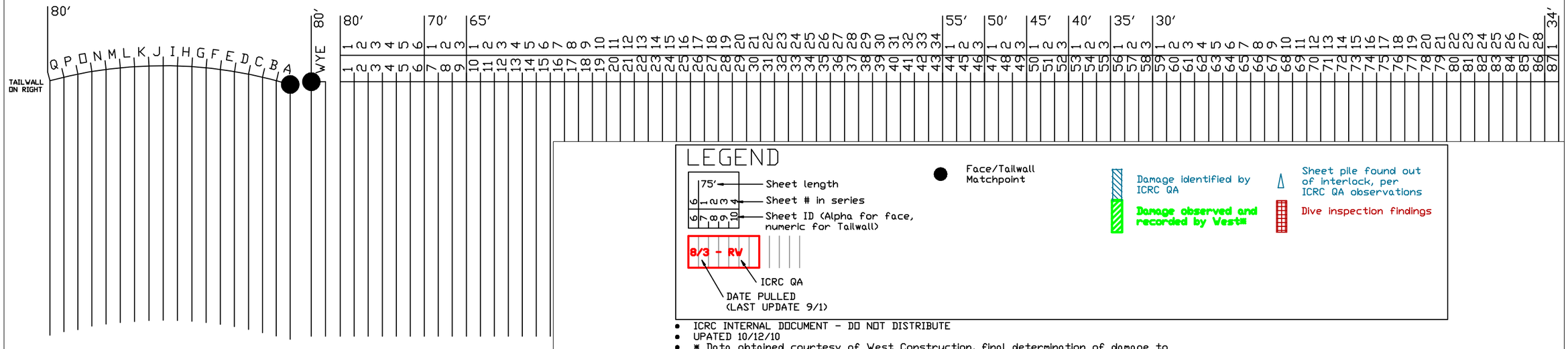
NE 3
EXISTING

NTS

NO EXISTING

NE 3
PLAN



- ICRC INTERNAL DOCUMENT - DO NOT DISTRIBUTE
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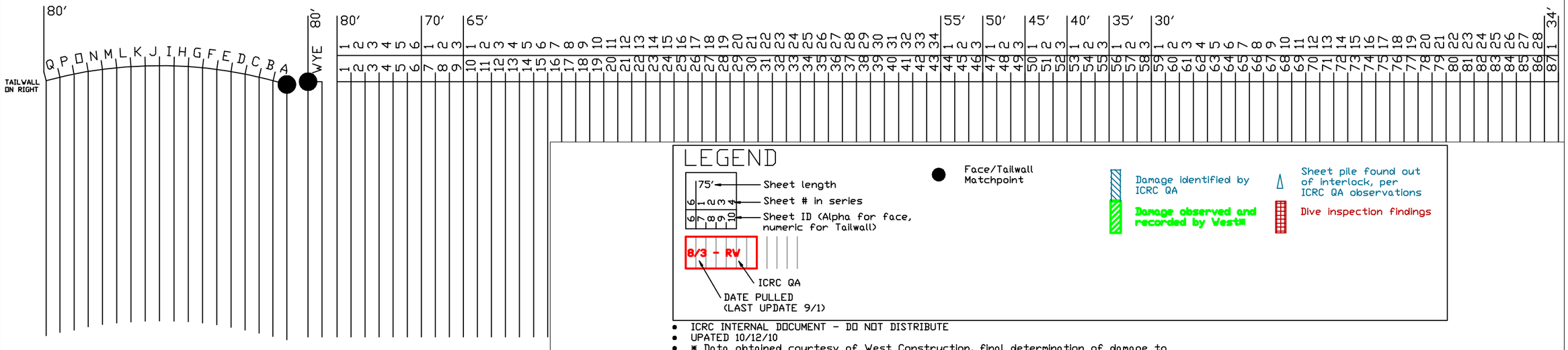
NE 4
EXISTING

NTS

NO EXISTING

NE 4
PLAN



LEGEND

75′ — Sheet length
Sheet # in series
Sheet ID (Alpha for face, numeric for Tailwall)

8/3 - RW
ICRC QA
DATE PULLED (LAST UPDATE 9/1)

Face/Tailwall Matchpoint

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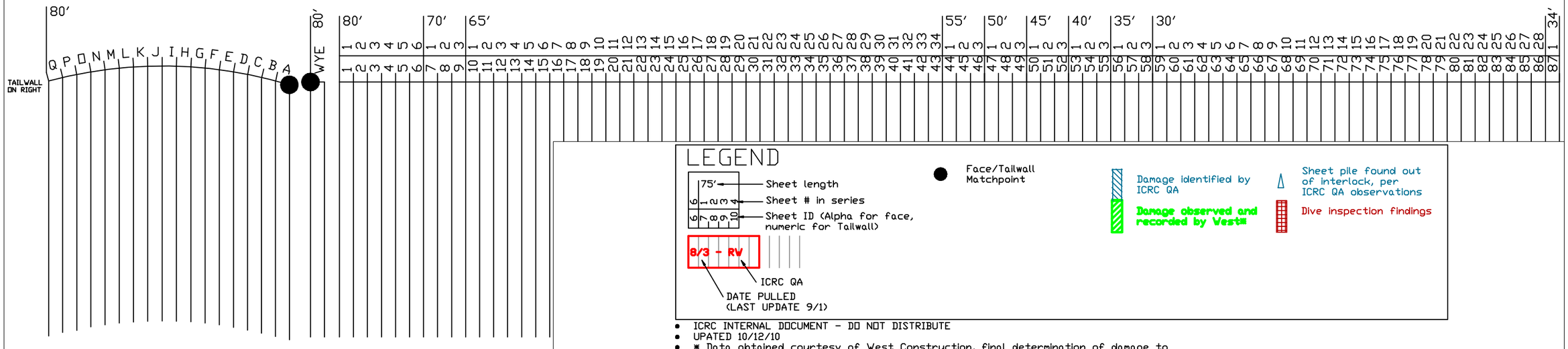
NE 5
EXISTING

NTS

NO EXISTING

NE 5
PLAN



LEGEND

75′ — Sheet length
Sheet # in series
Sheet ID (Alpha for face, numeric for Tailwall)

8/3 - RV
ICRC QA
DATE PULLED (LAST UPDATE 9/1)

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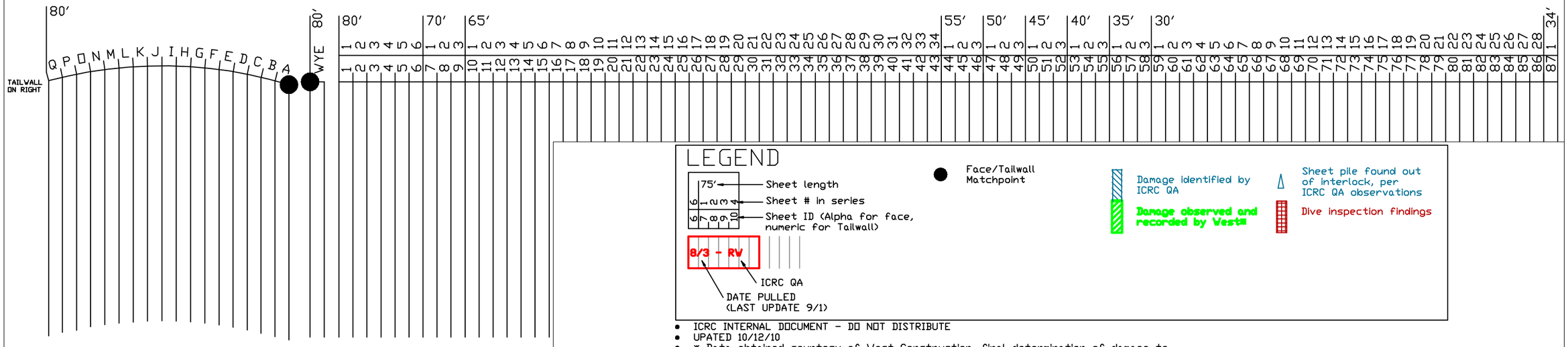
NE 6
EXISTING

NTS

NO EXISTING

NE 6
PLAN



LEGEND

75′ — Sheet length
6 1 2 3 4 — Sheet # in series
6 7 8 9 10 — Sheet ID (Alpha for face, numeric for Tailwall)
8/3 - RW — ICRC QA
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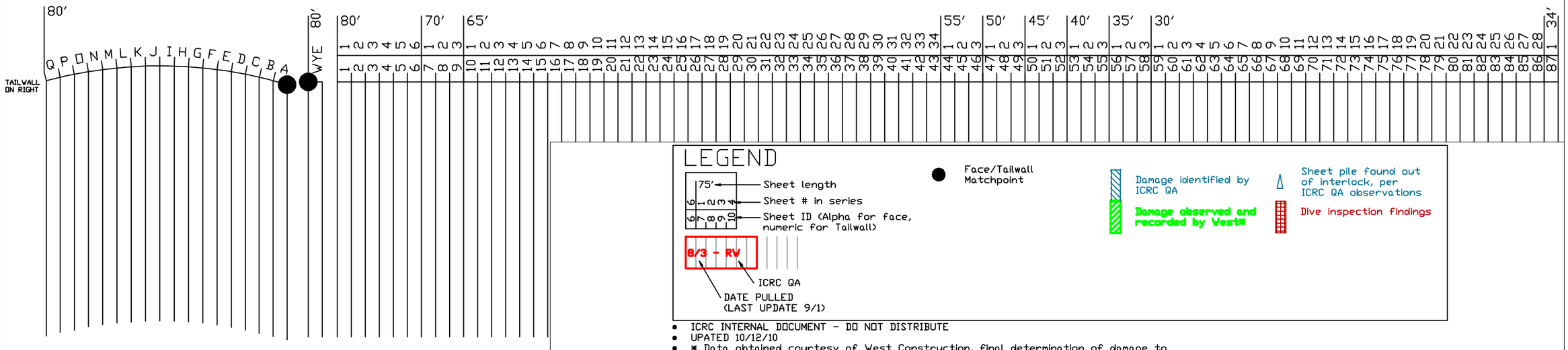
NE 7
EXISTING

NTS

NO EXISTING

NE 7
PLAN



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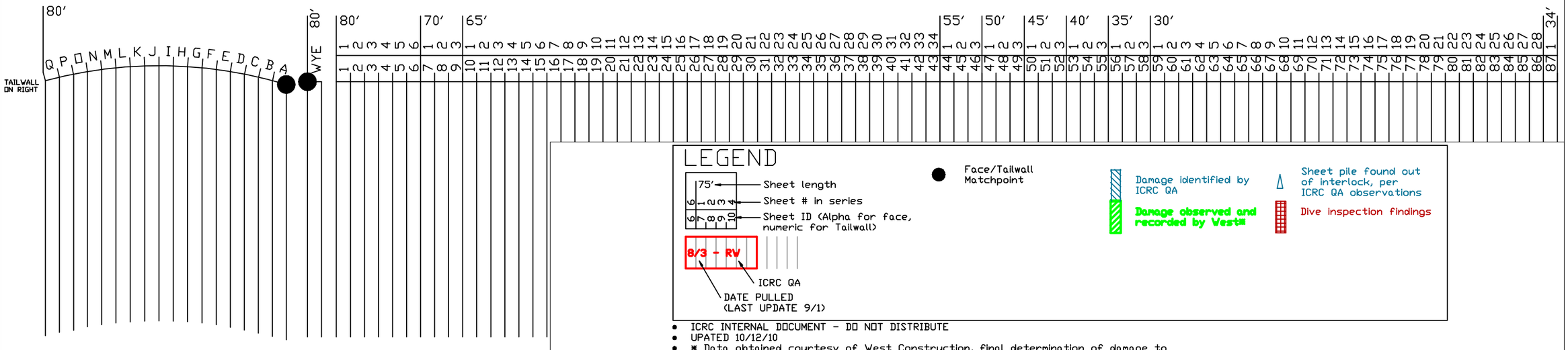
NE 8
EXISTING

NTS

NO EXISTING

NE 8
PLAN



LEGEND

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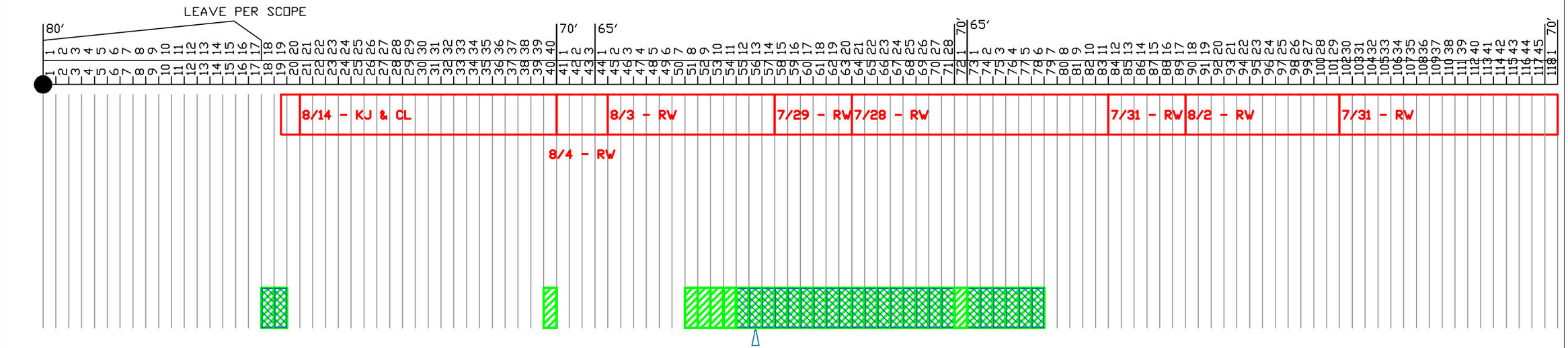
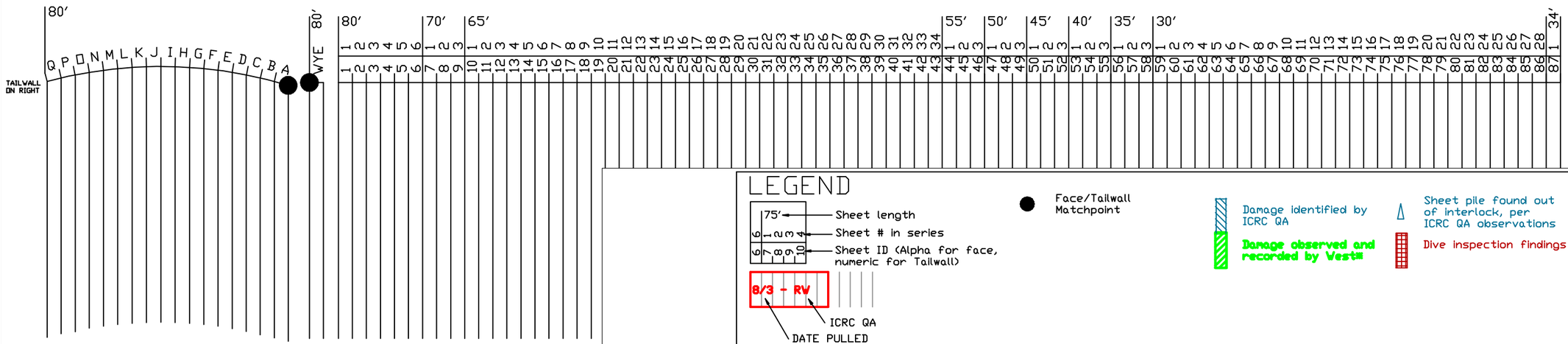
NE 9
EXISTING

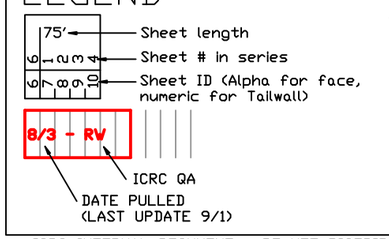
NTS



NE 9
PLAN



LEGEND



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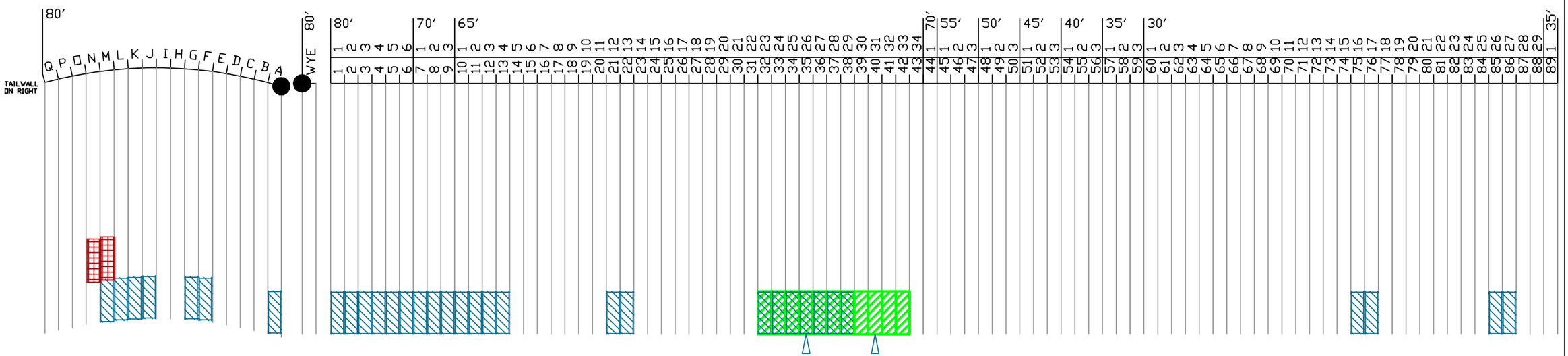
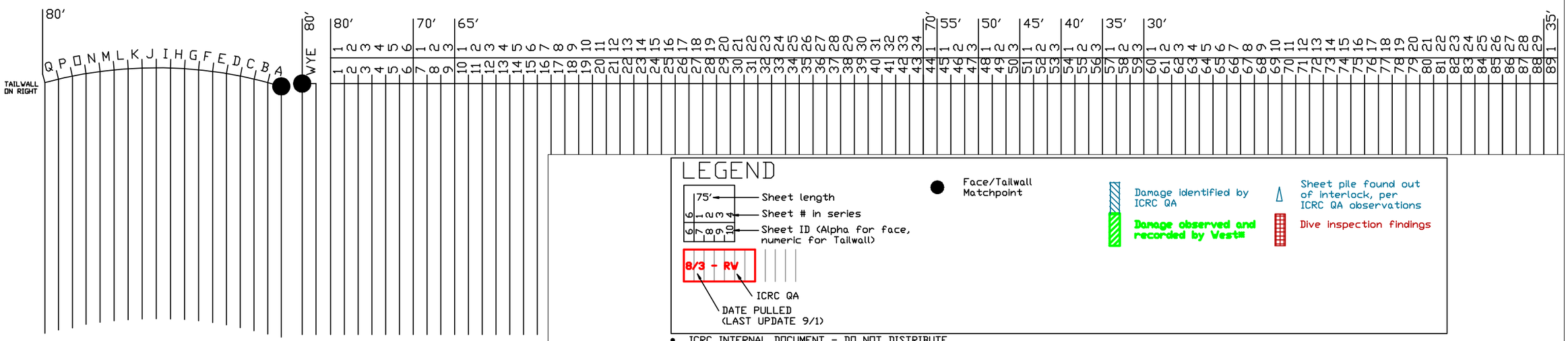
NE 10
EXISTING

NTS



NE 10
PLAN



LEGEND

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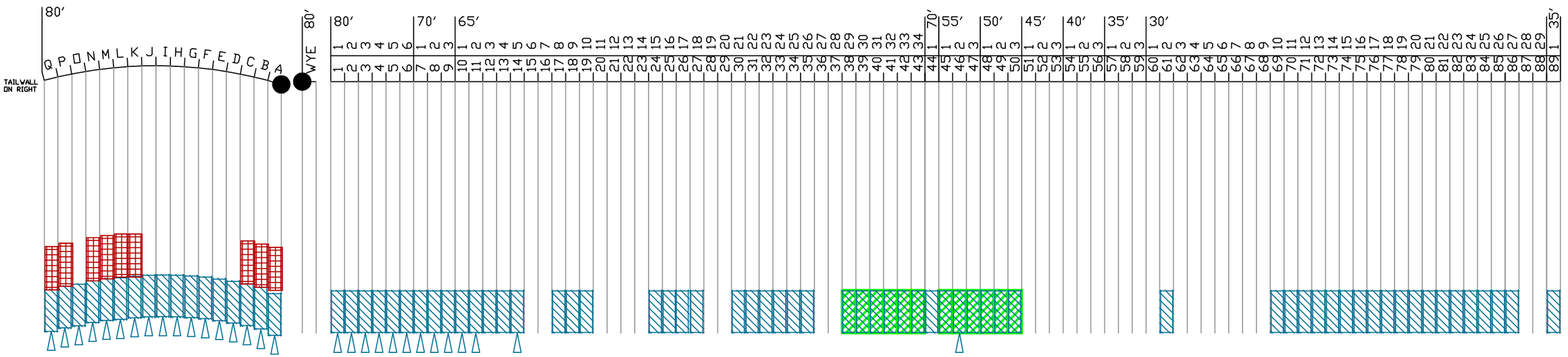
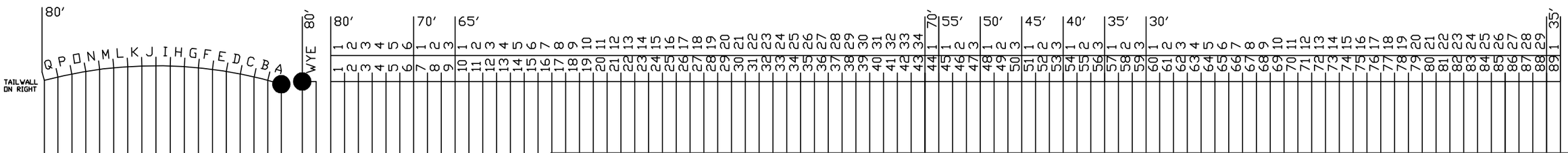
NE 11
EXISTING

NTS



NE 11
PLAN



LEGEND

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  - DATE PULLED (LAST UPDATE 9/1)
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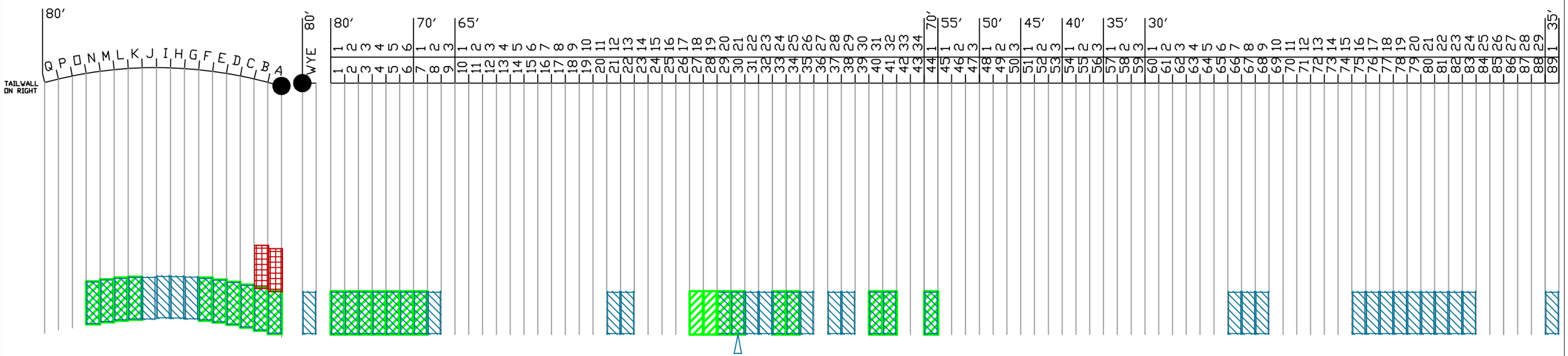
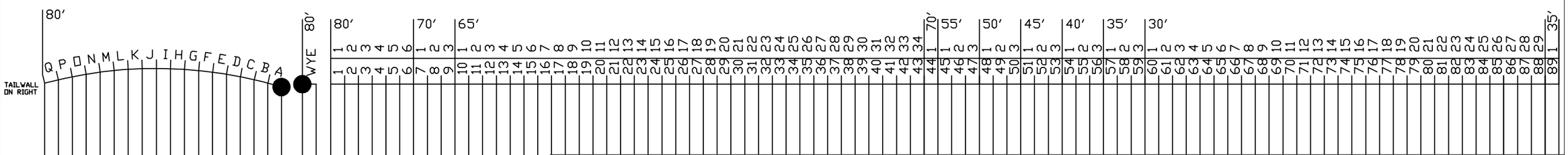
NE 12
EXISTING

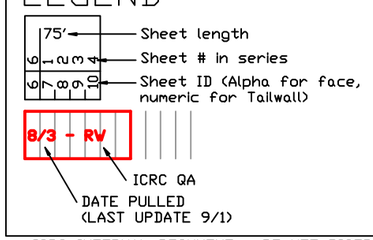
NTS



NE 12
PLAN



LEGEND



Face/Tailwall Matchpoint

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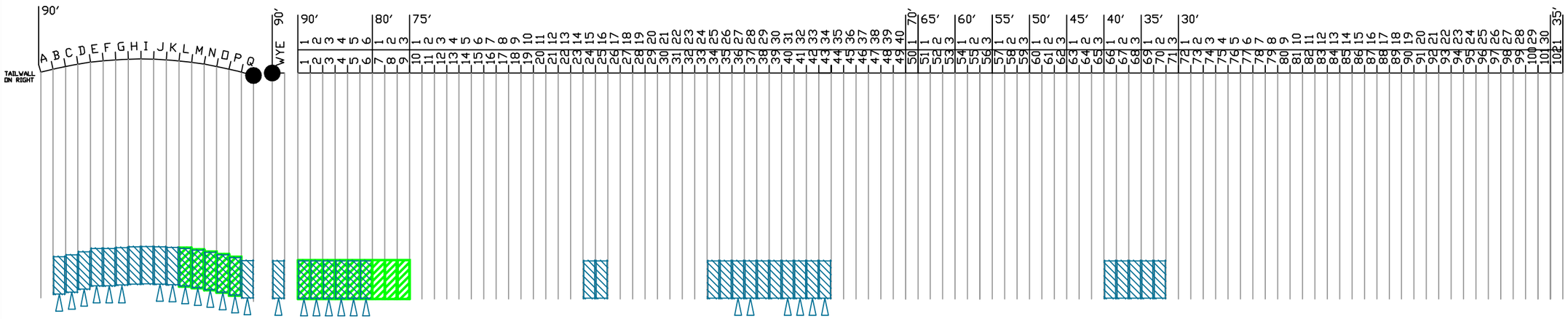
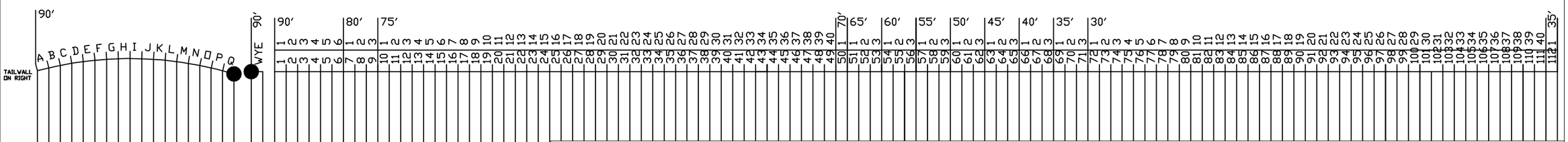
NE 31

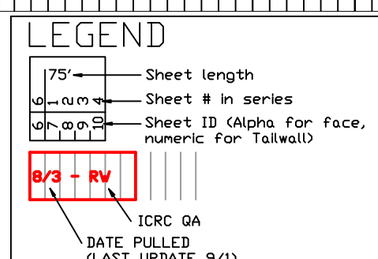
EXISTING NTS



PLAN



LEGEND



- Face/Tailwall Matchpoint
- Damage identified by ICRC QA
- Damage observed and recorded by West*
- Sheet pile found out of interlock, per ICRC QA observations
- Dive inspection findings

- ICRC INTERNAL DOCUMENT - DO NOT DISTRIBUTE
- UPATED 10/12/10
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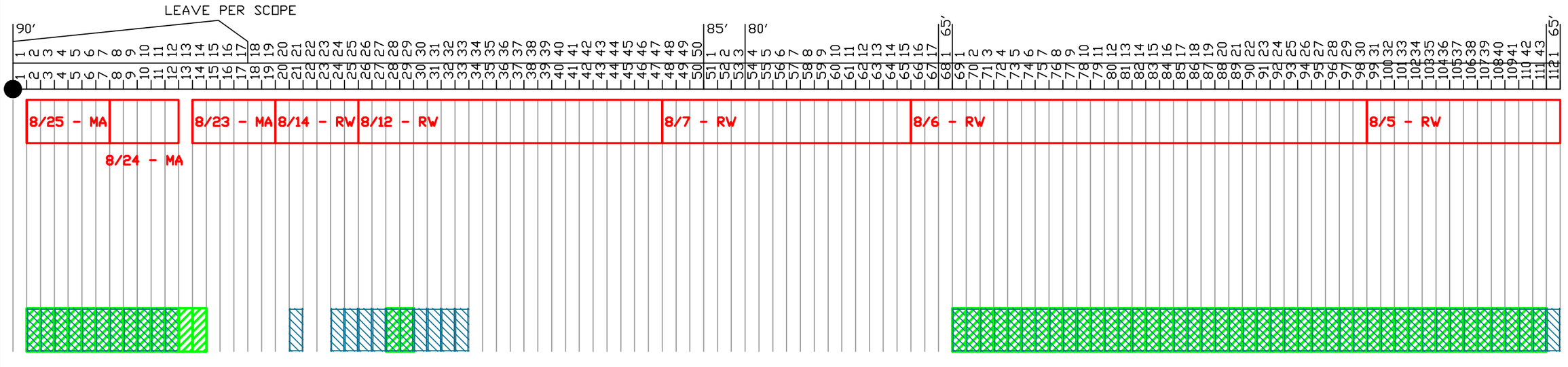
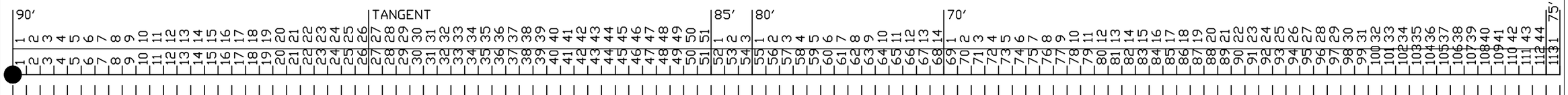
- West data from West cell by cell drawings, courtesy of West.
- ICRC observation data obtained from ICRC 'Drive/Pull Summary Log' updated 09/30/2010.

NE 32
EXISTING

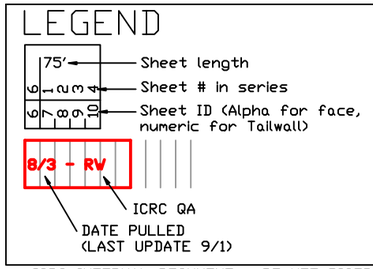
NTS



NE 32
PLAN



LEGEND



Face/Tailwall Matchpoint

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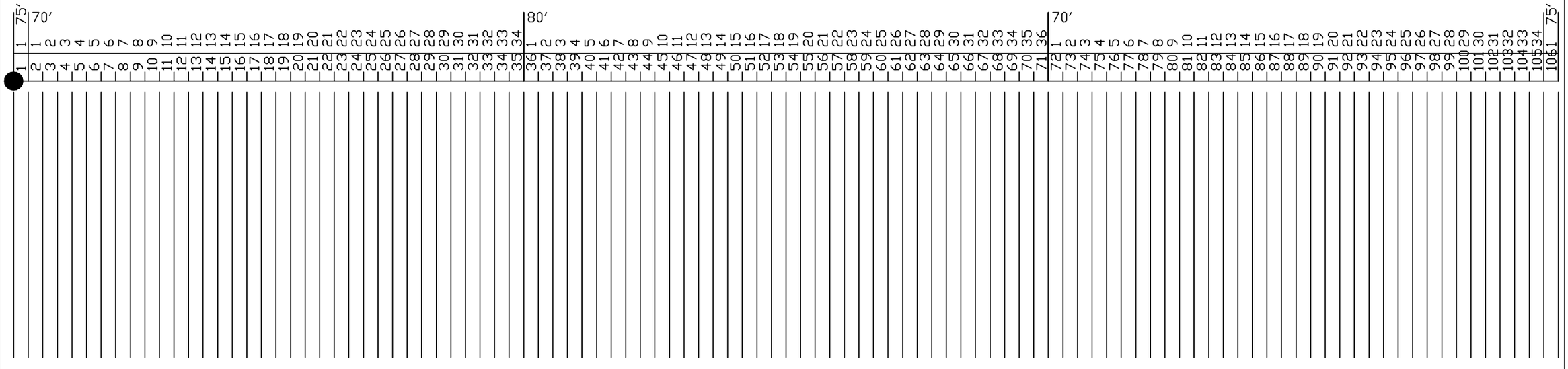
NE 33
EXISTING

NTS

NO EXISTING

NE 33
PLAN

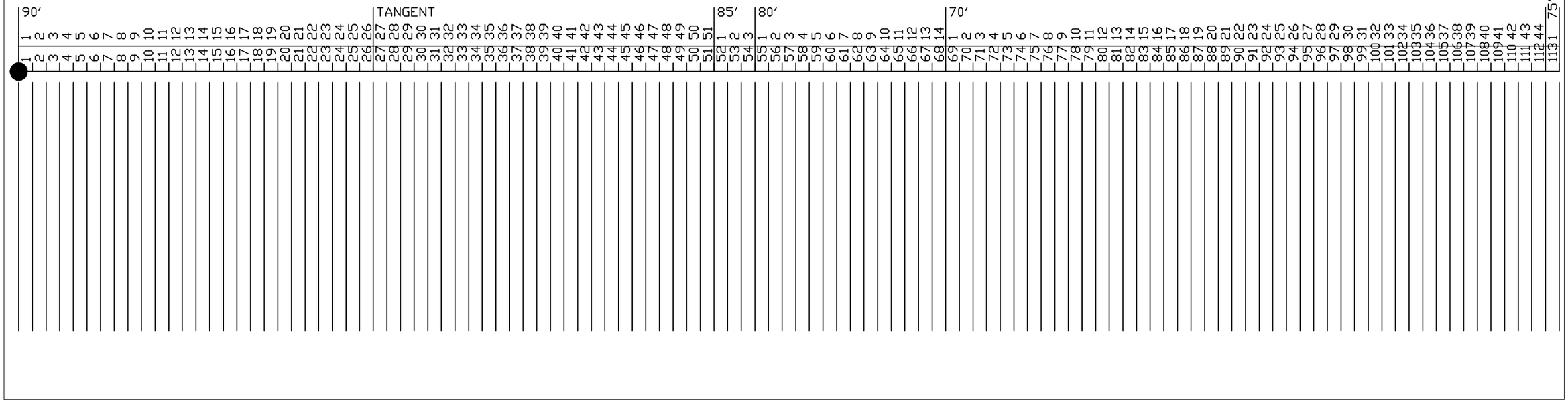


NE 34
EXISTING

NTS

NO EXISTING

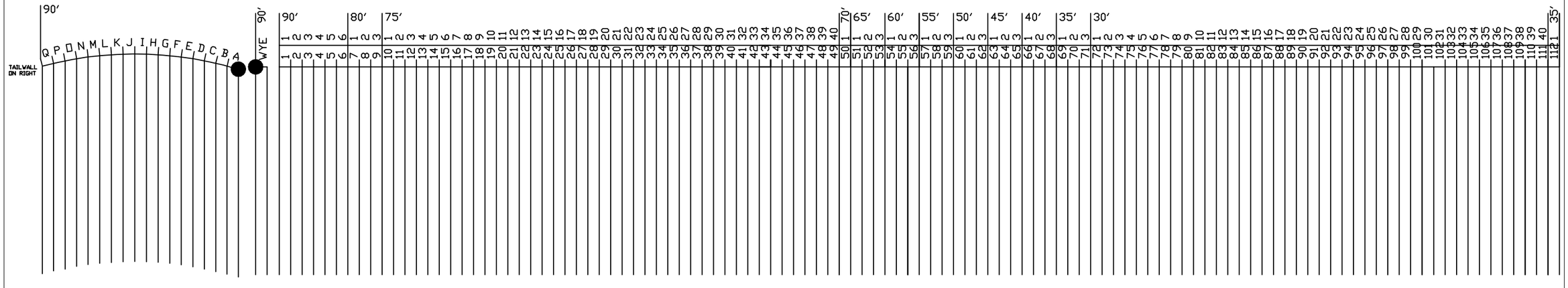
NE 34
PLAN



NE 35
EXISTING NTS

NO EXISTING

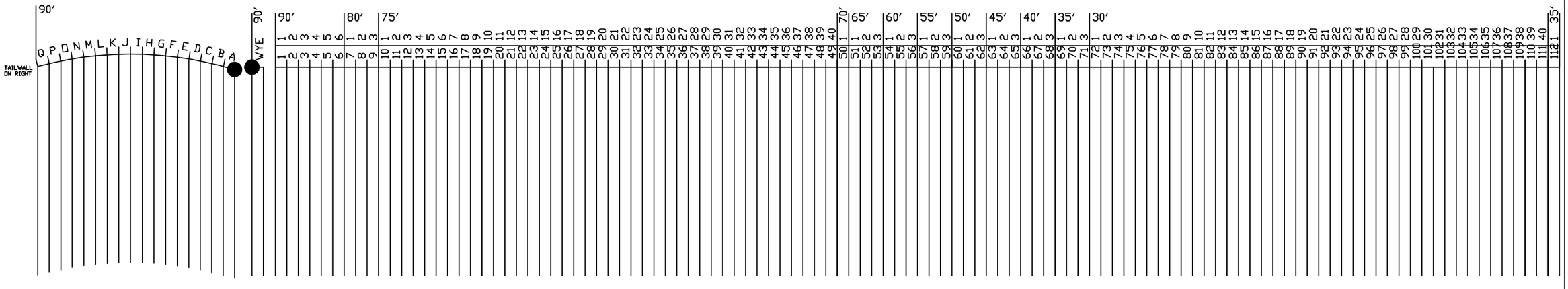
NE 35
PLAN



NE 36
EXISTING (NTS)

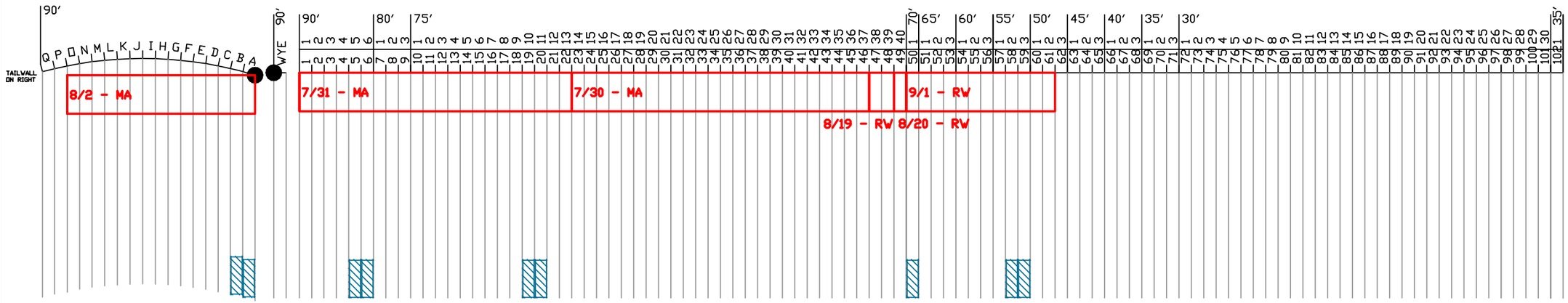
NO EXISTING

NE 36
PLAN

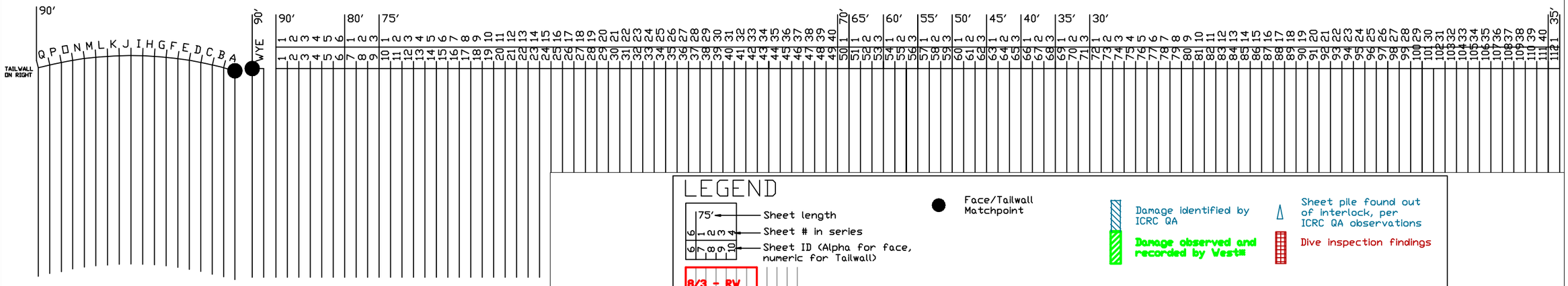


NE 37
EXISTING

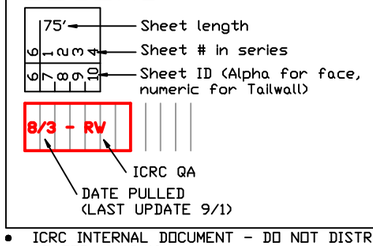
NTS



NE 37
PLAN



LEGEND



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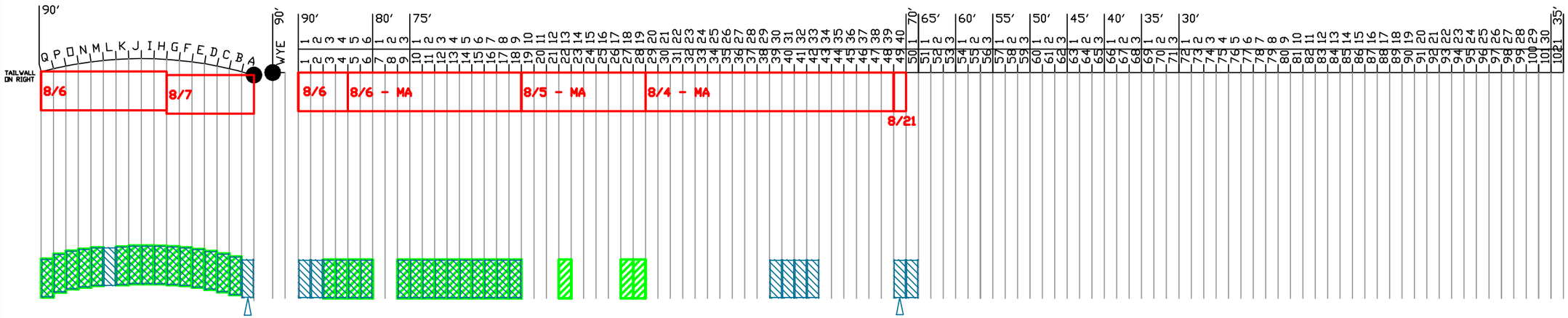
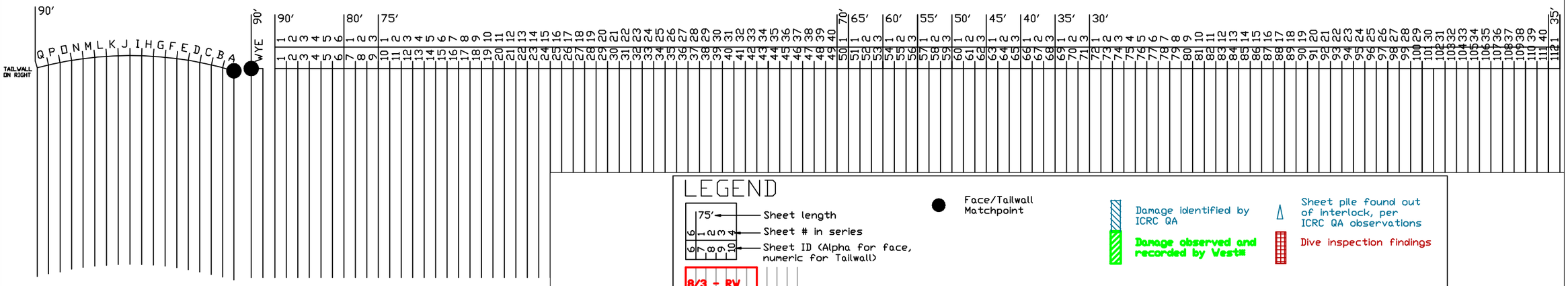
NE 38
EXISTING

NTS



NE 38
PLAN



LEGEND

- 75′ — Sheet length
- 6 6 1 2 3 4 — Sheet # in series
- 6 7 8 9 10 — Sheet ID (Alpha for face, numeric for Tailwall)
- 8/3 - RV — ICRC QA; DATE PULLED (LAST UPDATE 9/1)

Face/Tailwall Matchpoint

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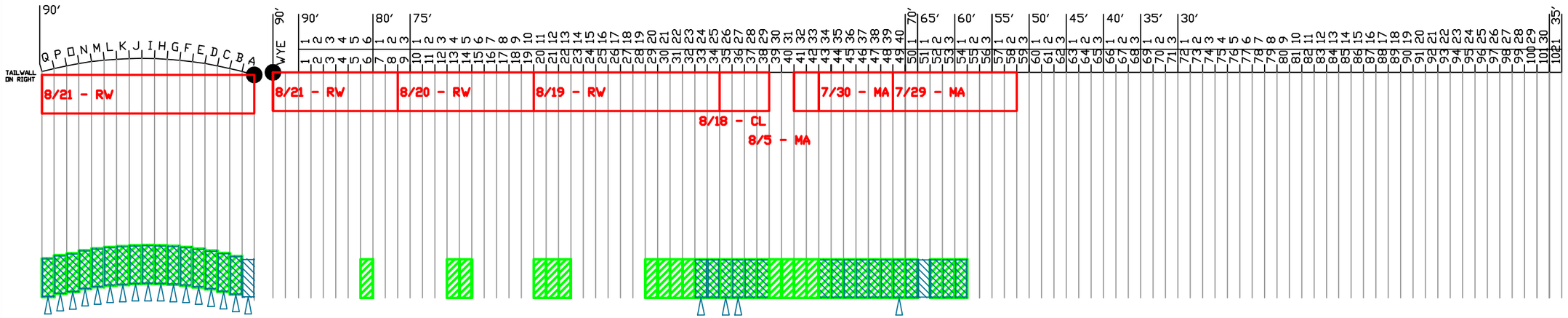
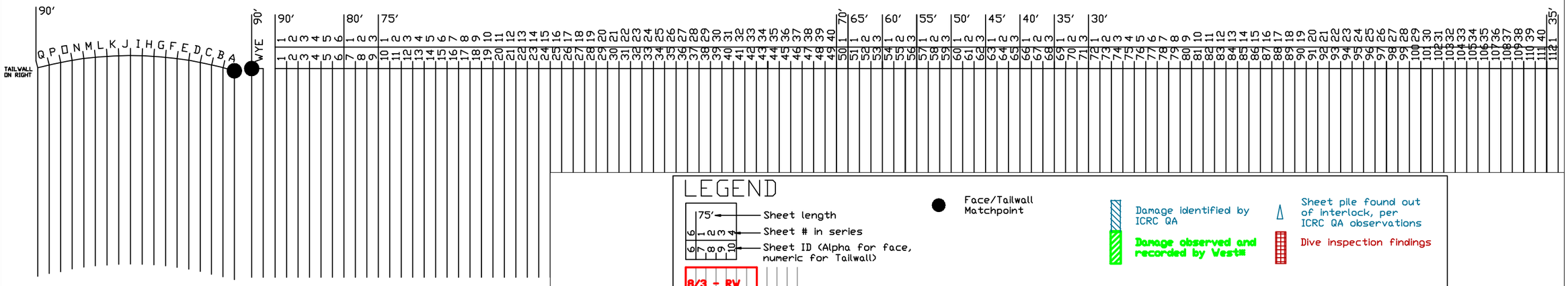
- ICRC observation data obtained from ICRC 'Drive/Pull Summary Log' updated 09/30/2010.

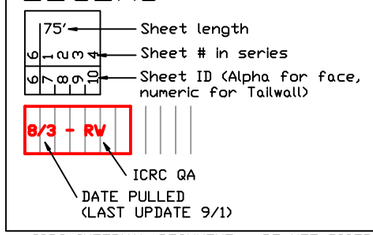
NE 39 EXISTING NTS



NE 39 PLAN



LEGEND



Face/Tailwall Matchpoint

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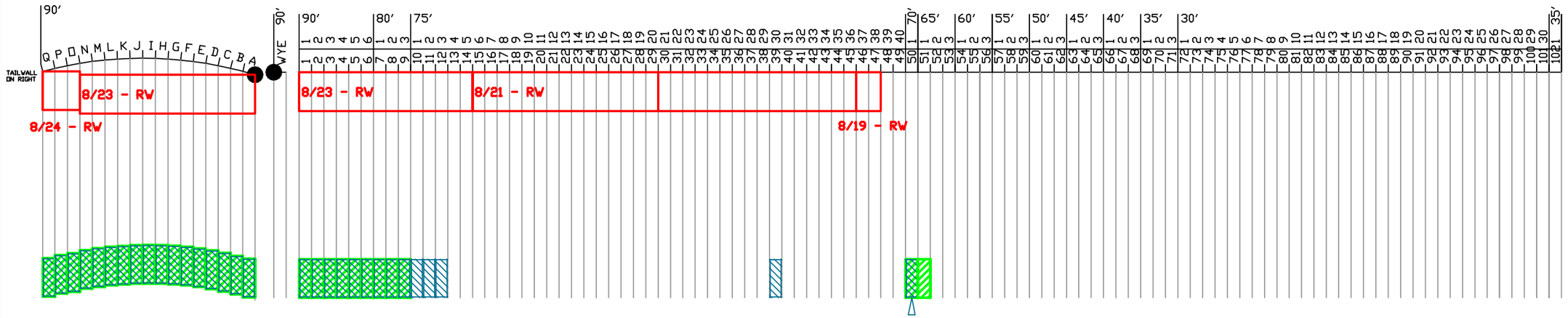
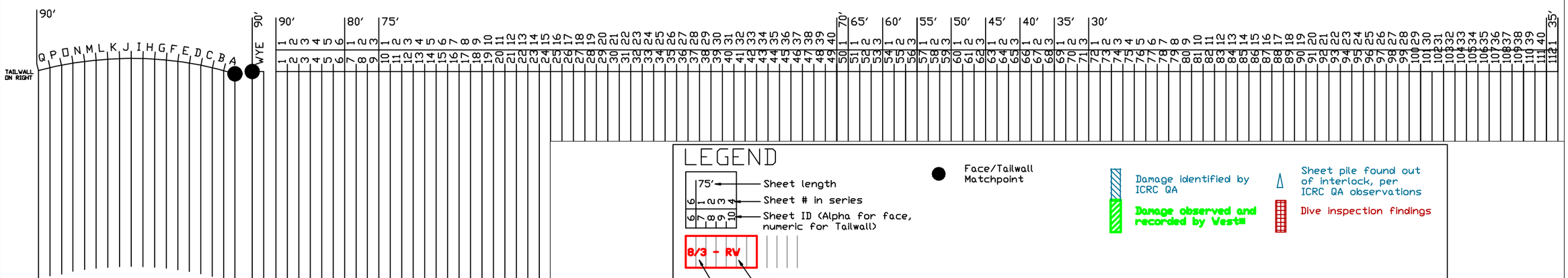
NE 40

EXISTING NTS



PLAN



LEGEND

- 75′ — Sheet length
- 6 — Sheet # in series
- 6 7 8 9 10 — Sheet ID (Alpha for face, numeric for Tailwall)
- 8/3 - RW — ICRC QA; DATE PULLED (LAST UPDATE 9/1)
- Face/Tailwall Matchpoint
- Damage identified by ICRC QA
- Damage observed and recorded by West*
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- Dive inspection findings

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- UPATED 10/12/10
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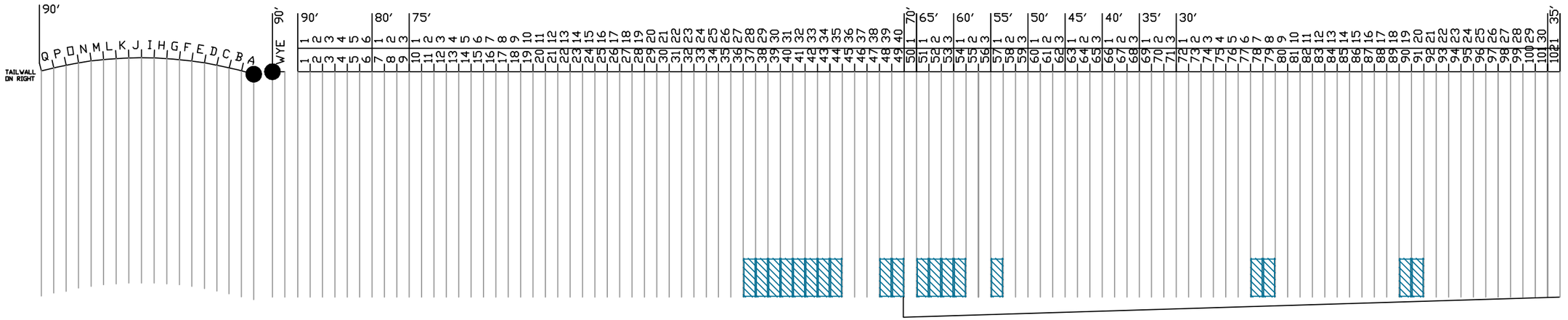
- West data from West cell by cell drawings, courtesy of West.
- ICRC observation data obtained from ICRC 'Drive/Pull Summary Log' updated 09/30/2010.

NE 41

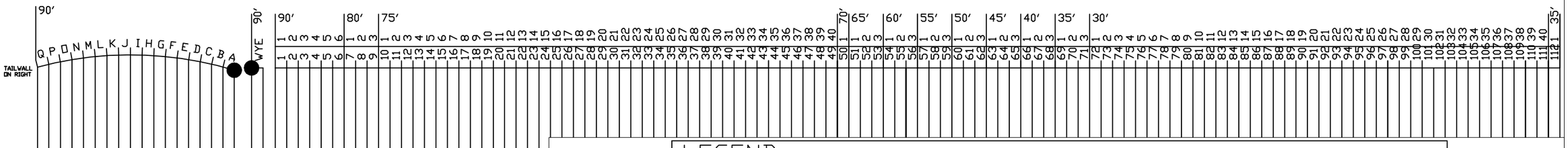
EXISTING

NTS



FROM WINTER CLOSURE PLAN: "PULL AND INSPECT TAILWALLS FROM END ANCHOR TO INTERMEDIATE ANCHOR…"

PLAN



LEGEND

- 75′ — Sheet length
- Sheet # in series
- Sheet ID (Alpha for face, numeric for Tailwall)
- 8/3 - RV — DATE PULLED (LAST UPDATE 9/1); ICRC QA
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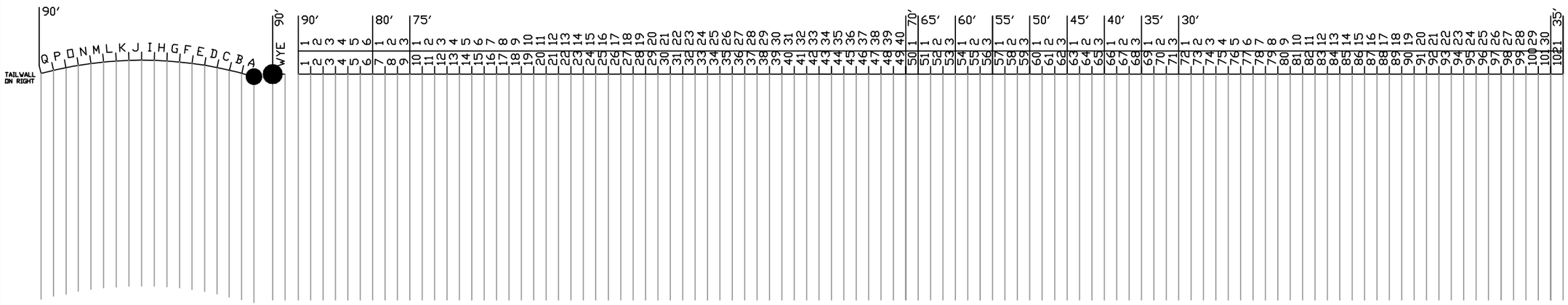
- ICRC observation data obtained from ICRC 'Drive/Pull Summary Log' updated 09/30/2010.

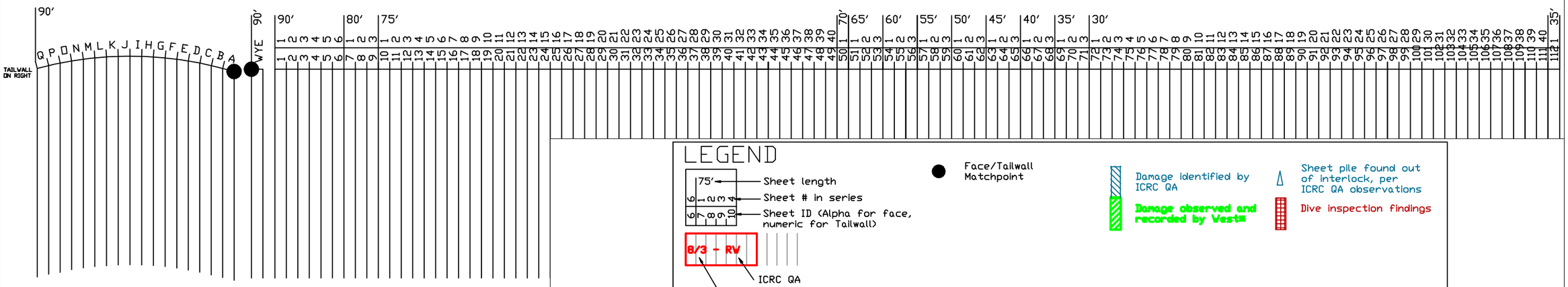
NE 42

EXISTING

NTS



PLAN



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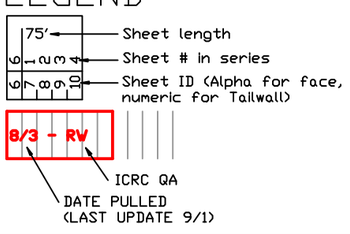

Face/Tailwall Matchpoint

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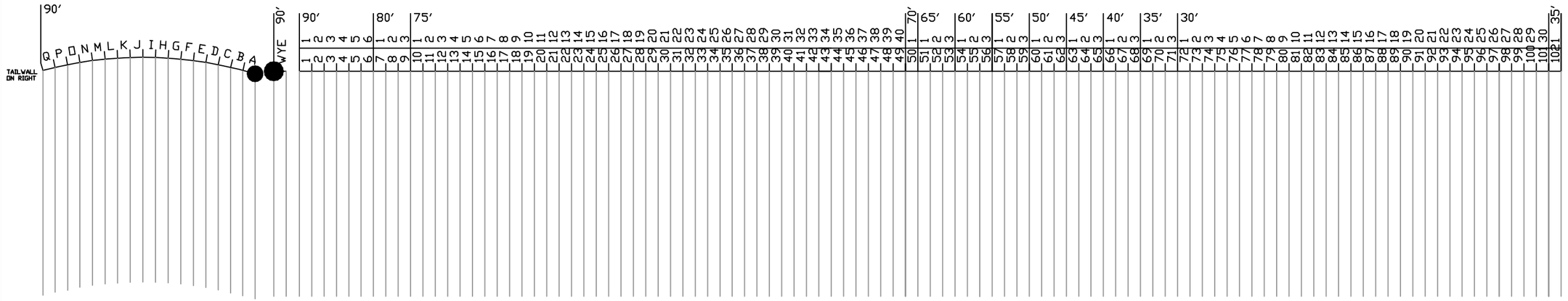
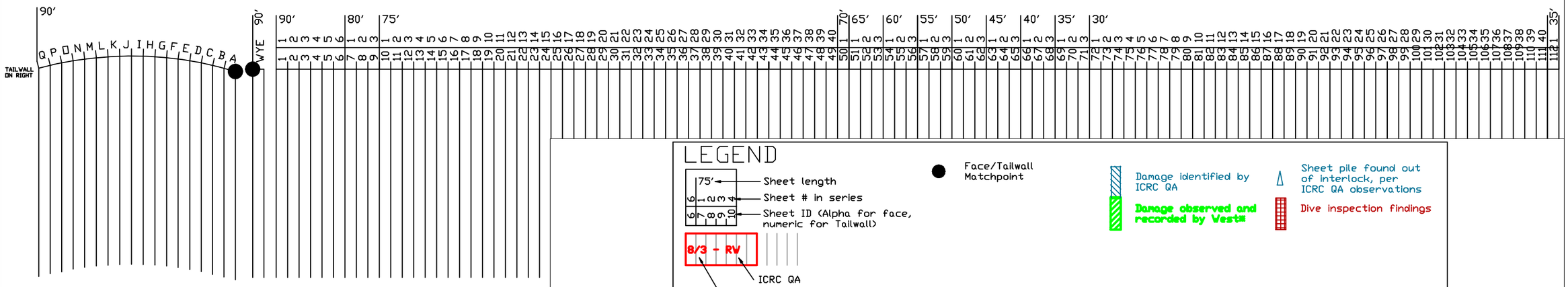
- ICRC observation data obtained from ICRC 'Drive/Pull Summary Log' updated 09/30/2010.

NE 43

EXISTING NTS



PLAN



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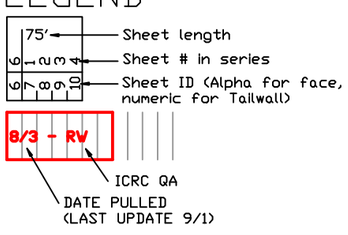

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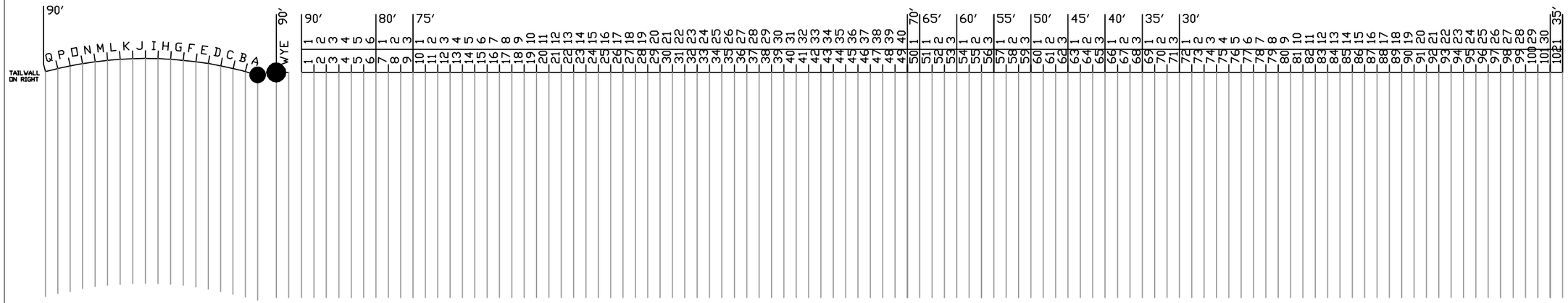
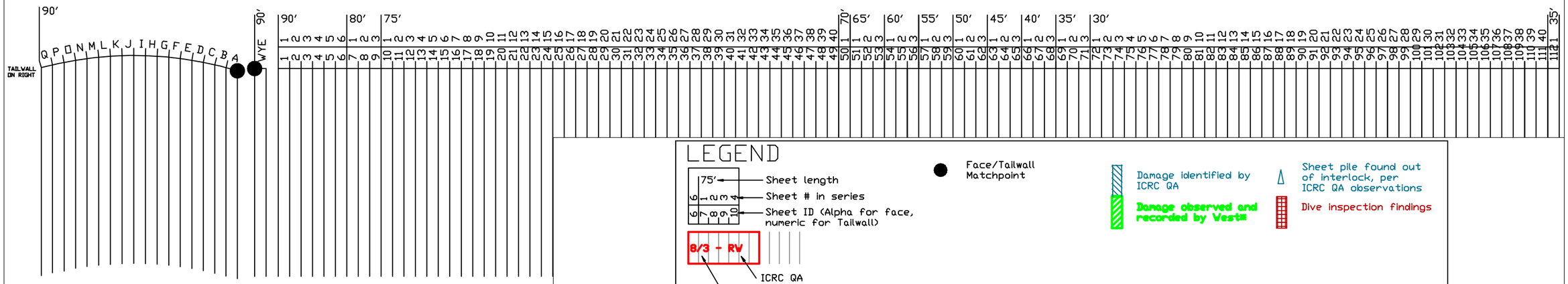
NE 44

EXISTING

NTS



PLAN



LEGEND

- 75′ — Sheet length
- Sheet # in series
- Sheet ID (Alpha for face, numeric for Tailwall)
- 8/3 - RV
  - ICRC QA
  - DATE PULLED (LAST UPDATE 9/1)
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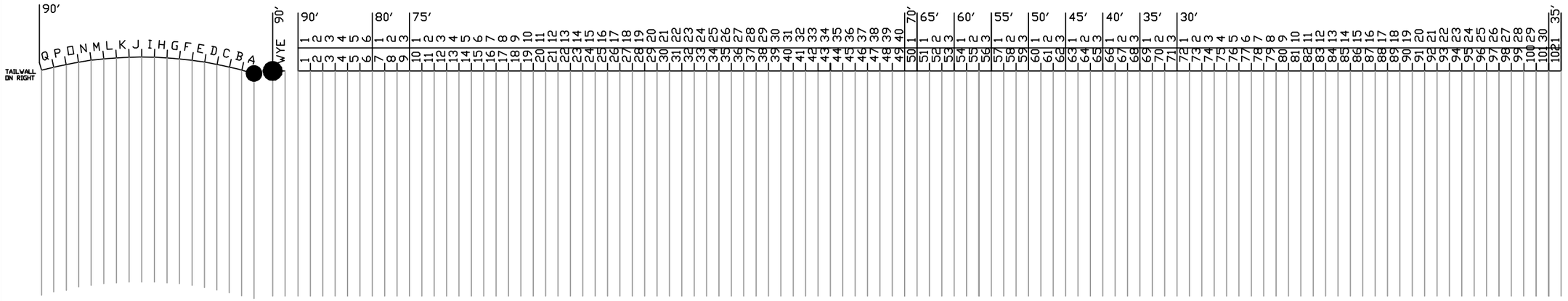
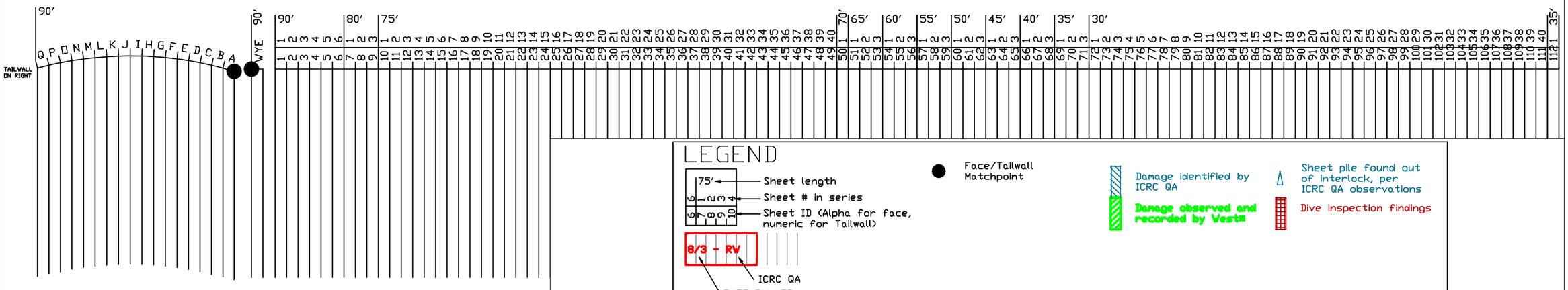
NE 45

EXISTING

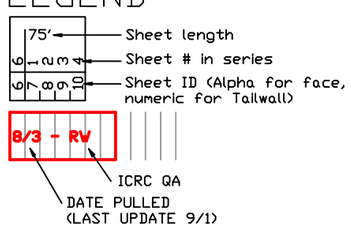
NTS



PLAN



LEGEND



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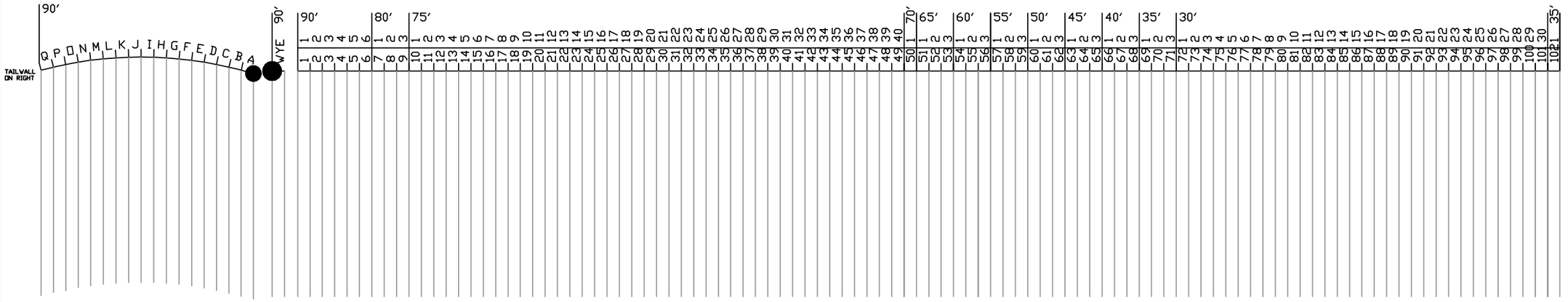
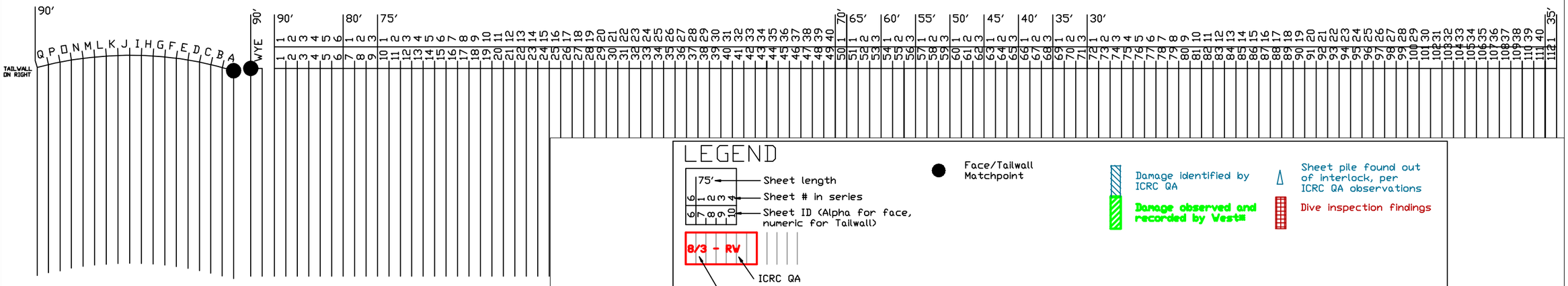
NE 46

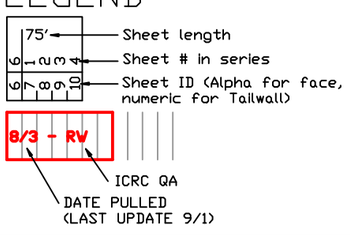
EXISTING NTS



PLAN



LEGEND



Face/Tailwall Matchpoint

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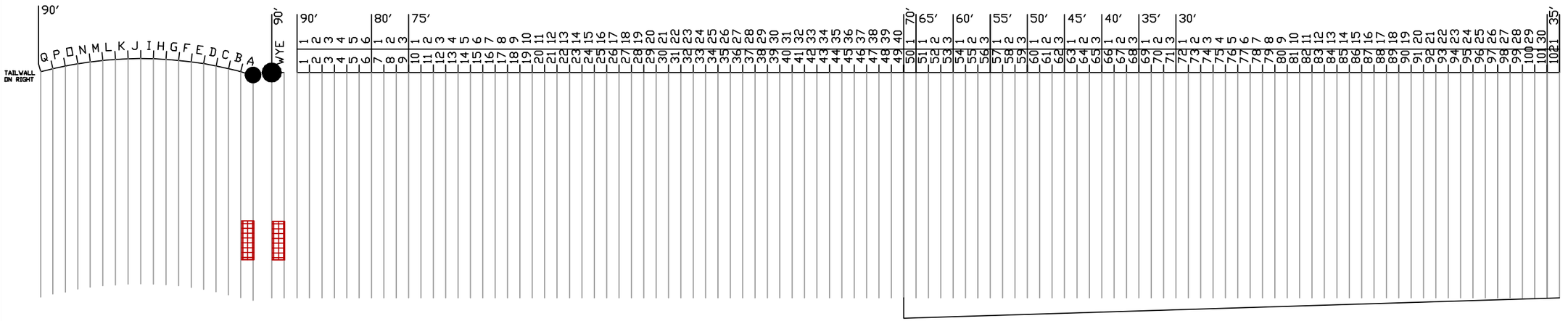
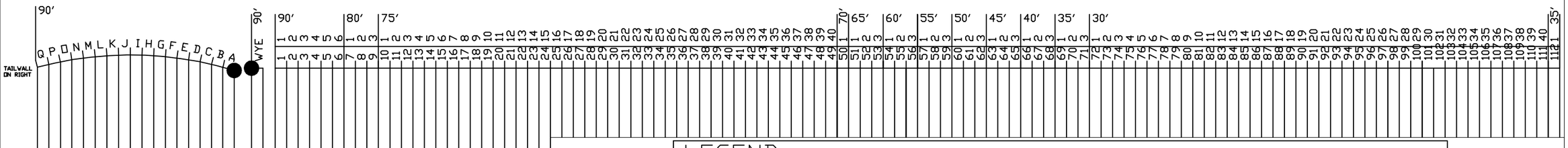
NE 47

EXISTING

NTS



PLAN



LEGEND

- 75′ — Sheet length
- Sheet # in series
- Sheet ID (Alpha for face, numeric for Tailwall)
- 8/3 - RV — DATE PULLED (LAST UPDATE 9/1); ICRC QA
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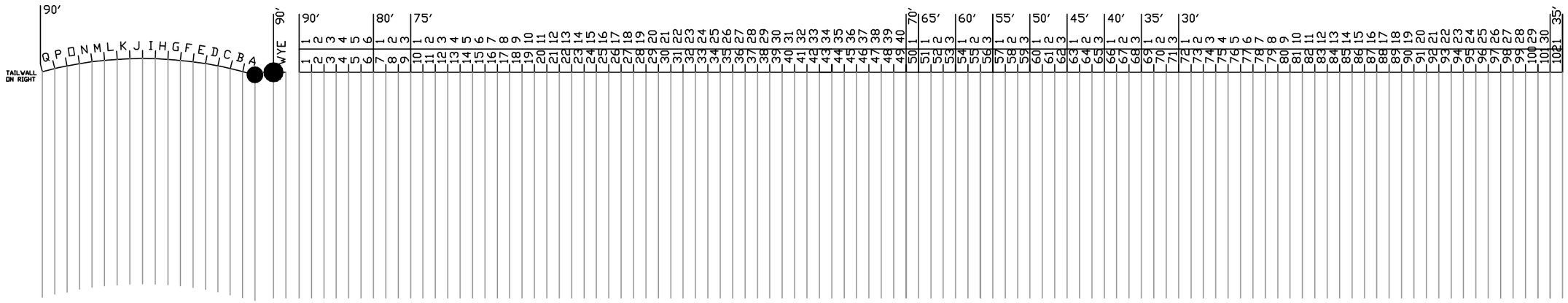
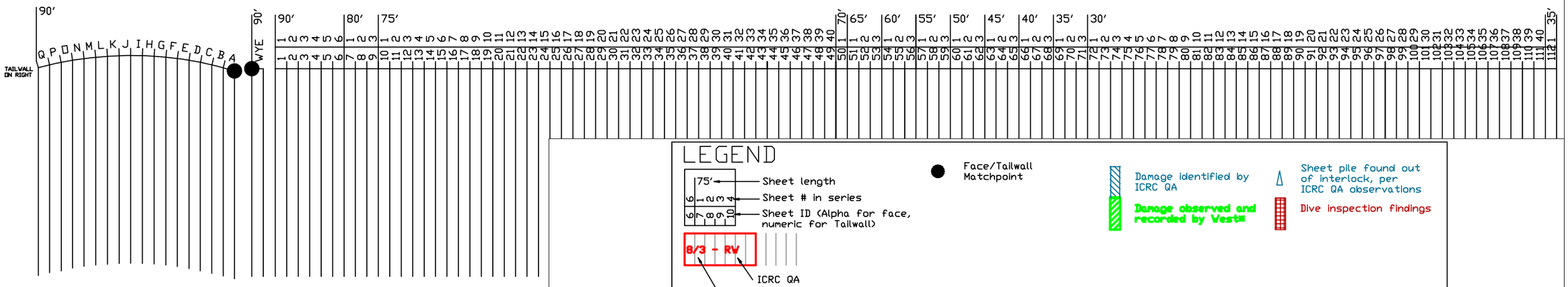
NE 48

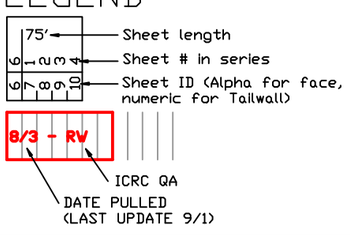
EXISTING NTS



PLAN



LEGEND



Face/Tailwall Matchpoint

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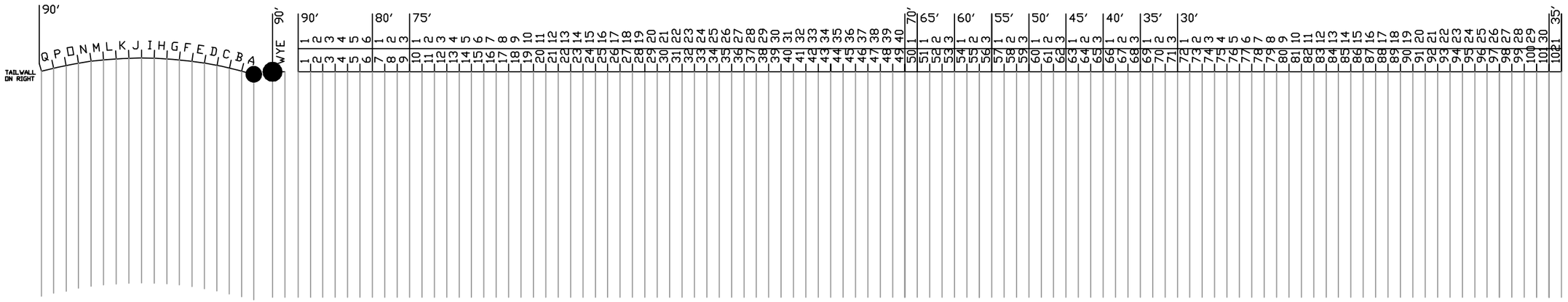
- ICRC observation data obtained from ICRC 'Drive/Pull Summary Log' updated 09/30/2010.

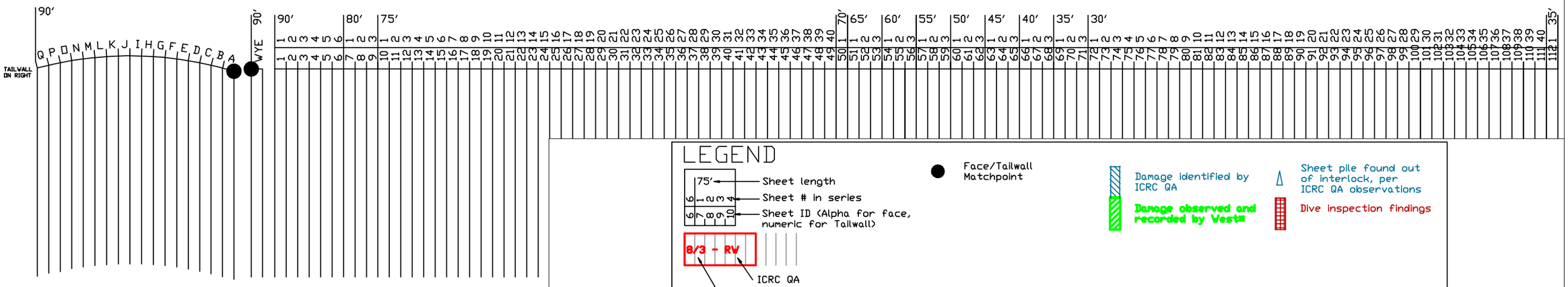
NE 49

EXISTING

NTS



PLAN



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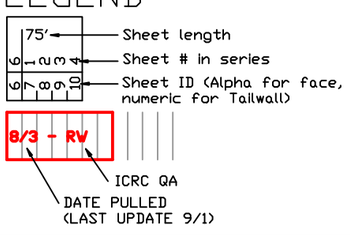

Face/Tailwall Matchpoint

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Dive inspection findings

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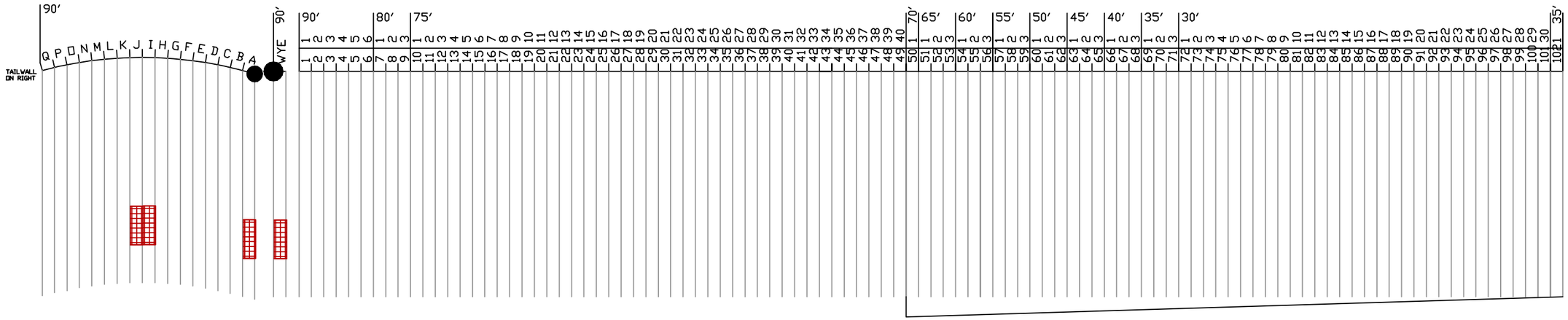
NE 50

EXISTING NTS



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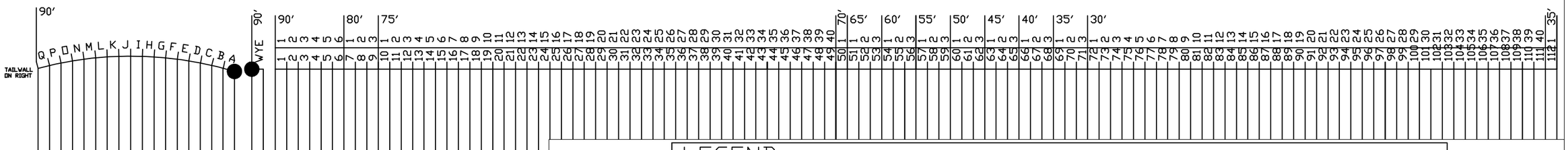

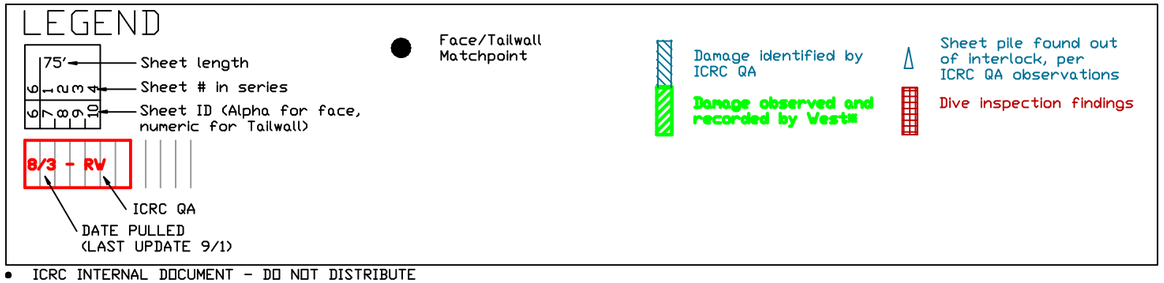

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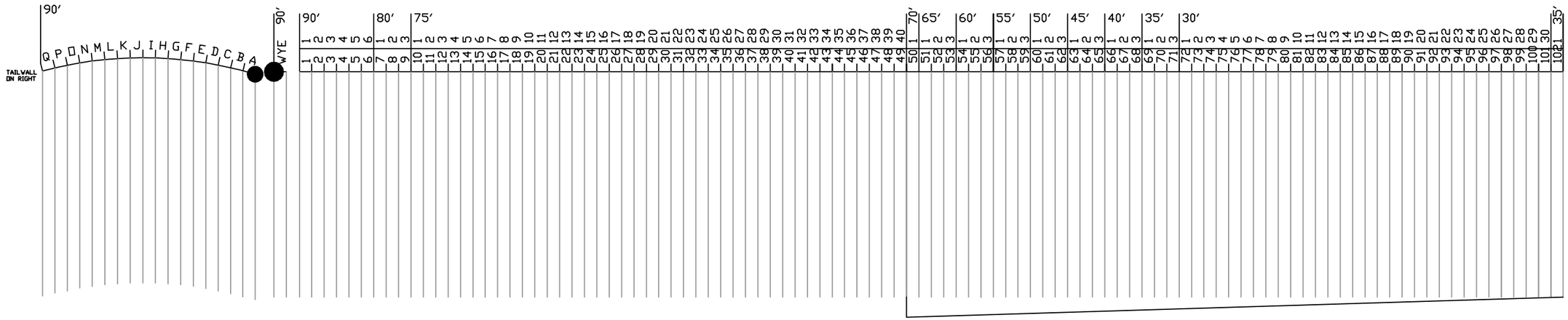
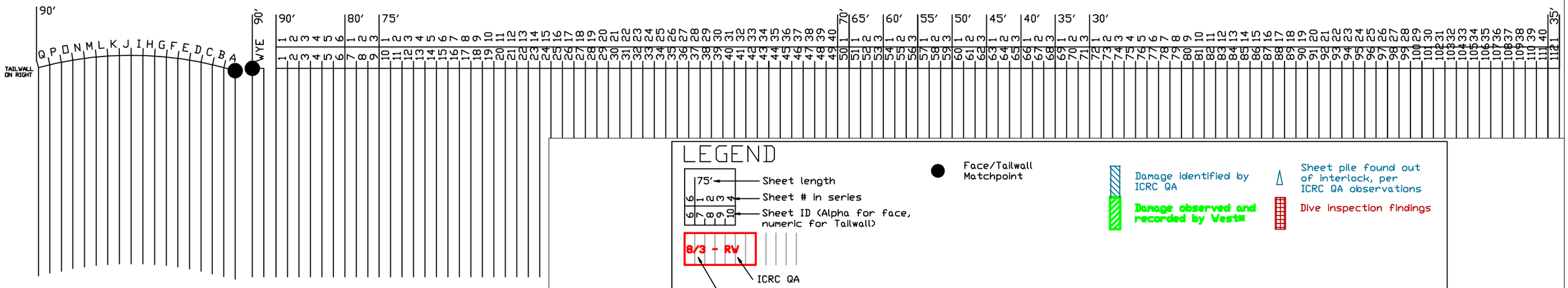
NE 51

EXISTING NTS



FROM WINTER CLOSURE PLAN: 'PULL AND INSPECT TAILWALLS FROM END ANCHOR TO INTERMEDIATE ANCHOR…'

PLAN



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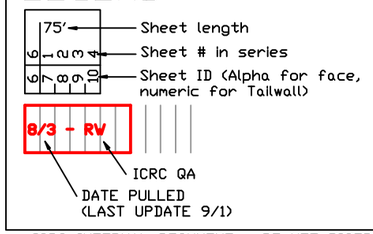

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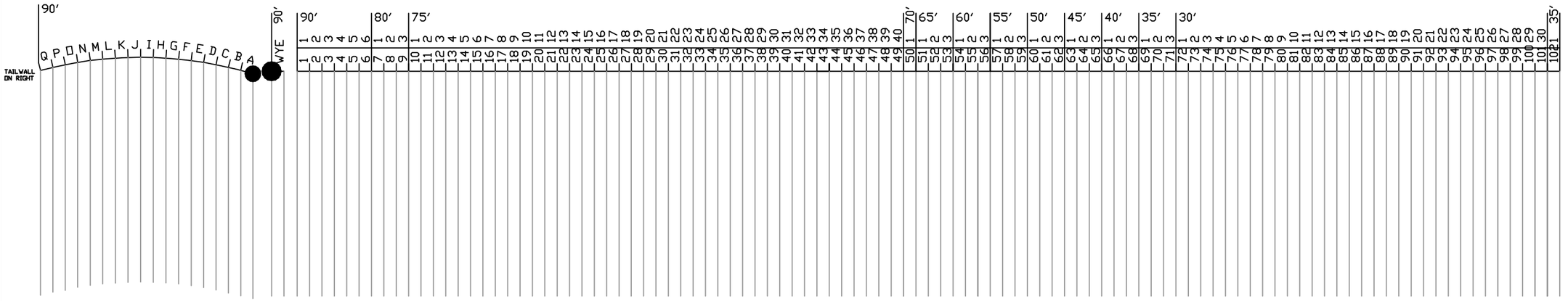
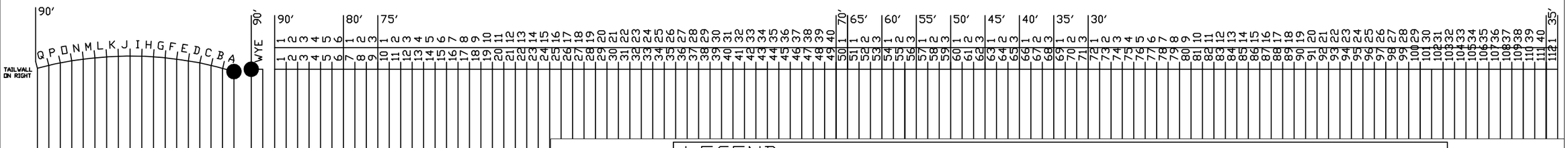
NE 52

EXISTING

NTS



PLAN



LEGEND

- 75′ — Sheet length
- Sheet # in series
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- 8/3 - RV — ICRC QA; DATE PULLED (LAST UPDATE 9/1)
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- Damage observed and recorded by West*
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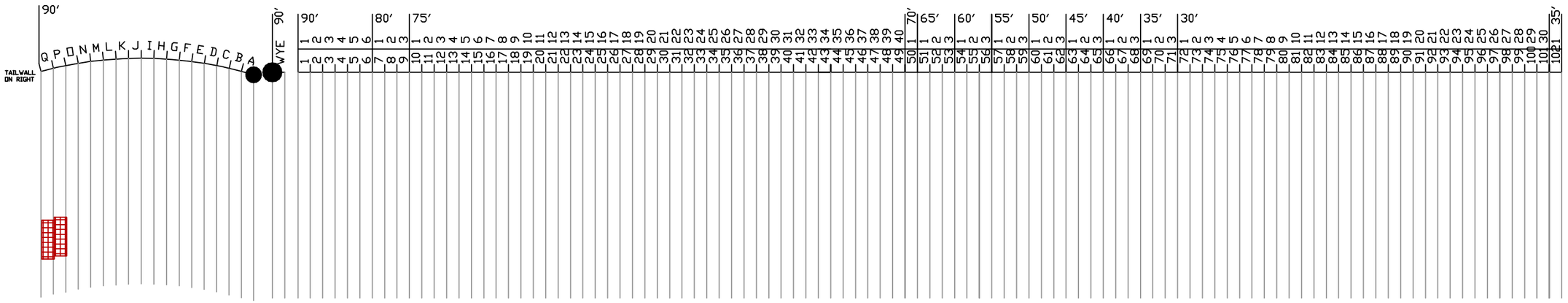
NE 53

EXISTING NTS



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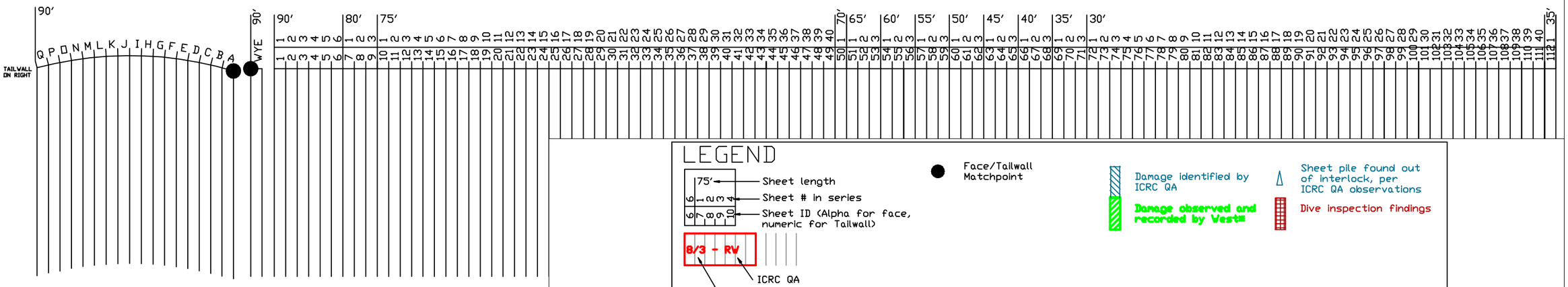

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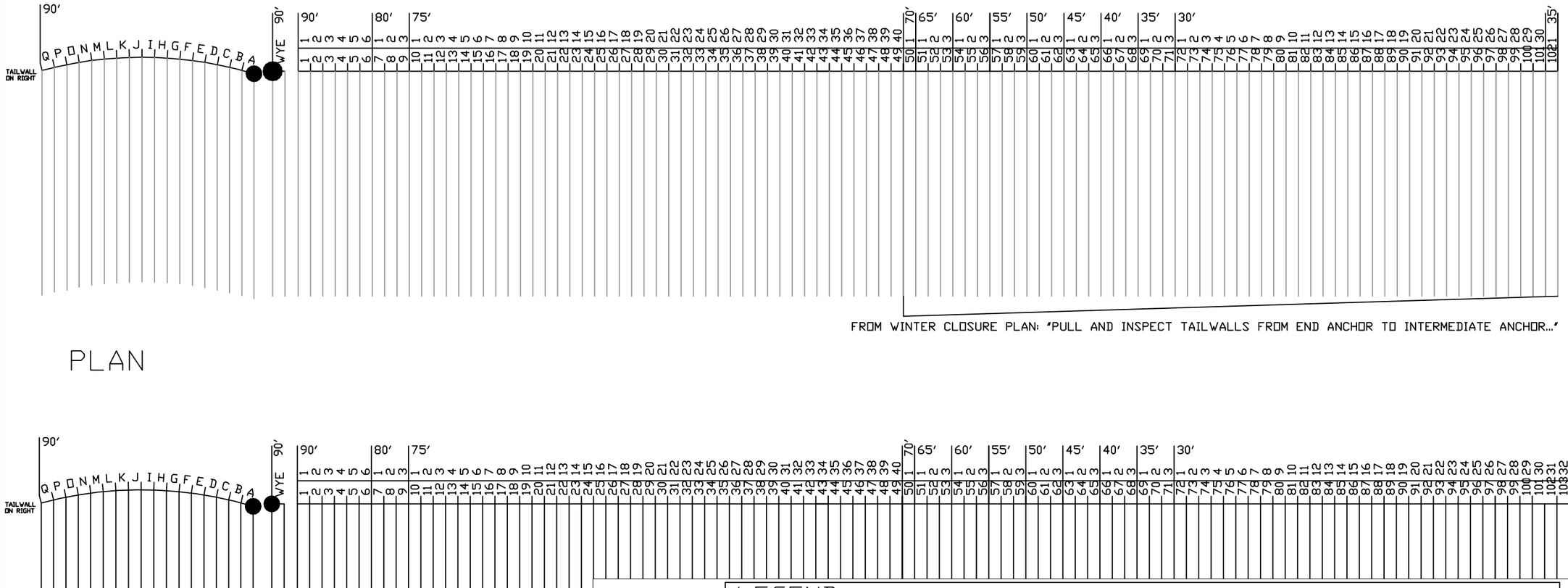
NE 54

EXISTING

NTS



PLAN

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NE 55

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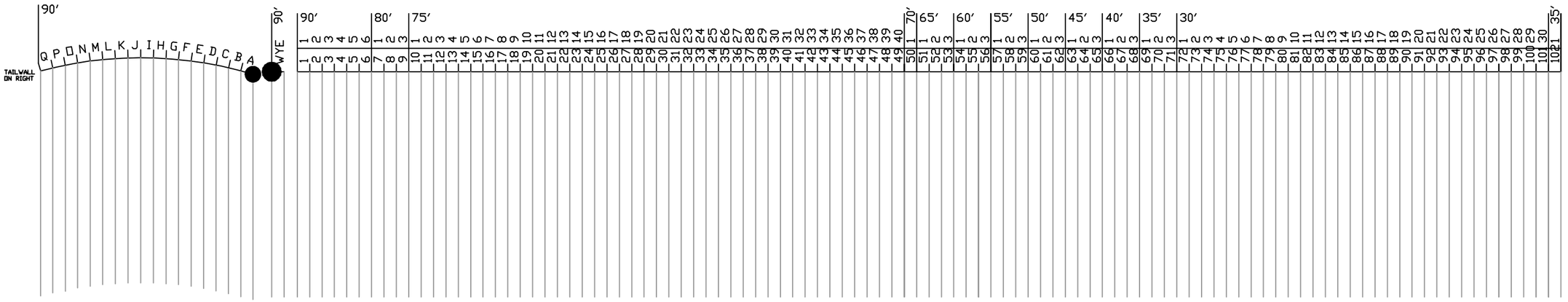
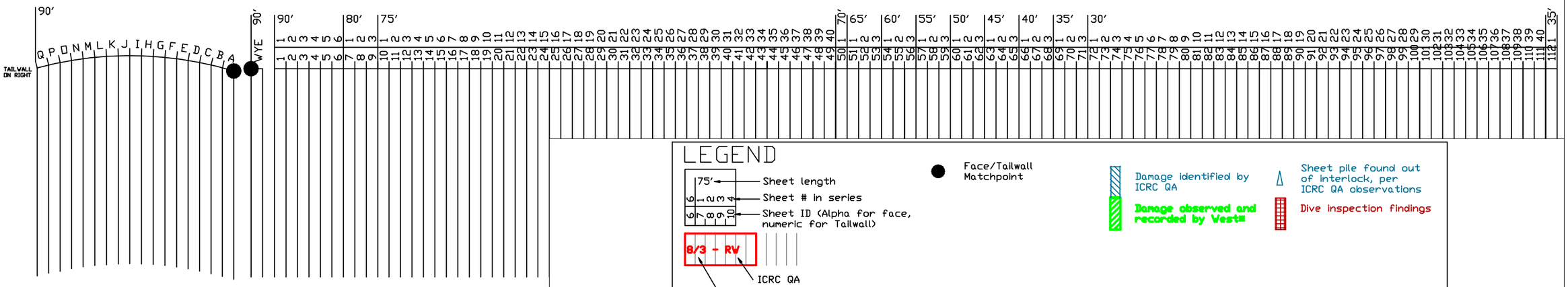


PLAN



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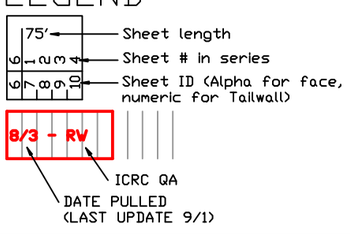

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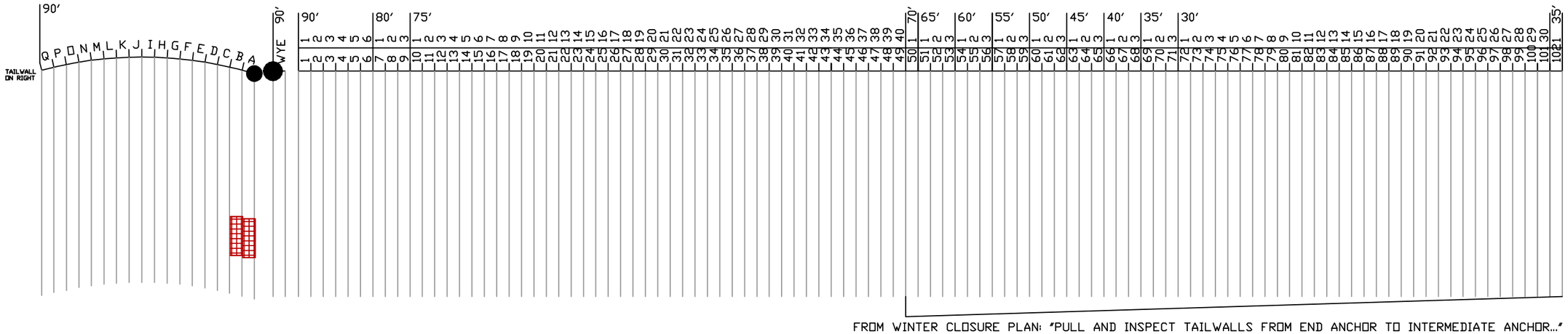
NE 56

EXISTING NTS



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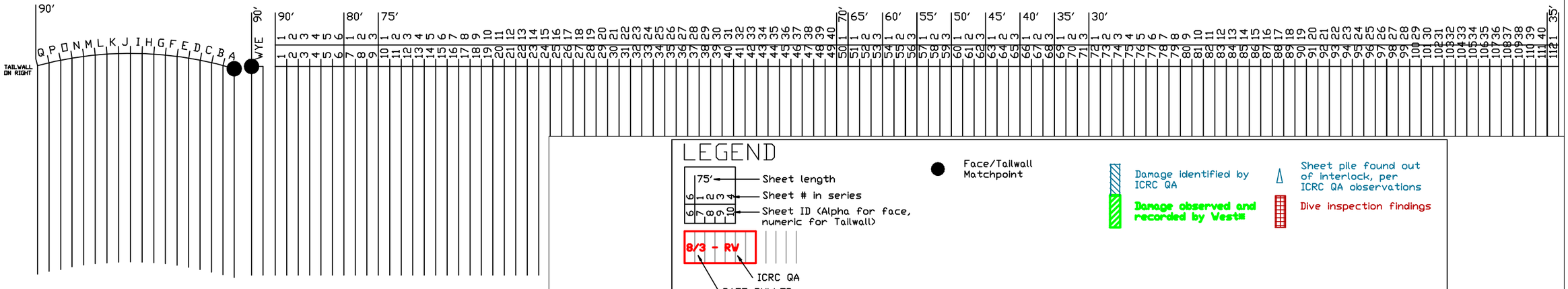
PLAN



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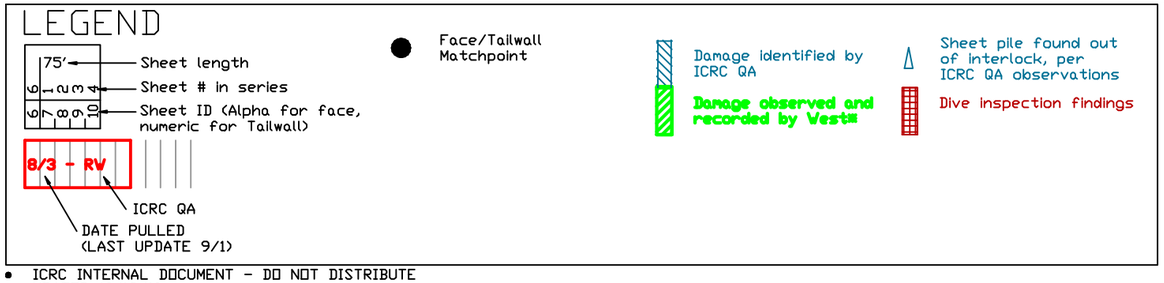

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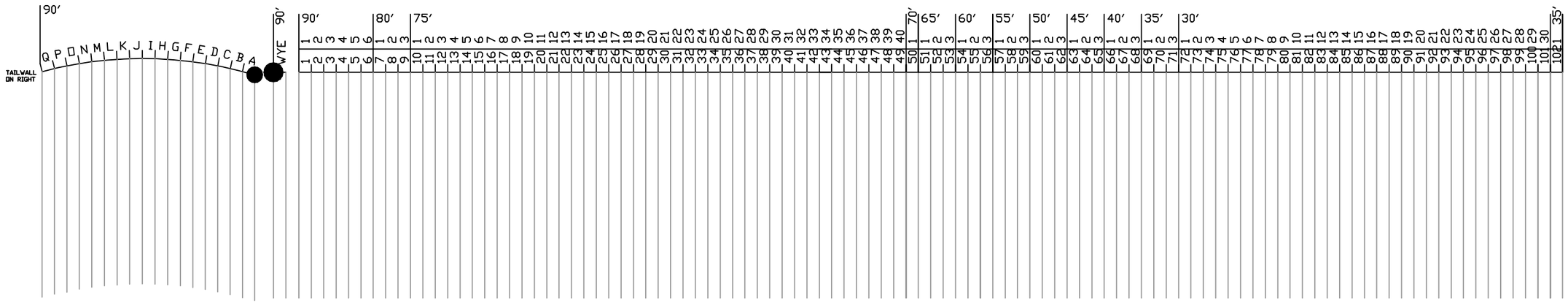
NE 57

EXISTING NTS



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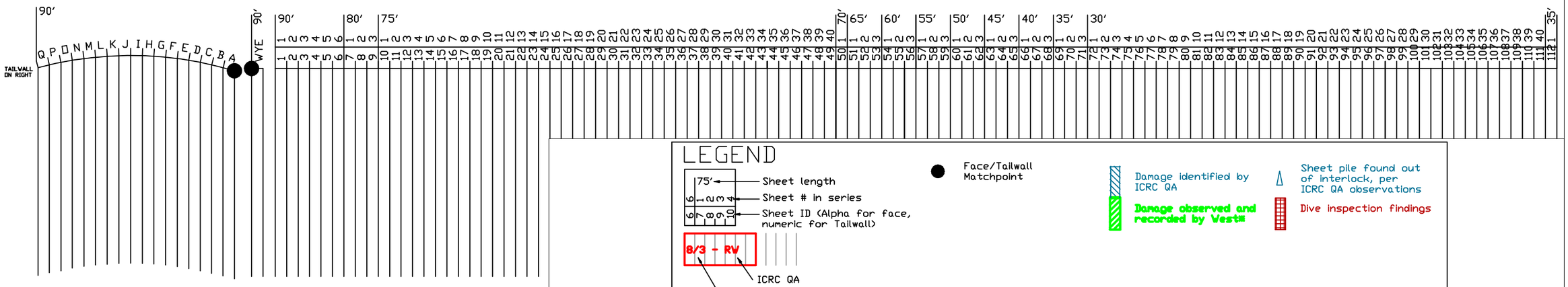

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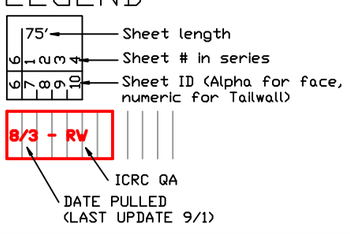

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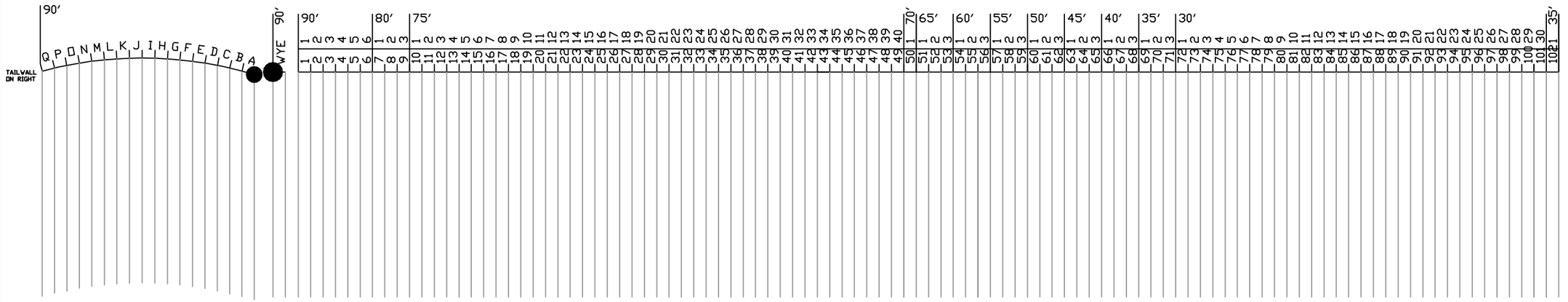
NE 58

EXISTING

NTS



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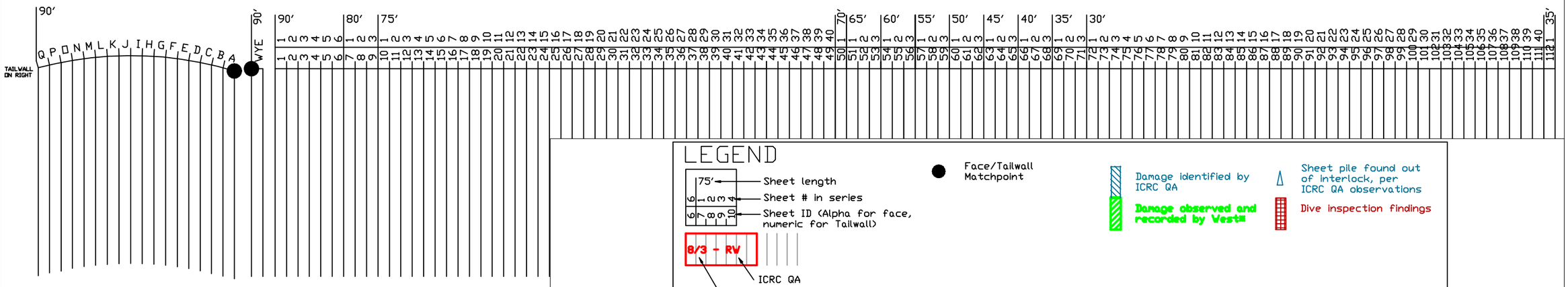

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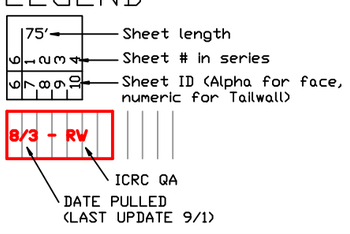

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NE 59

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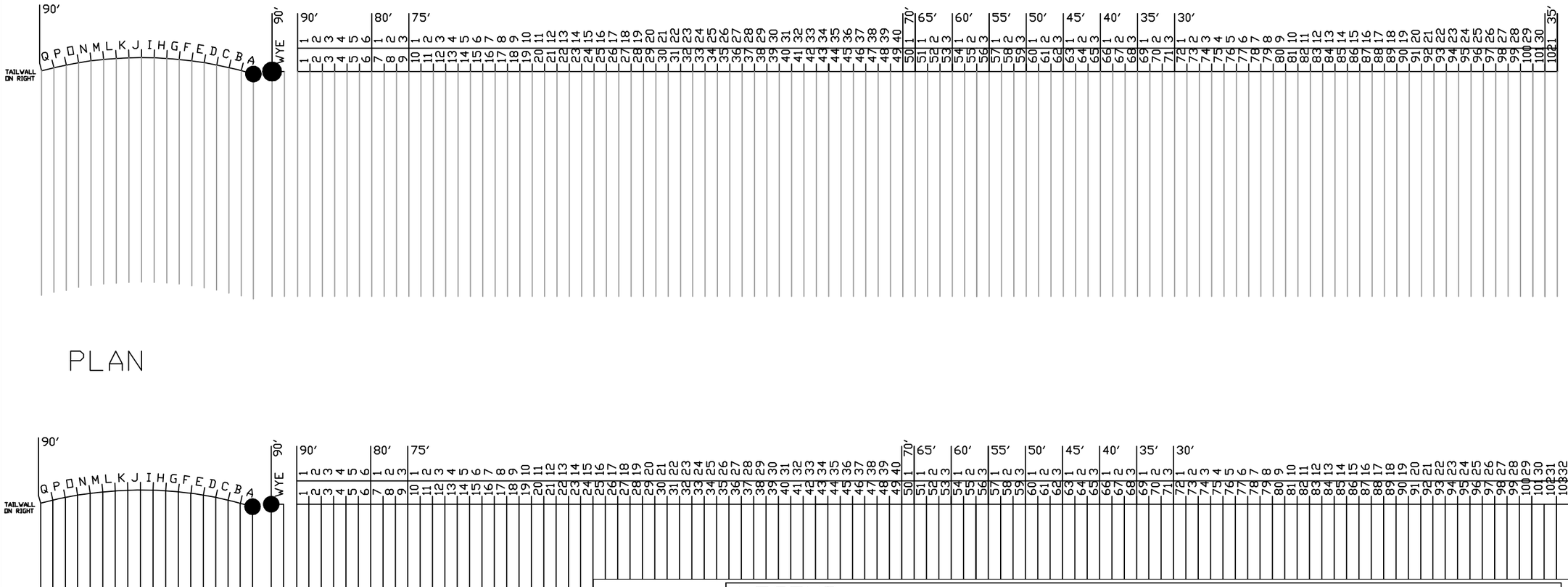
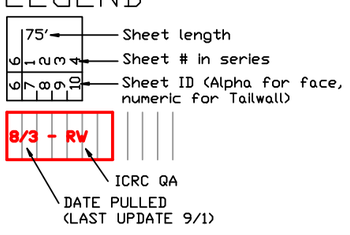


PLAN

LEGEND



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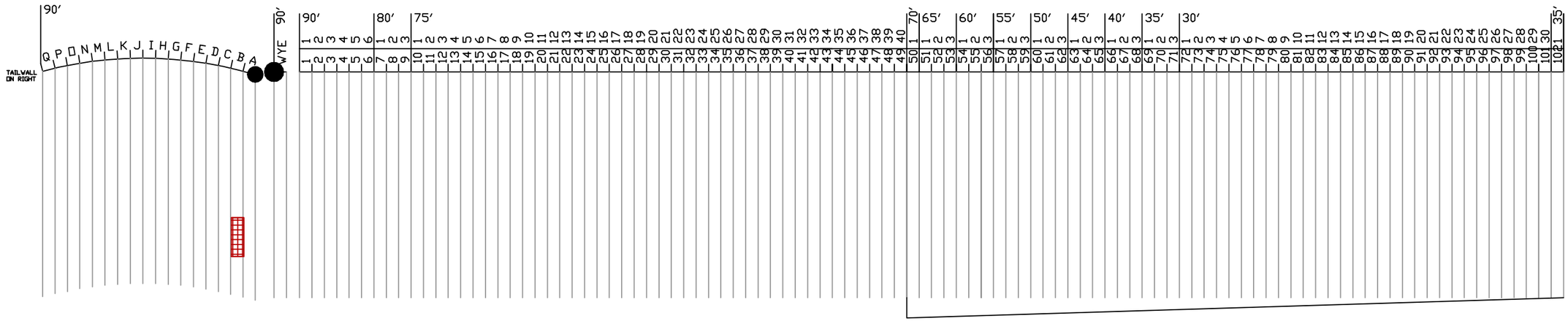
NE 60

EXISTING

NTS



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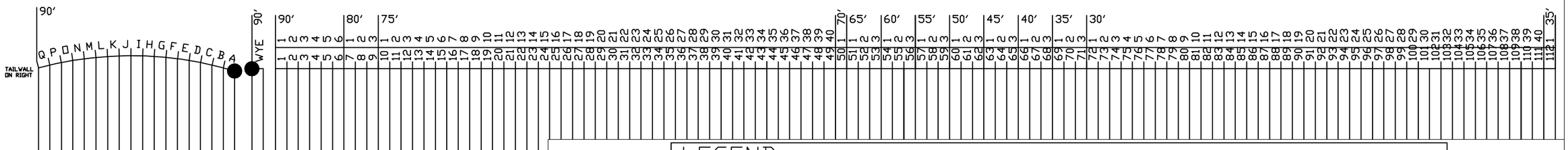

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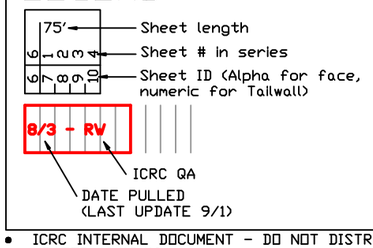

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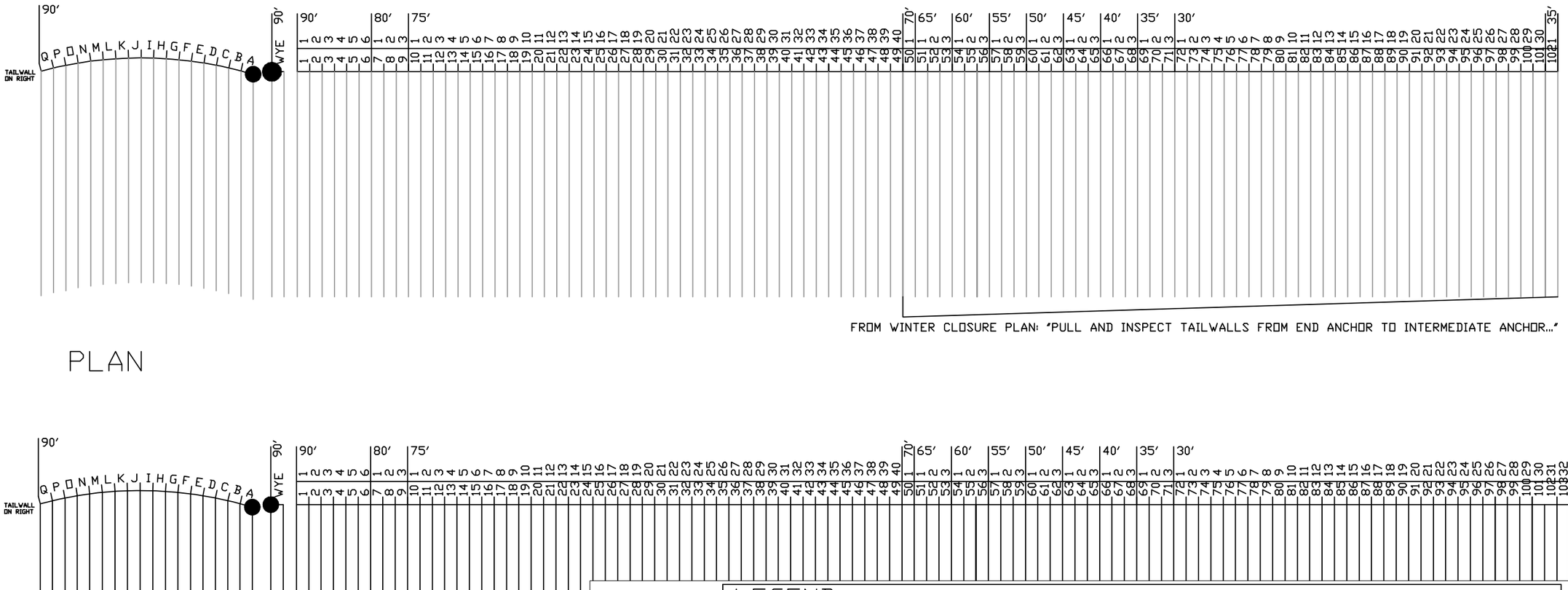
NE 61

EXISTING

NTS



PLAN

LEGEND

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- Sheet # in series
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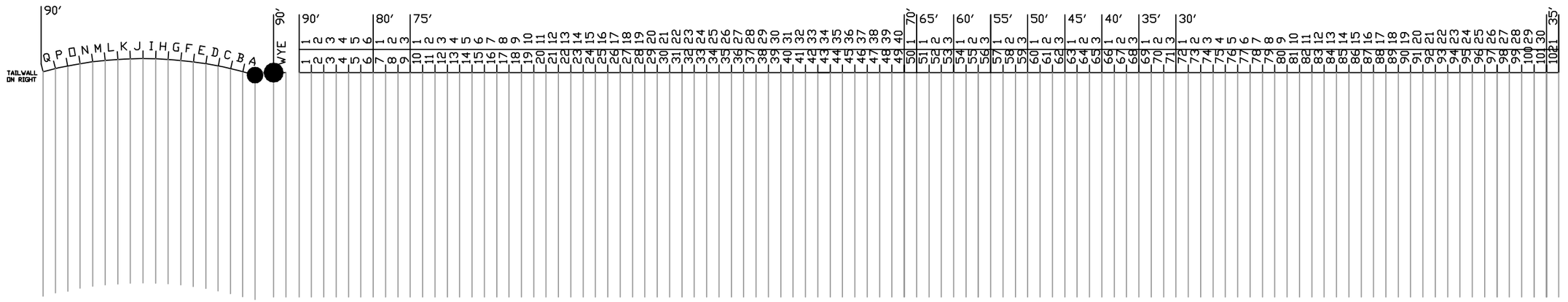
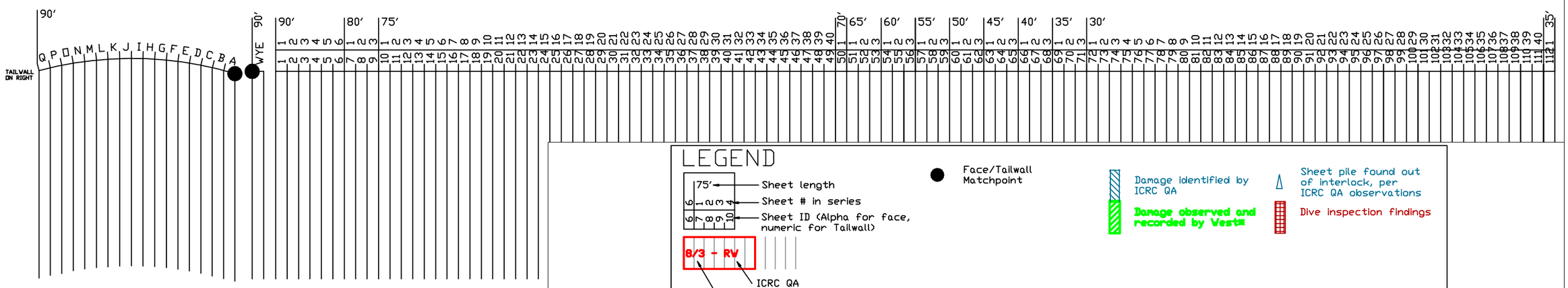
NE 62

EXISTING

NTS



PLAN



LEGEND

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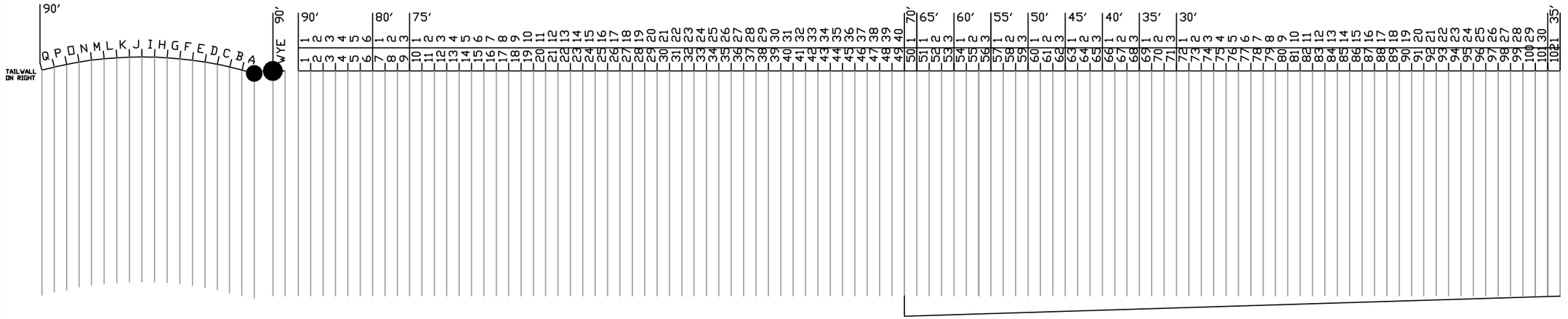
NE 63

EXISTING NTS



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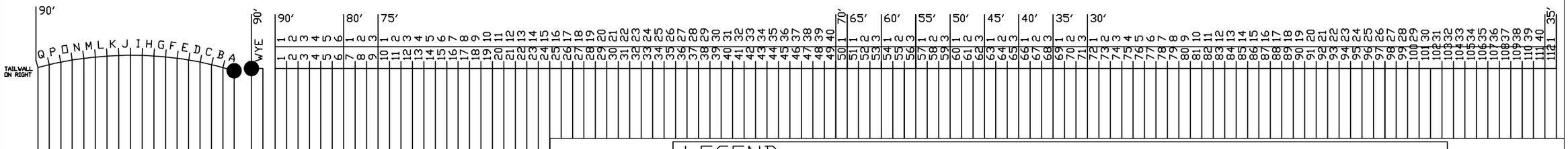

LEGEND

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NE 64

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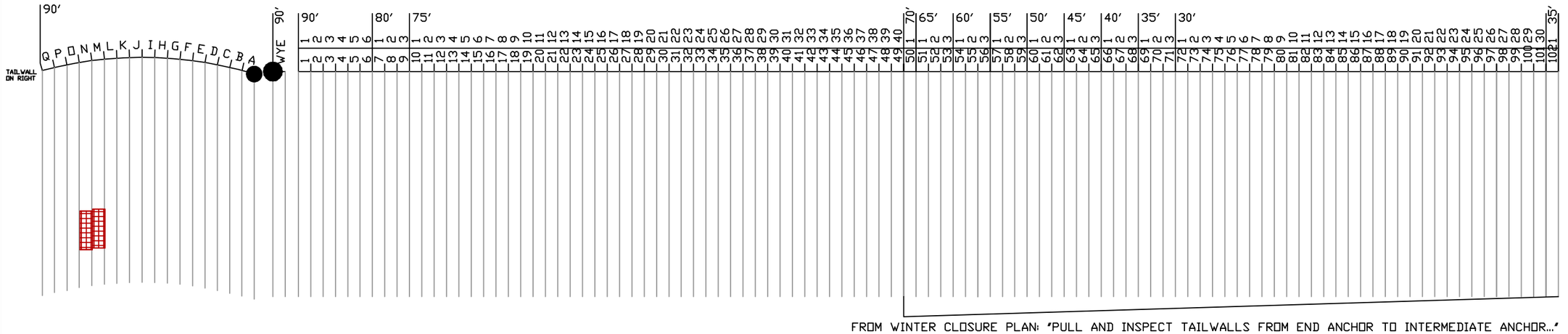

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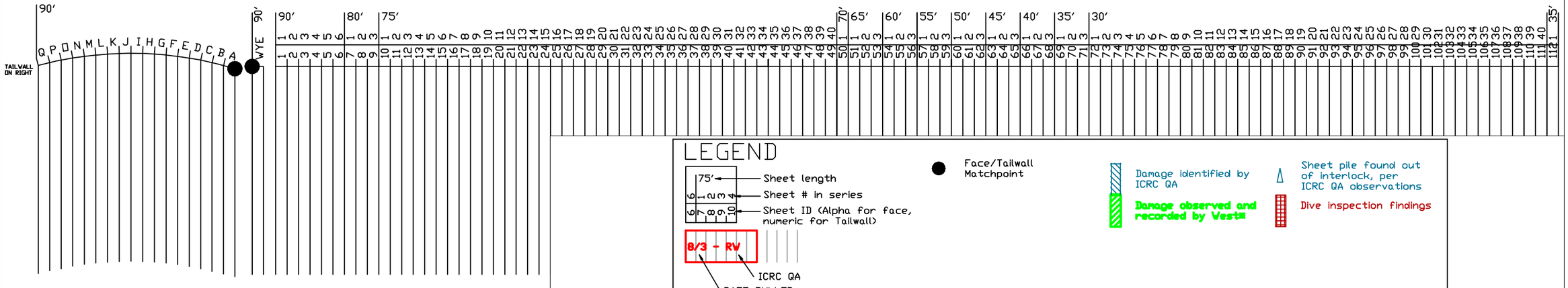
PLAN



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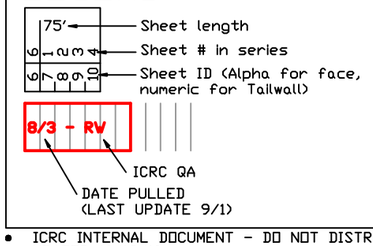

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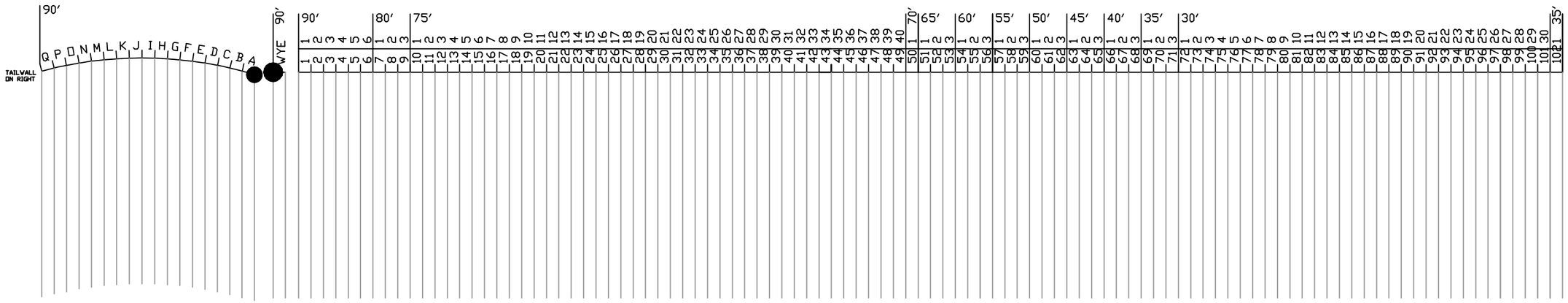
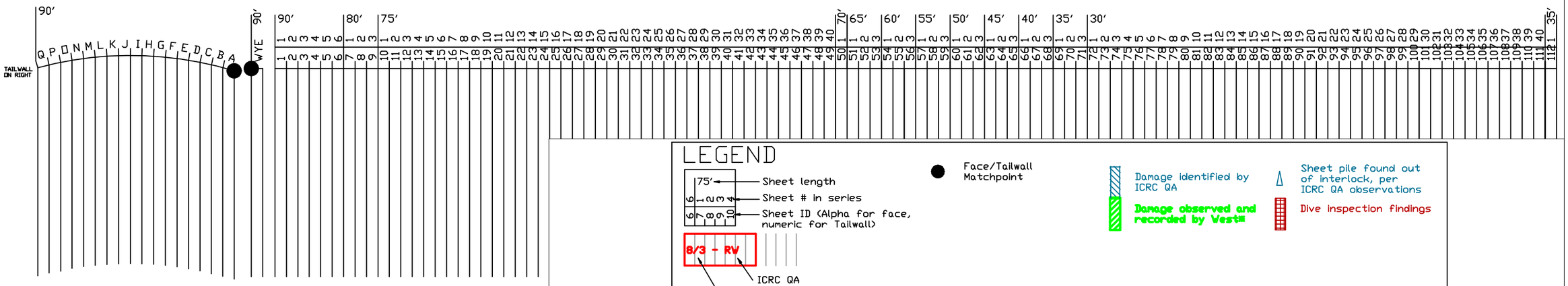
- West data from West cell by cell drawings, courtesy of West.
- ICRC observation data obtained from ICRC 'Drive/Pull Summary Log' updated 09/30/2010.

NE 65

EXISTING NTS



PLAN



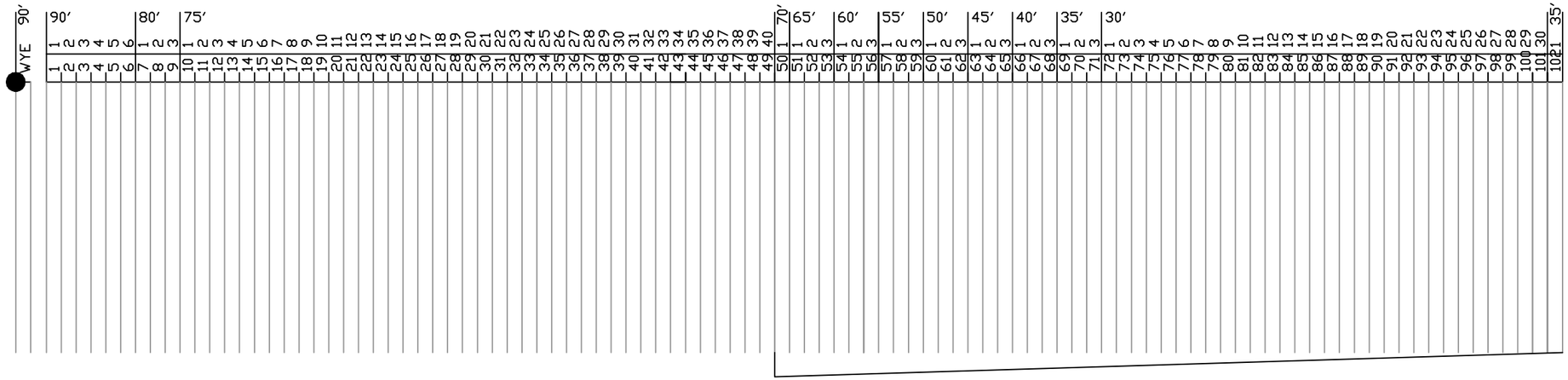
LEGEND

- 75′ — Sheet length
- Sheet # in series
- Sheet ID (Alpha for face, numeric for Tailwall)
- 8/3 - RV — ICRC QA; DATE PULLED (LAST UPDATE 9/1)
- Face/Tailwall Matchpoint
- Damage identified by ICRC QA
- Damage observed and recorded by West*
- Sheet pile found out of interlock, per ICRC QA observations
- Dive inspection findings

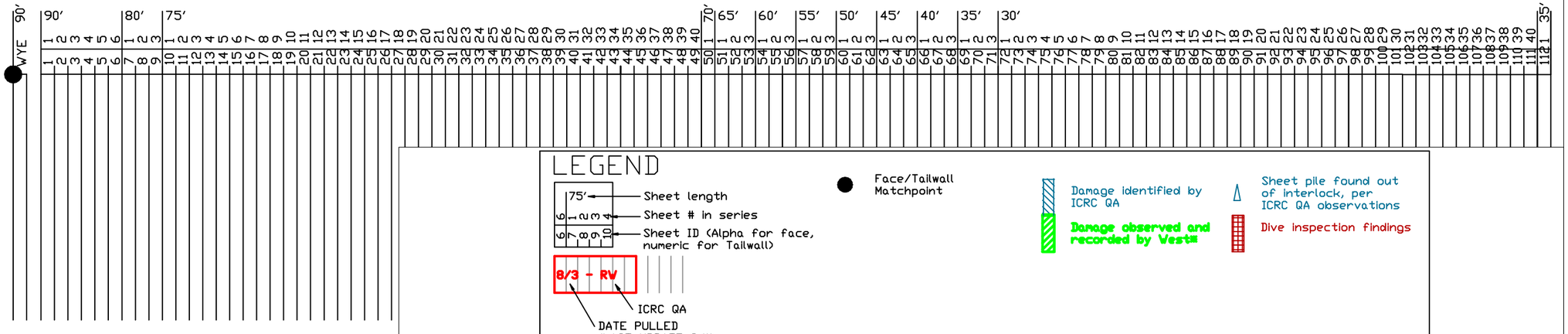
- ICRC INTERNAL DOCUMENT - DO NOT DISTRIBUTE
- UPATED 10/12/10
- * Data obtained courtesy of West Construction, final determination of damage to be made by ICRC based on multiphase QA inspections.
- West data from West cell by cell drawings, courtesy of West.
- ICRC observation data obtained from ICRC 'Drive/Pull Summary Log' updated 09/30/2010.

NE 65/66 (BK) TAILWALL

EXISTING NTS



PLAN



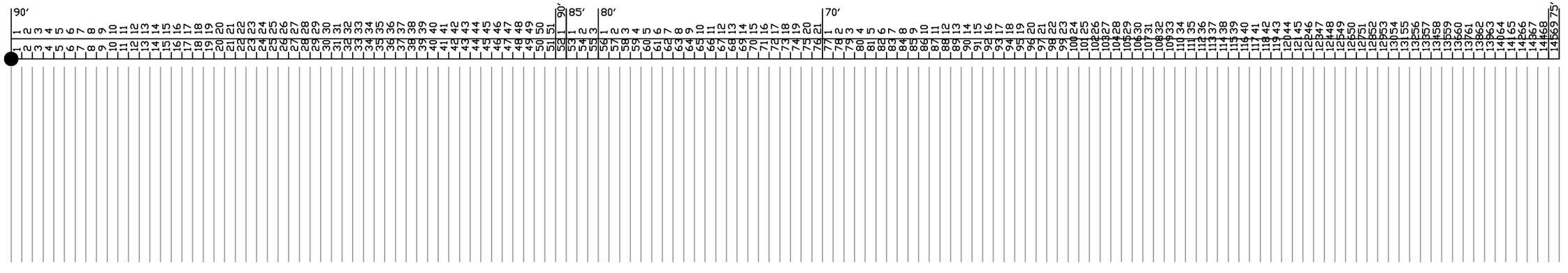
LEGEND

- 75′ — Sheet length
- 6 1 2 3 4 — Sheet # in series
- 6 7 8 9 10 — Sheet ID (Alpha for face, numeric for Tailwall)
- 8/3 - RV — ICRC QA; DATE PULLED (LAST UPDATE 9/1)
- Face/Tailwall Matchpoint
- Damage identified by ICRC QA
- Damage observed and recorded by West*
- Sheet pile found out of interlock, per ICRC QA observations
- Dive inspection findings

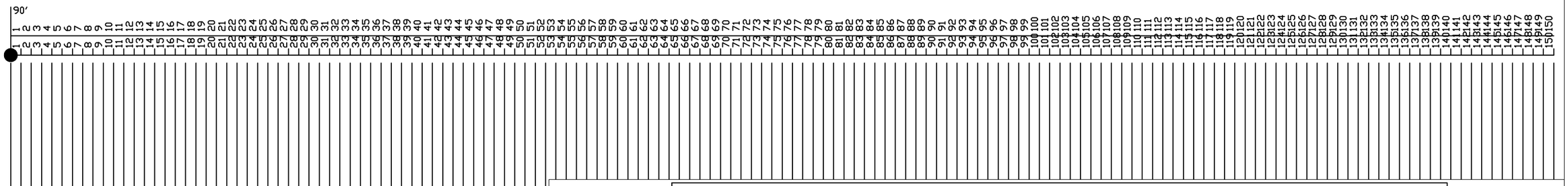
- ICRC INTERNAL DOCUMENT - DO NOT DISTRIBUTE
- UPATED 10/12/10
- * Data obtained courtesy of West Construction, final determination of damage to be made by ICRC based on multiphase QA inspections.
- West data from West cell by cell drawings, courtesy of West.
- ICRC observation data obtained from ICRC 'Drive/Pull Summary Log' updated 09/30/2010.

NE 66
EXISTING

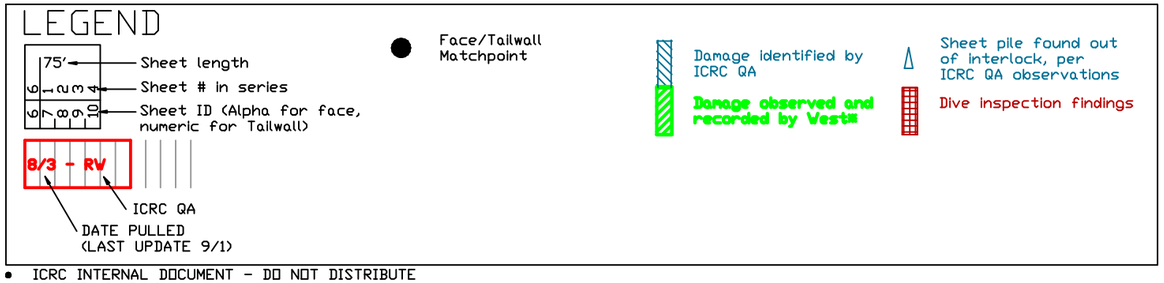
NTS



NE 66
PLAN?



LEGEND



- ICRC INTERNAL DOCUMENT - DO NOT DISTRIBUTE
- UPATED 10/12/10
- * Data obtained courtesy of West Construction, final determination of damage to be made by ICRC based on multiphase QA inspections.
- West data from West cell by cell drawings, courtesy of West.
- ICRC observation data obtained from ICRC 'Drive/Pull Summary Log' updated 09/30/2010.

Article VIII. Exhibit C

Post Dredging Subsidence

Subsidence Photos

Cell 60

Cell 60

Cell 60

Cell 66

Cell 66

Cell 66

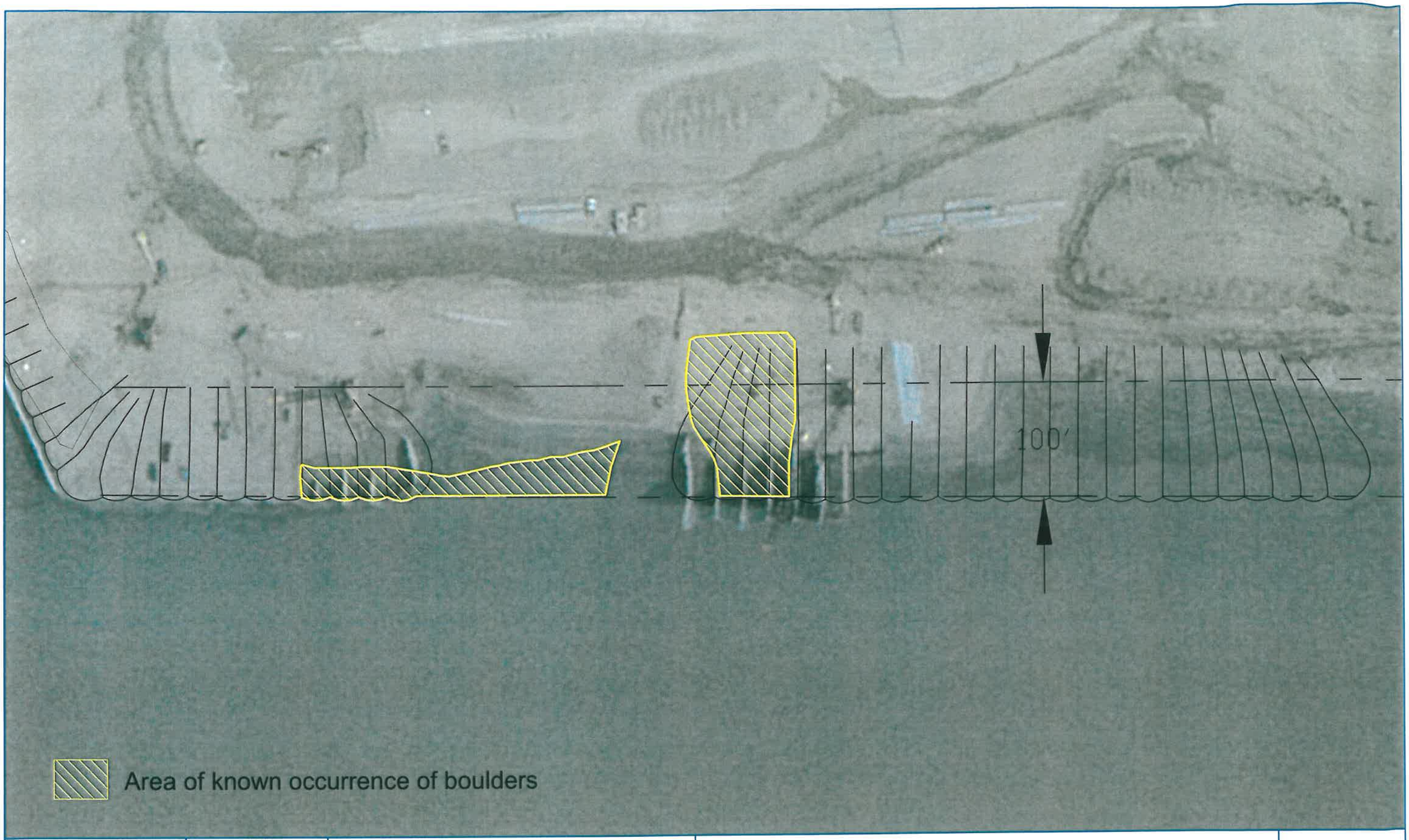
Subsidence Photos

Cell 63

Cell 53

Cell 27

Subsurface Rocks



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Port of Anchorage Intermodal Expansion Project

Estimated Locations of Armor Rock Obstructions

Sheet 1 of 1

10-7-10

Boulders Photos

Cell 11