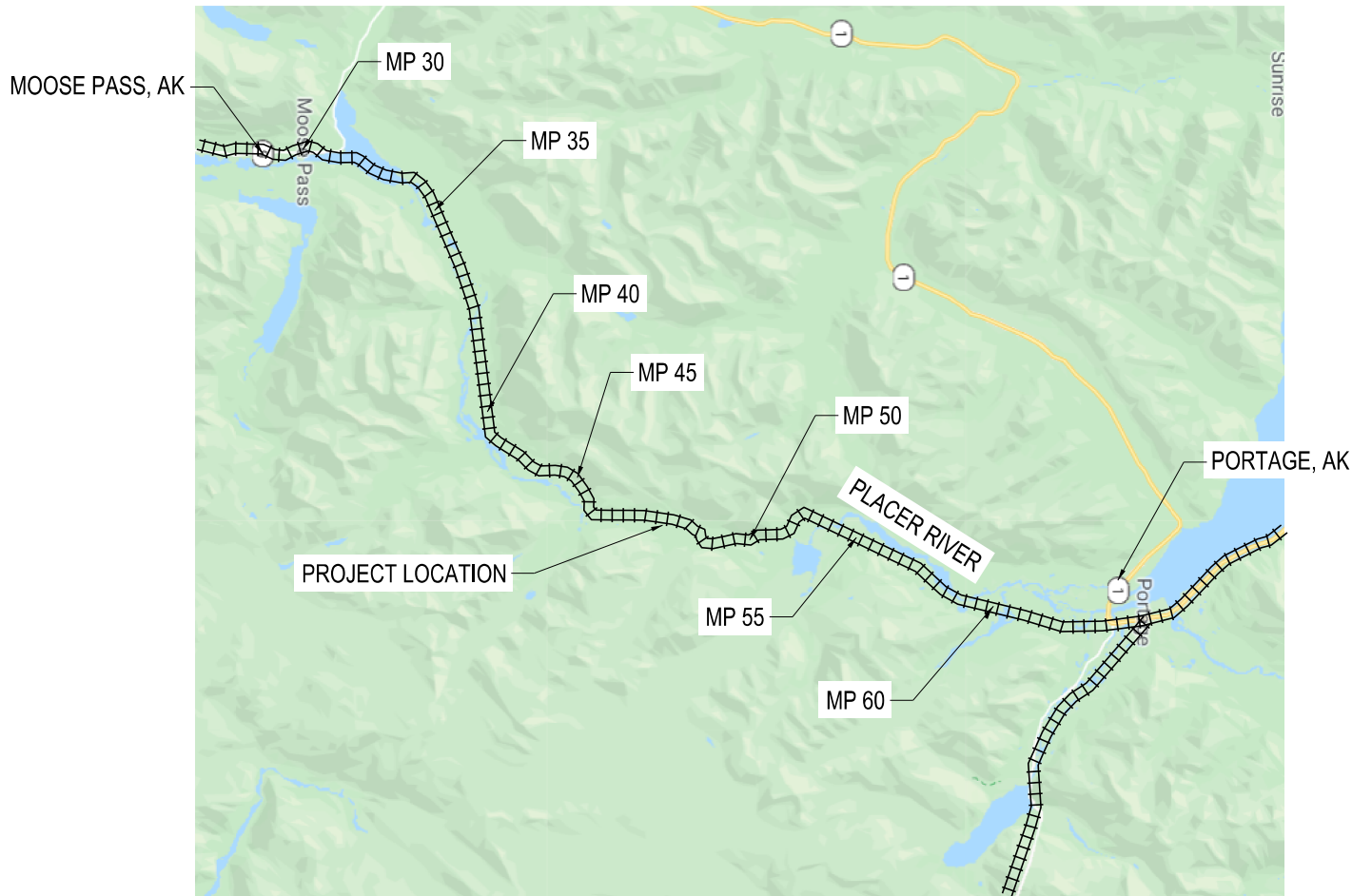
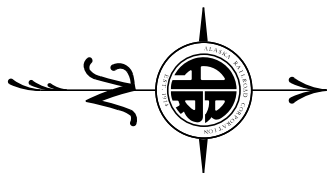




ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES

P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

MP 52.14
RETAINING STRUCTURES
SEPTEMBER 2020



INDEX OF SHEETS

DRAWING NUMBER	DESCRIPTION
1	TITLE SHEET
2	GENERAL NOTES
3	SITE PLAN
4	EXISTING CONDITIONS SOUTH WALL
5	FINAL CONDITIONS SOUTH WALL
6	TYPICAL DETAILS SOUTH WALL
7	CROSS SECTIONS SOUTH WALL (1 OF 2)
8	CROSS SECTIONS SOUTH WALL (2 OF 2)
9	EXISTING CONDITIONS NORTH WALL
10	FINAL CONDITIONS NORTH WALL
11	TYPICAL DETAILS NORTH WALL
12	CROSS SECTIONS NORTH WALL
13	WALL DETAILS
14	DRAINAGE PLAN SOUTH WALL
15	DRAINAGE PLAN NORTH WALL

If this sheet is smaller than 22" x 34",
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ALASKA RAILROAD CORPORATION			
ENGINEERING SERVICES			
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500			
PROJECT :			
MP 52.14			
RETAINING WALL REPLACEMENT			
TITLE:			
TITLE SHEET			
DESIGNED BY:	- KAG	SCALE:	
DRAWN BY:	- NBS	H: AS NOTED	
CHECKED BY:	- LWH	V: AS NOTED	
APPROVED BY:	- AWK	DATE:	09/05/20
			AFE NO.:
			ACAD FILE:
			DWG NO.
			1 OF 15

PROJECT NOTES

- 1. ALL WORK MUST BE DONE IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE, AND LOCAL LAWS, INCLUDING ASSOCIATED REGULATIONS AND PROJECT PERMIT STIPULATIONS.
- 2. CONTRACT WORK SHALL BE PERFORMED PER CURRENT AREMA MANUAL FOR RAILWAY ENGINEERING (MRE) OR AS MODIFIED BY THE SPECIFICATIONS.
- 3. ALL WORK SHALL COMPLY WITH APPLICABLE LOCAL AND STATE CODES AND ALL OTHER REGULATIONS OF AGENCIES HAVING JURISDICTION.
- 4. THE CONTRACTOR SHALL COORDINATE ALL WORK WITH ALASKA RAILROAD CORPORATION.
- 5. AN ESTIMATED THREE (3) WEEK WINDOW OF TIME IS AVAILABLE FOR CONSTRUCTION. THE CONTRACTOR SHALL PLAN AND COORDINATE WORK TO BE COMPLETED WITHIN THIS TIME FRAME.
- 6. ALL TRACK WORK IS TO BE PERFORMED BY ALASKA RAILROAD CORPORATION FORCES.
- 7. COORDINATES ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY, ESTABLISHING SURVEY CONTROL SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
- 8. CONSTRUCTION ACTIVITIES SHALL NOT DISRUPT RAILROAD OPERATIONS AND SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS. ALL WORK TO BE SCHEDULED WITH ACCORDANCE WITH THE CONSTRUCTION SCHEDULE AND CONSTRUCTION STAGING PLANS.
- 9. DISPOSAL OF ALL MATERIALS SHALL BE IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS.
- 10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL EXISTING CONDITIONS, DIMENSIONS AND ELEVATIONS AT THE SITE AND MUST ADAPT THEIR WORK TO ACTUAL CONDITIONS IN A MANNER APPROVED BY THE ENGINEER.
- 11. SHALLOW OR EXPOSED BEDROCK IS PRESENT THROUGHOUT THE PROJECT AREA. MECHANICAL ROCK EXCAVATION OR BLASTING NECESSARY TO COMPLETE PROJECT EXCAVATIONS IS SUBSIDIARY TO PAY ITEM 3.
- 12. ALTERATIONS OF CONSTRUCTION PLANS AND DETAILS IS NOT PERMITTED WITHOUT EXPRESS WRITTEN PERMISSION OF ALASKA RAILROAD CORPORATION CHIEF ENGINEER.
- 13. DESIGN LIVE LOAD IS COOPER E-80 PLUS IMPACT FOR EQUIPMENT WITHOUT HAMMER BLOW PER THE 2020 AREMA MRE.
- 14. UTILITY LOCATIONS SHOWN ON THESE PLANS MAY NOT BE CORRECT OR COMPLETE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY UTILITY LOCATIONS. THE CONTRACTOR SHALL COORDINATE CONSTRUCTION ACTIVITIES WITH THE RESPECTIVE UTILITY COMPANIES.
- 15. ALL STRUCTURAL STEEL TO BE ASTM A709 GRADE 50 UNLESS OTHERWISE NOTED.
- 16. ALL STEEL SHEET PILE SHALL BE A572 GRADE 50 UNLESS OTHERWISE NOTED.
- 17. ALL STRUCTURAL STEEL TO BE HOT-DIP GALVANIZED.
- 18. ANCHOR RODS SHALL BE THREADED RODS MEETING THE CURRENT REQUIREMENTS OF ASTM A722 SPECIFICATIONS GRADE 150.
- 19. ALL STRUCTURAL HARDWARE, INCLUDING ANCHOR RODS, PLATES, HEAVY HEX NUTS AND HARDENED WASHERS ARE TO BE GALVANIZED PER ASTM A-153 OR B-695.
- 20. CEMENT GROUT FOR ROCK ANCHORS SHALL HAVE A MINIMUM:
1 DAY COMPRESSIVE STRENGTH OF 4,500 PSI
7 DAY COMPRESSIVE STRENGTH OF 11,000 PSI
28 DAY COMPRESSIVE STRENGTH OF 15,000 PSI
PER ASTM C-942, PTI GS 4.4.2 AND MEET THE REQUIREMENT OF THE CEMENT GROUT SPECIAL PROVISIONS.
- 21. ALL CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4,000 PSI.
- 22. CONCRETE SURFACE SEALER SHALL BE APPLIED TO ALL EXPOSED SURFACES OF CONCRETE.
- 23. THE RETAINING WALL WAS DESIGNED FOR SEISMIC SITE CLASS B.
- 24. WELDING ELECTRODES FOR ARC WELDING SHALL MEET THE CURRENT REQUIREMENTS OF THE SPECIFICATIONS FOR MILD STEEL ARC-WELDING ELECTRODES SERIES E70, AWS 5.1, AND LOW HYDROGEN CLASSIFICATION FOR SMAW AND AWS 5.17 FOR SAW.
- 25. STRUCTURAL FASTENERS SHALL BE 7/8" DIAMETER ASTM A325 HIGH-STRENGTH BOLTS, UNLESS NOTED OTHERWISE, WHICH SHALL BE TIGHTENED USING THE TURN-OF-NUT METHOD TO OBTAIN A MINIMUM TENSION OF 39 KIPS. ALL OPEN HOLES SHALL BE 15/16" FOR 7/8" DIAMETER BOLTS, UNLESS OTHERWISE NOTED.



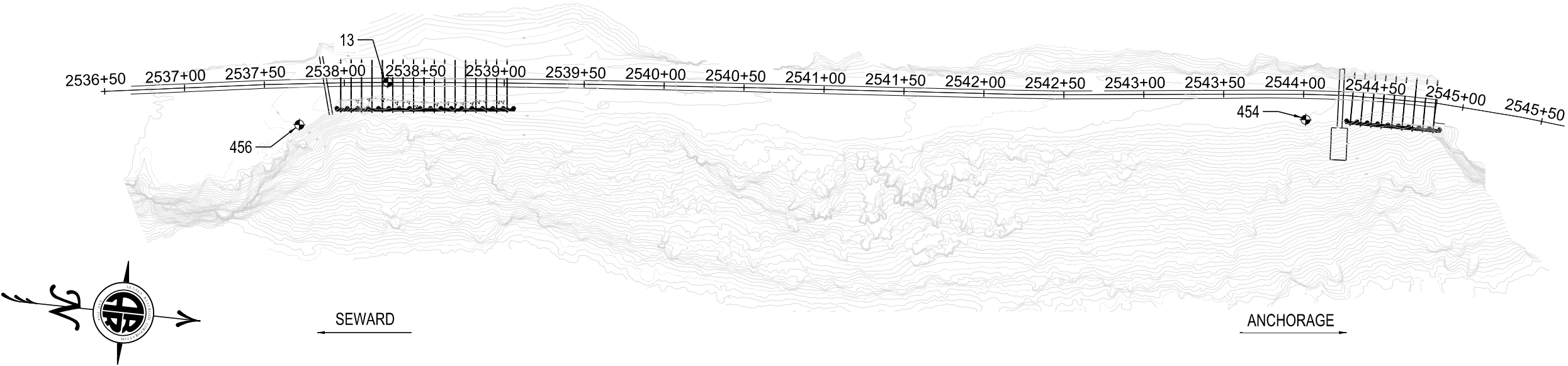
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REV.	DATE	BY	REVISION

			
ALASKA RAILROAD CORPORATION			
ENGINEERING SERVICES			
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500			
PROJECT :			
MP 52.14			
RETAINING WALL REPLACEMENT			
TITLE:			
GENERAL NOTES			
DESIGNED BY:	- KAG	SCALE:	AFE NO.:
DRAWN BY:	- NBS	H: AS NOTED	ACAD FILE:
CHECKED BY:	- L.J.H	V: AS NOTED	DWG NO.
APPROVED BY:	- AWK	DATE: 09/05/20	2 OF 15

NOTES:

- 1. HORIZONTAL AND VERTICAL DATUM IS ALASKA STATE PLANE ZONE 4, GEOID128 PER SERVBASE CONTROL.
- 2. TOPOGRAPHIC INFORMATION GATHERED JUNE 10TH, 2020.
- 3. CONTOURS SHOWN PER NOV. 2018 UAV DIGITAL SERVICE MODEL. ELEVATIONS SHOWN ARE TO THE TOP OF VEGETATION, BUILDINGS, CARS AND OTHER ELEVATED FEATURES.
- 4. CENTERLINE AND STATIONING PER ARRC CAD.



PLAN VIEW
SCALE 1" = 40'

2019 CONTROL POINT LIST

POINT	NORTHING	EASTING	STATION	OFFSET	ELEVATION	DESCRIPTION
13	2441958.59	1811059.59	2538+27.23	0.14 LT	358.58	SET PK
454	2442530.93	1811007.03	2544+1.59	15.81 RT	345.91	FND. YPC-RBR 8201
456	2441907.56	1811093.19	2537+71.31	25.60 RT	359.71	FND. YPC-RBR 8201



ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

PROJECT :
**MP 52.14
RETAINING WALL REPLACEMENT**

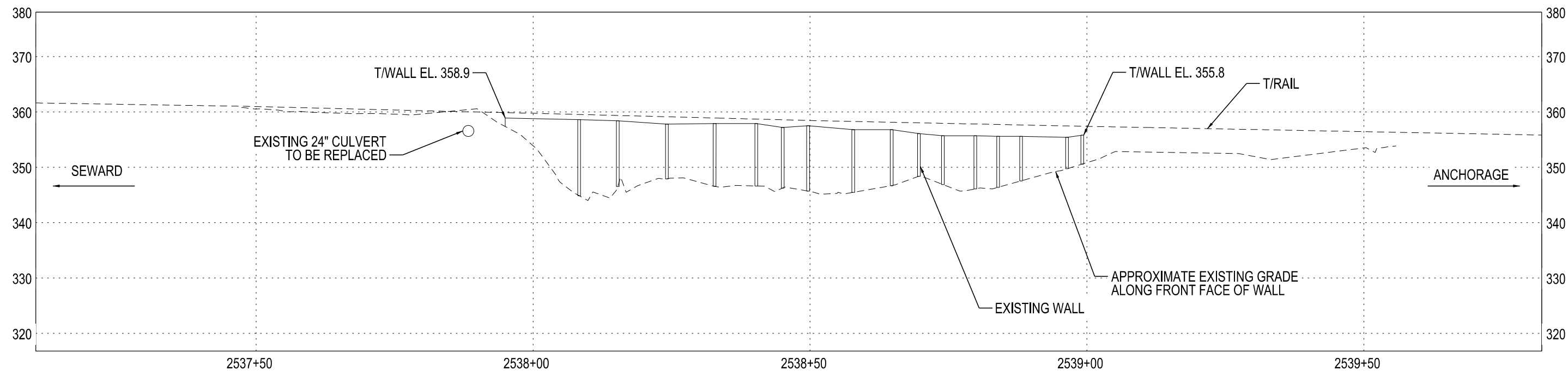
TITLE:
SITE PLAN

DESIGNED BY:	- KAG	SCALE:	H: AS NOTED	-	AFE NO.:
DRAWN BY:	- NBS	V: AS NOTED	ACAD FILE:		
CHECKED BY:	- LJH	DATE:	DWG NO.		
APPROVED BY:	- AWK	09/05/20	3 OF 15		

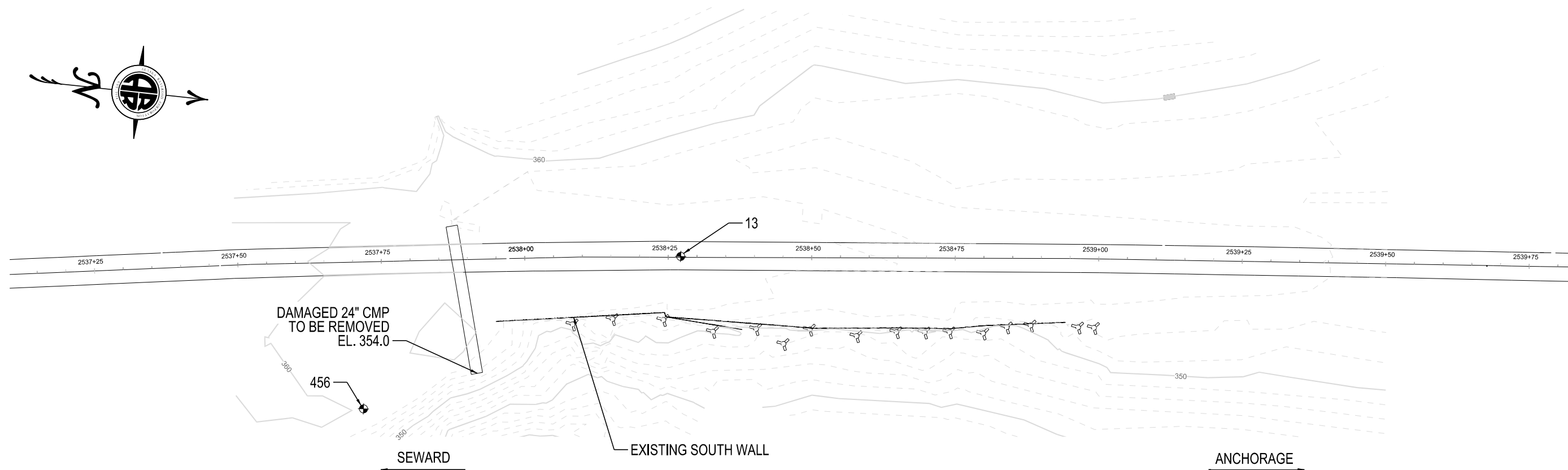
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PROFILE VIEW
SCALE 1" = 10'

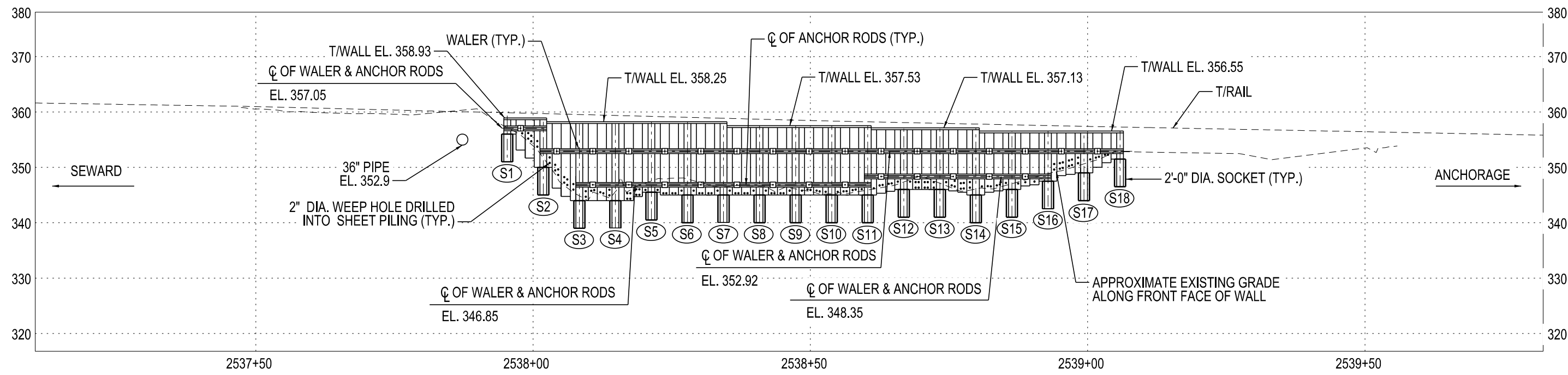


PLAN VIEW
SCALE 1" = 10'

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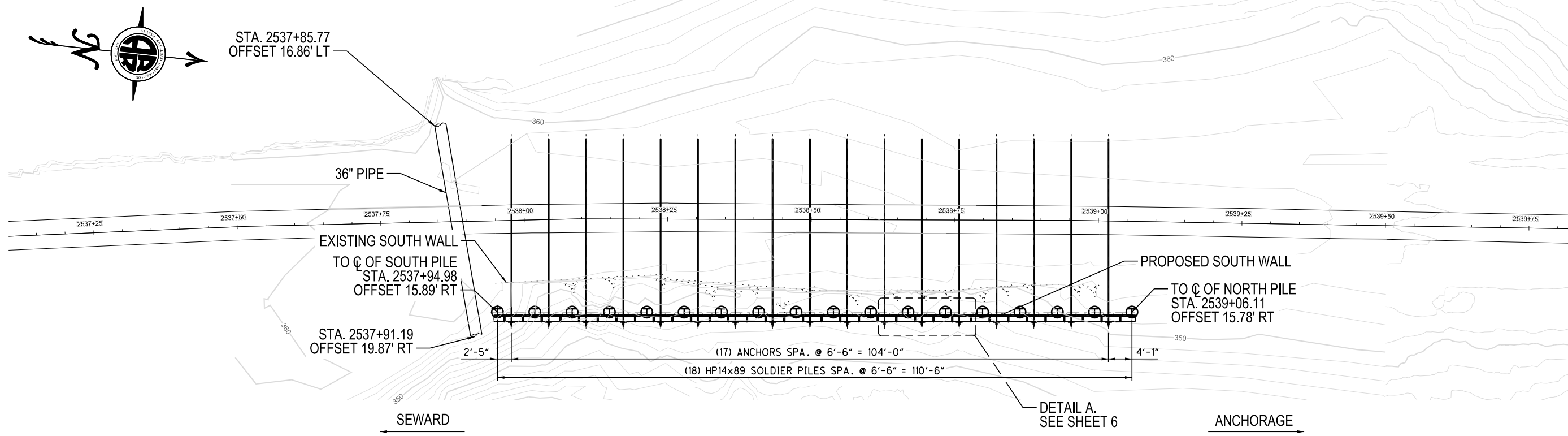
REV.	DATE	BY	REVISION

			
ALASKA RAILROAD CORPORATION			
ENGINEERING SERVICES			
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500			
PROJECT :			
MP 52.14			
RETAINING WALL REPLACEMENT			
TITLE:			
EXISTING CONDITIONS			
SOUTH WALL			
DESIGNED BY:	- KAG	SCALE:	AFE NO.:
DRAWN BY:	- NBS	H: AS NOTED	ACAD FILE:
CHECKED BY:	- LWH	V: AS NOTED	DWG NO.
APPROVED BY:	- AWK	DATE: 09/05/20	4 OF 15



PROFILE VIEW
SCALE 1" = 10'

KEY
(S#) = SOUTH WALL SOLDIER PILE DESIGNATION



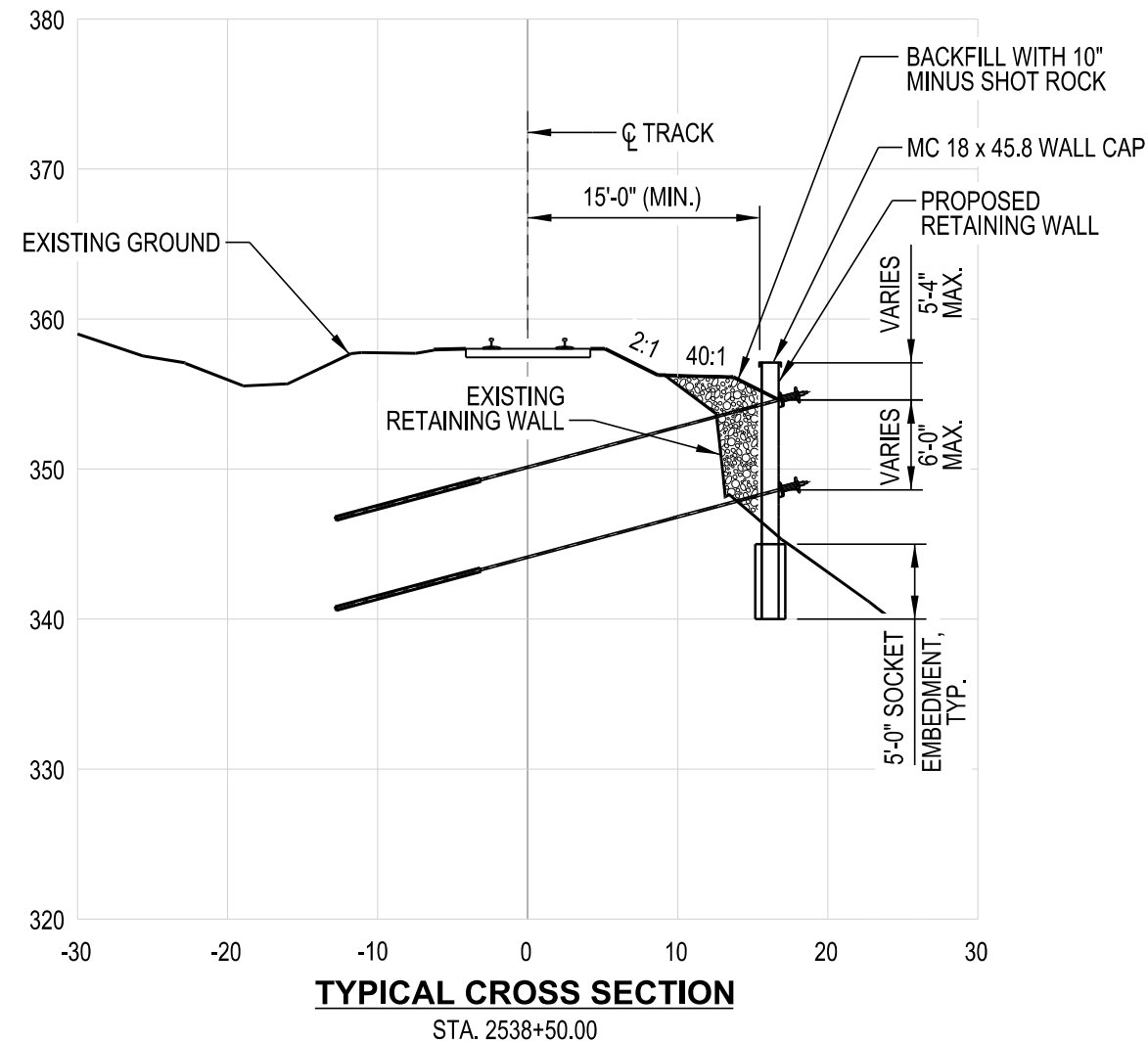
PLAN VIEW
SCALE 1" = 10'

NOTE
1. SEE SHEET 8/15 FOR SOUTH WALL SOLDIER PILE ELEVATIONS TABLE.

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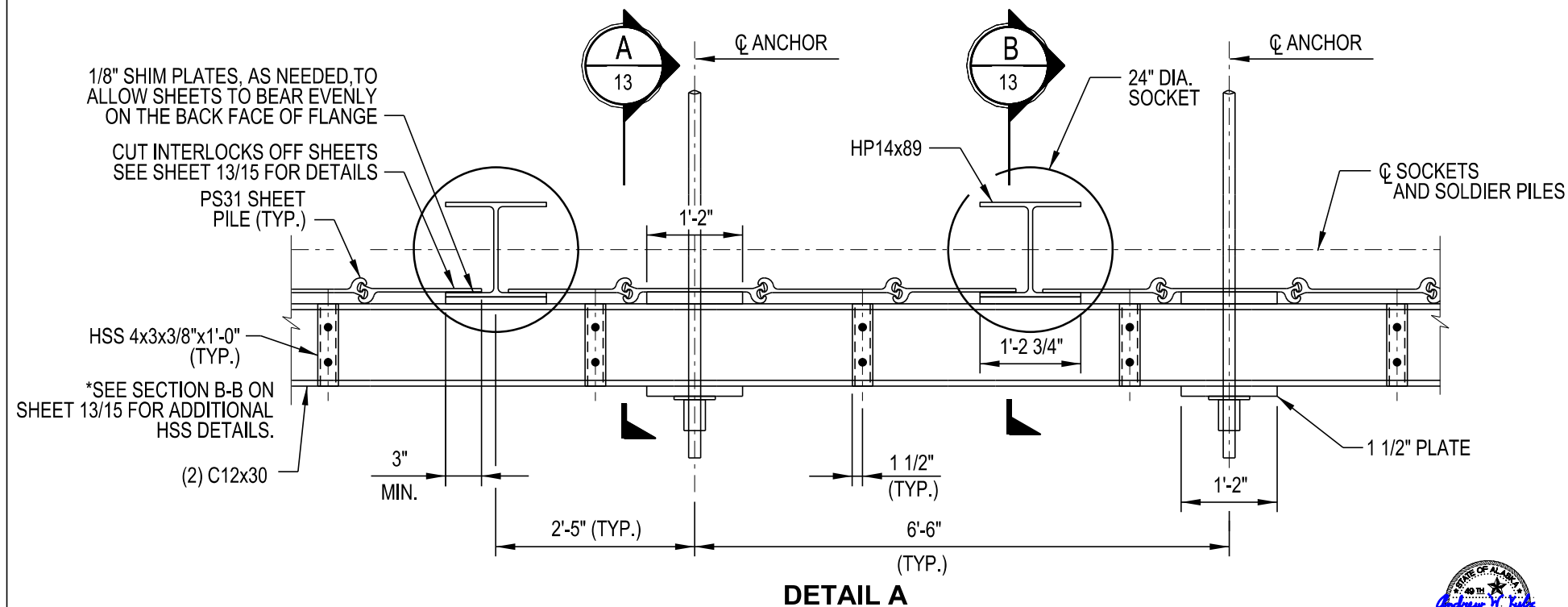


 ALASKA RAILROAD CORPORATION ENGINEERING SERVICES P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500			
PROJECT: MP 52.14 RETAINING WALL REPLACEMENT			
TITLE: FINAL CONDITIONS SOUTH WALL			
DESIGNED BY: - KAG	SCALE: H: AS NOTED V: AS NOTED	-	AFE NO.:
DRAWN BY: - NBS	CHECKED BY: - LWH		ACAD FILE:
CHECKED BY: - LWH	DATE: 09/05/20		DWG NO.
APPROVED BY: - AWK			5 OF 15



NOTES:

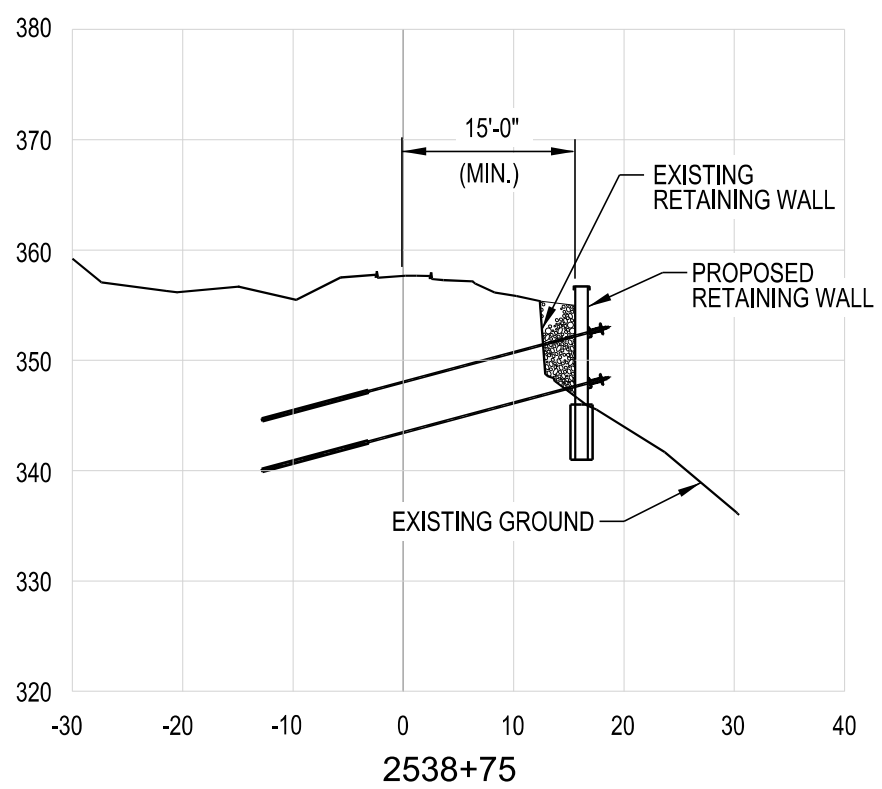
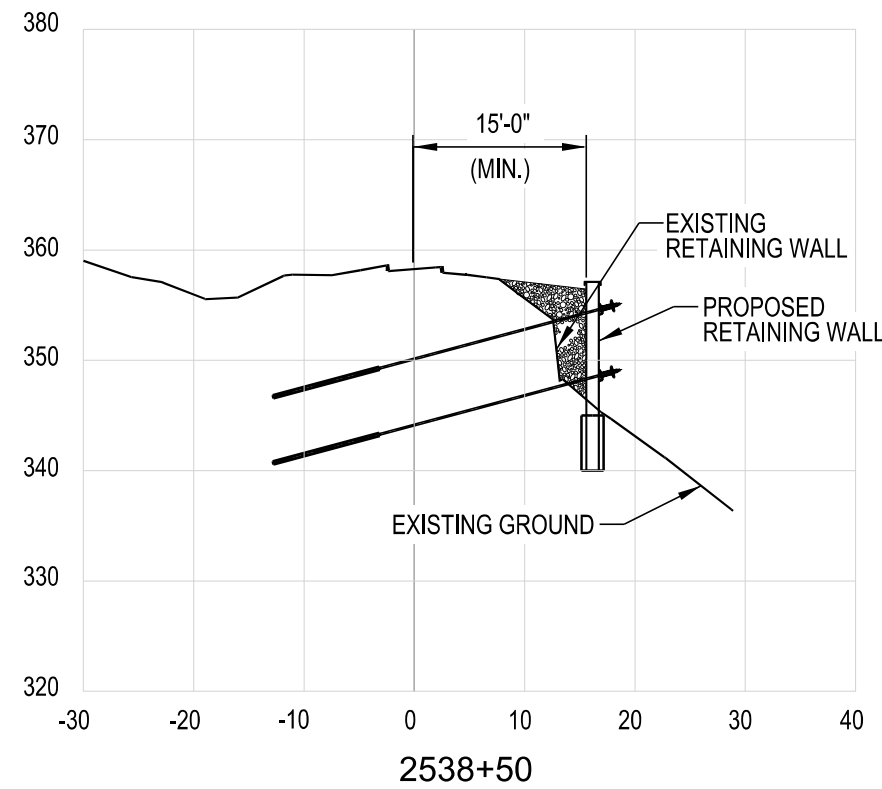
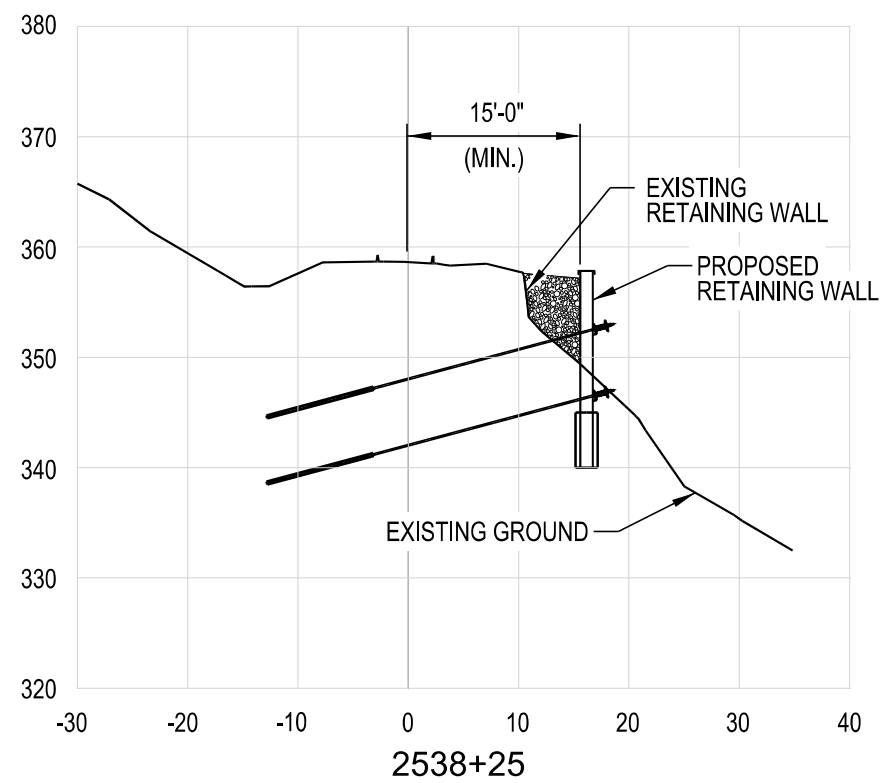
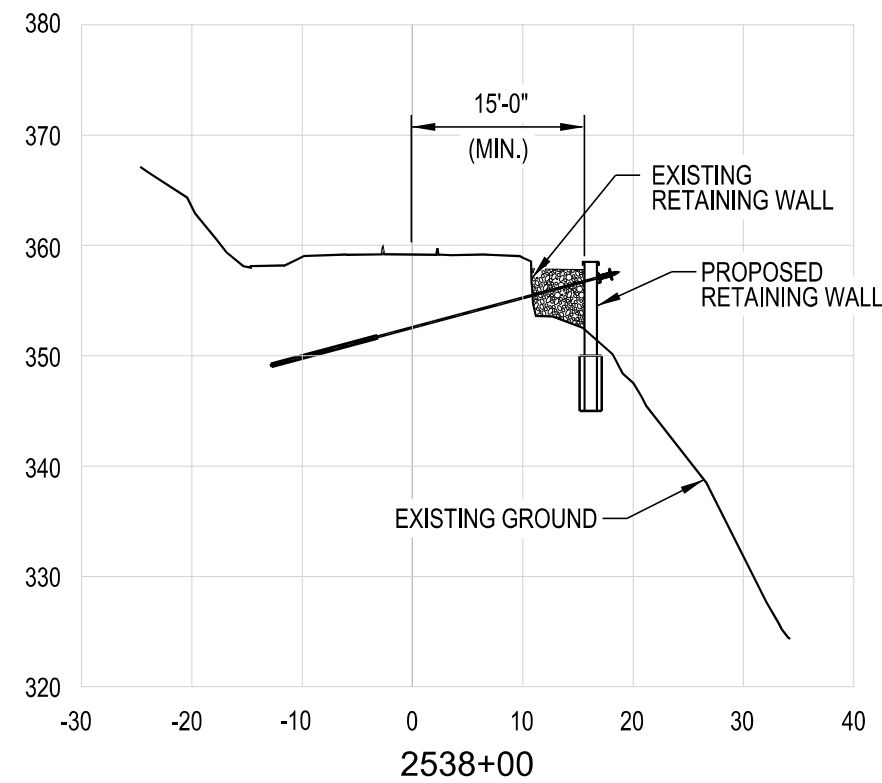
1. PROVIDE MATERIAL AND WORKMANSHIP IN ACCORDANCE WITH THE SPECIAL PROVISIONS AND STANDARD SPECIFICATIONS.
2. BACKFILL BEHIND SHEETING TO ANCHOR ROD LEVEL PRIOR TO INSTALLING ROCK ANCHORS.
3. SEE SHEET 13/15 FOR SECTION A-A AND SECTION B-B.
4. SEE SHEET 13/15 FOR ROCK DOWEL DETAIL.



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REV.	DATE	BY	REVISION

ALASKA RAILROAD CORPORATION ENGINEERING SERVICES P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500			
PROJECT : MP 52.14 RETAINING WALL REPLACEMENT			
TITLE: TYPICAL DETAILS SOUTH WALL			
DESIGNED BY: - KAG	SCALE: H: AS NOTED	-	AFE NO.:
DRAWN BY: - NBS	V: AS NOTED		ACAD FILE:
CHECKED BY: - LWH	DATE: 09/05/20		DWG NO.
APPROVED BY: - AWK			6 OF 15



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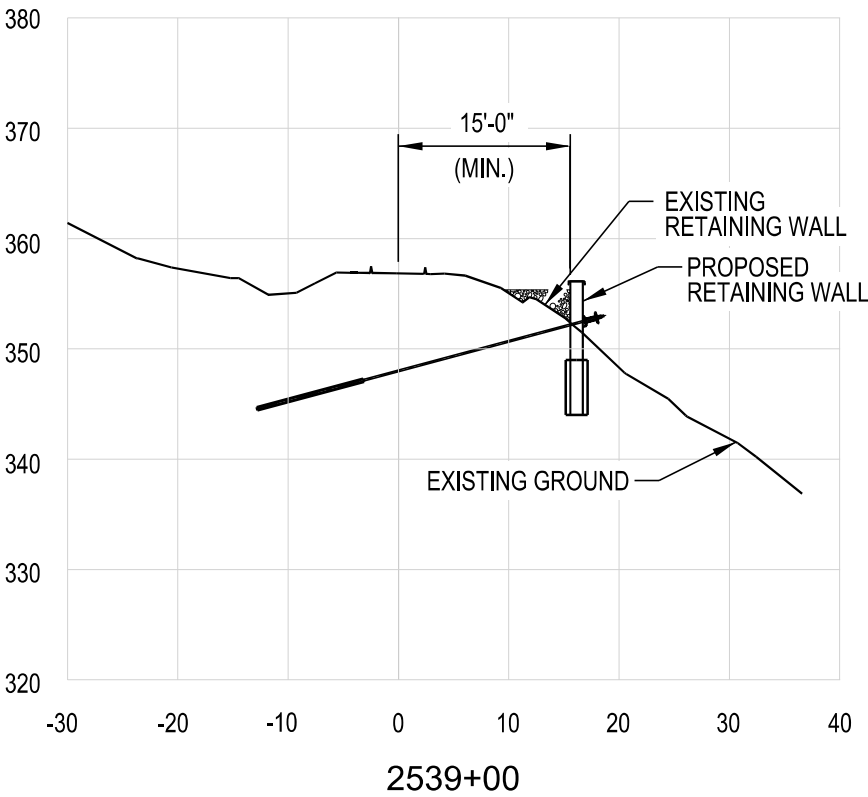


REV.	DATE	BY	REVISION

			
ALASKA RAILROAD CORPORATION			
ENGINEERING SERVICES			
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500			
PROJECT :			
MP 52.14			
RETAINING WALL REPLACEMENT			
TITLE:			
CROSS SECTIONS			
SOUTH WALL (1 OF 2)			
DESIGNED BY:	- KAG	SCALE:	AFE NO.:
DRAWN BY:	- NBS	H: AS NOTED	ACAD FILE:
CHECKED BY:	- LJH	V: AS NOTED	DWG NO.
APPROVED BY:	- AWK	DATE:	7 OF 15
		09/05/20	

SOLDIER PILE	TOP OF SOLDIER PILE ELEVATION	TOP OF ROCK SOCKET ELEVATION	BOTTOM OF ROCK SOCKET ELEVATION
S1	358.89	356.00	351.00
S2	358.89	350.00	345.00
S3	358.21	344.00	339.00
S4	358.21	344.00	339.00
S5	358.21	345.50	340.50
S6	358.21	345.00	340.00
S7	358.21	345.00	340.00
S8	357.49	345.00	340.00
S9	357.49	345.00	340.00
S10	357.49	345.00	340.00
S11	357.49	345.00	340.00
S12	357.09	346.00	341.00
S13	357.09	346.00	341.00
S14	357.09	345.00	340.00
S15	356.51	346.00	341.00
S16	356.51	347.50	342.50
S17	356.51	349.00	344.00
S18	356.51	351.50	346.50

SOUTH WALL SOLDIER PILE ELEVATIONS



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REV.	DATE	BY	REVISION



ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

PROJECT :

MP 52.14
RETAINING WALL REPLACEMENT

TITLE:

CROSS SECTIONS
SOUTH WALL (2 OF 2)

DESIGNED BY: - KAG

DRAWN BY: - NBS

CHECKED BY: - LJH

APPROVED BY: - AWK

SCALE:

H: AS NOTED

V: AS NOTED

DATE: 09/05/20

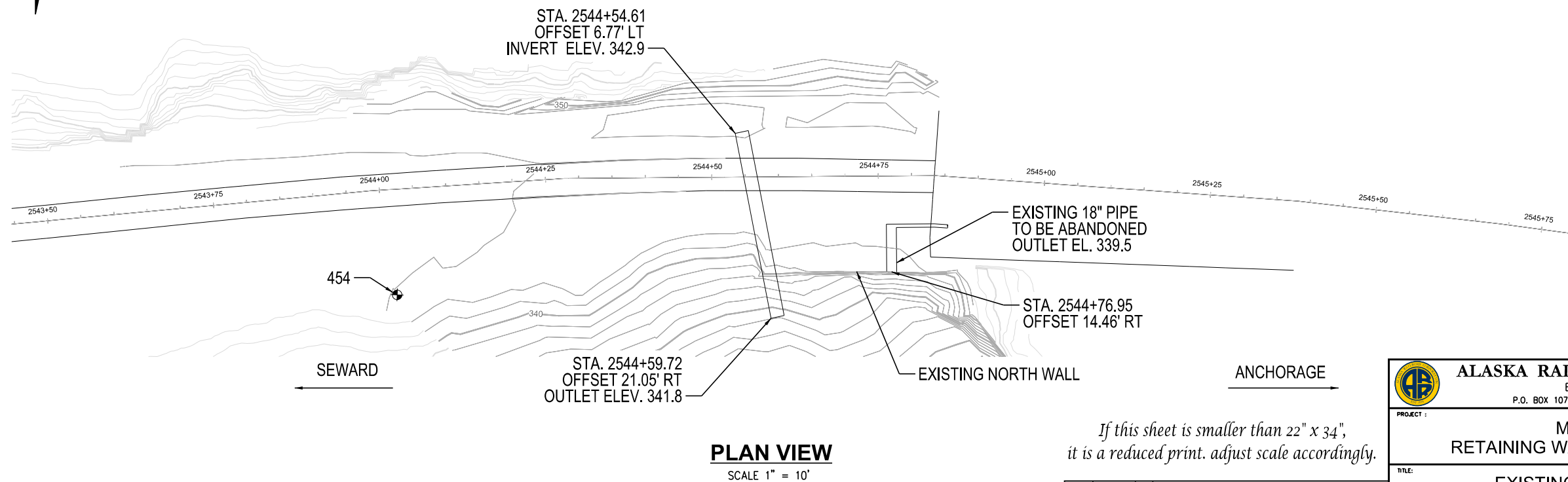
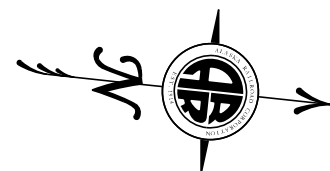
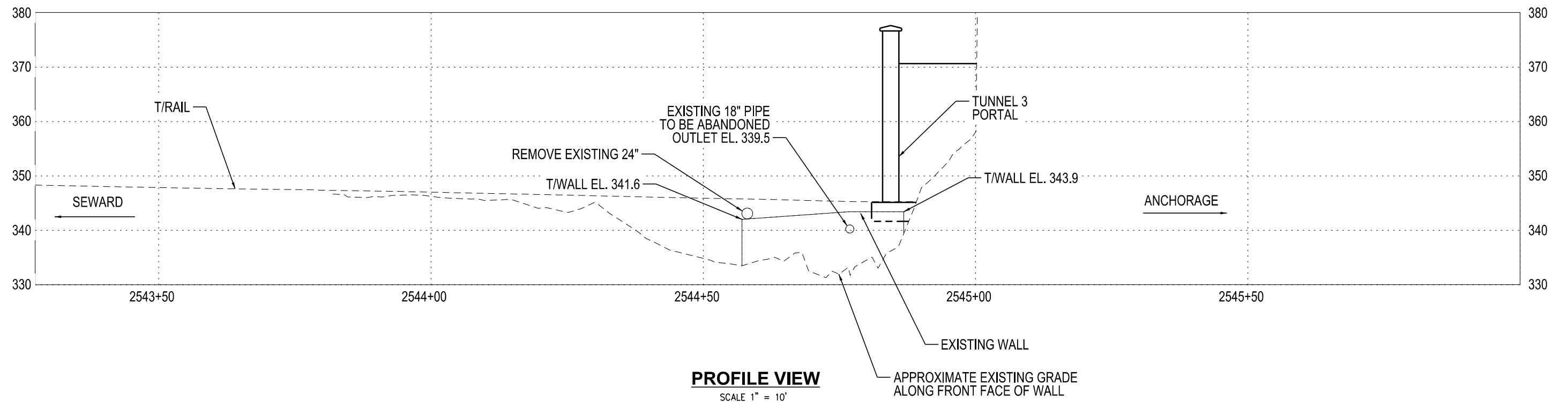
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AFE NO.:

ACAD FILE:

DWG NO.

8 OF 15

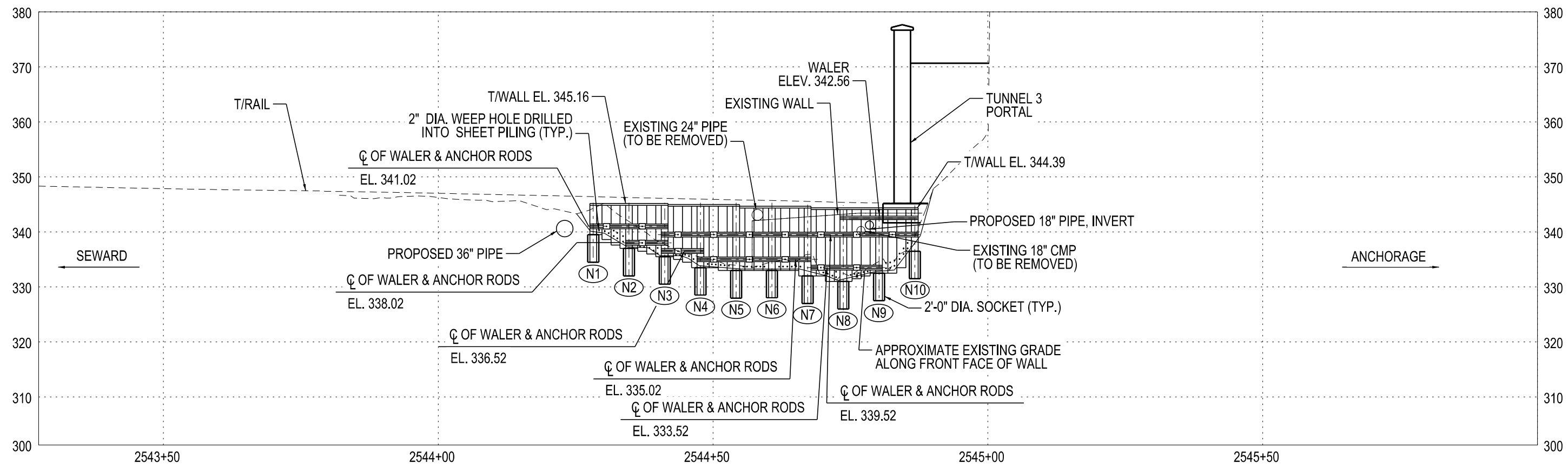


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REV.	DATE	BY	REVISION

 ALASKA RAILROAD CORPORATION ENGINEERING SERVICES P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500			
PROJECT : MP 52.14 RETAINING WALL REPLACEMENT			
TITLE: EXISTING CONDITIONS NORTH WALL			
DESIGNED BY: - KAG	SCALE: H: AS NOTED V: AS NOTED	-	AFE NO.:
DRAWN BY: - NBS	CHECKED BY: - LWH		ACAD FILE:
APPROVED BY: - AWK	DATE: 09/05/20		DWG NO. 9 OF 15

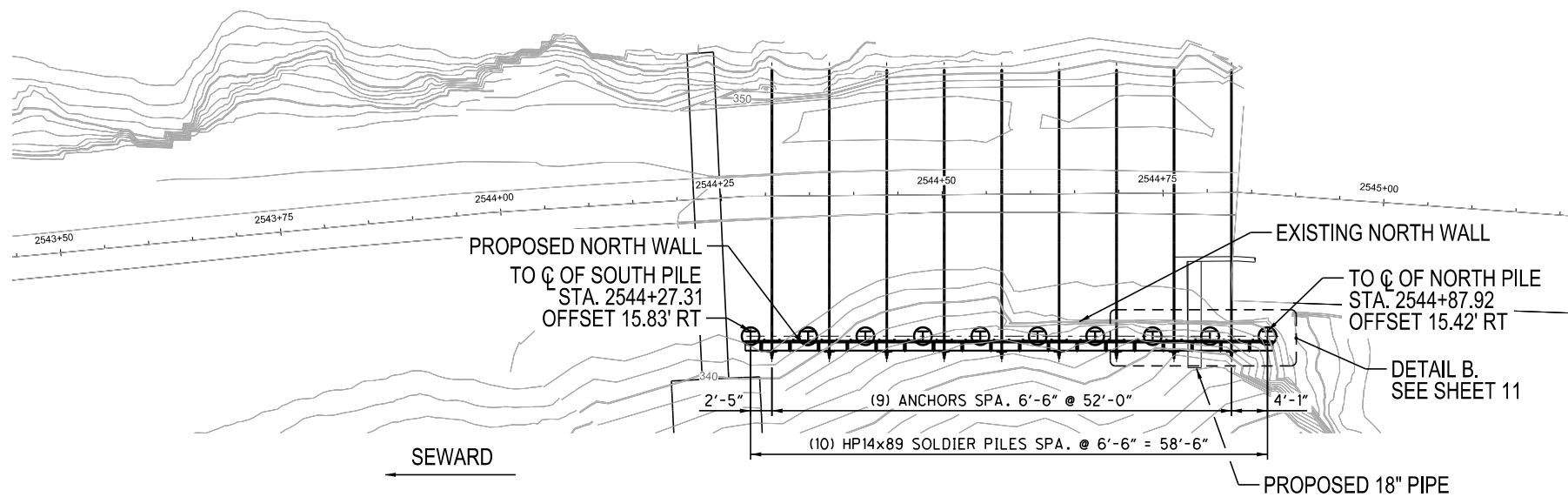


PROFILE VIEW
SCALE 1" = 10'

KEY
(N#) = NORTH WALL SOLDIER PILE DESIGNATION

SOLDIER PILE	TOP OF SOLDIER PILE ELEVATION	TOP OF ROCK SOCKET ELEVATION	BOTTOM OF ROCK SOCKET ELEVATION
N1	345.12	339.50	334.50
N2	345.12	337.00	332.00
N3	345.12	335.50	330.50
N4	344.95	333.50	328.50
N5	344.95	333.00	328.00
N6	344.62	333.00	328.00
N7	344.62	332.00	327.00
N8	344.35	331.00	326.00
N9	344.35	332.50	327.50
N10	344.35	336.50	331.50

NORTH WALL SOLDIER PILE ELEVATIONS



PLAN VIEW
SCALE 1" = 10'

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ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

PROJECT :

**MP 52.14
RETAINING WALL REPLACEMENT**

TITLE:

**FINAL CONDITIONS
NORTH WALL**

DESIGNED BY: - KAG

DRAWN BY: - NBS

CHECKED BY: - LJH

APPROVED BY: - AWK

SCALE:

H: AS NOTED

V: AS NOTED

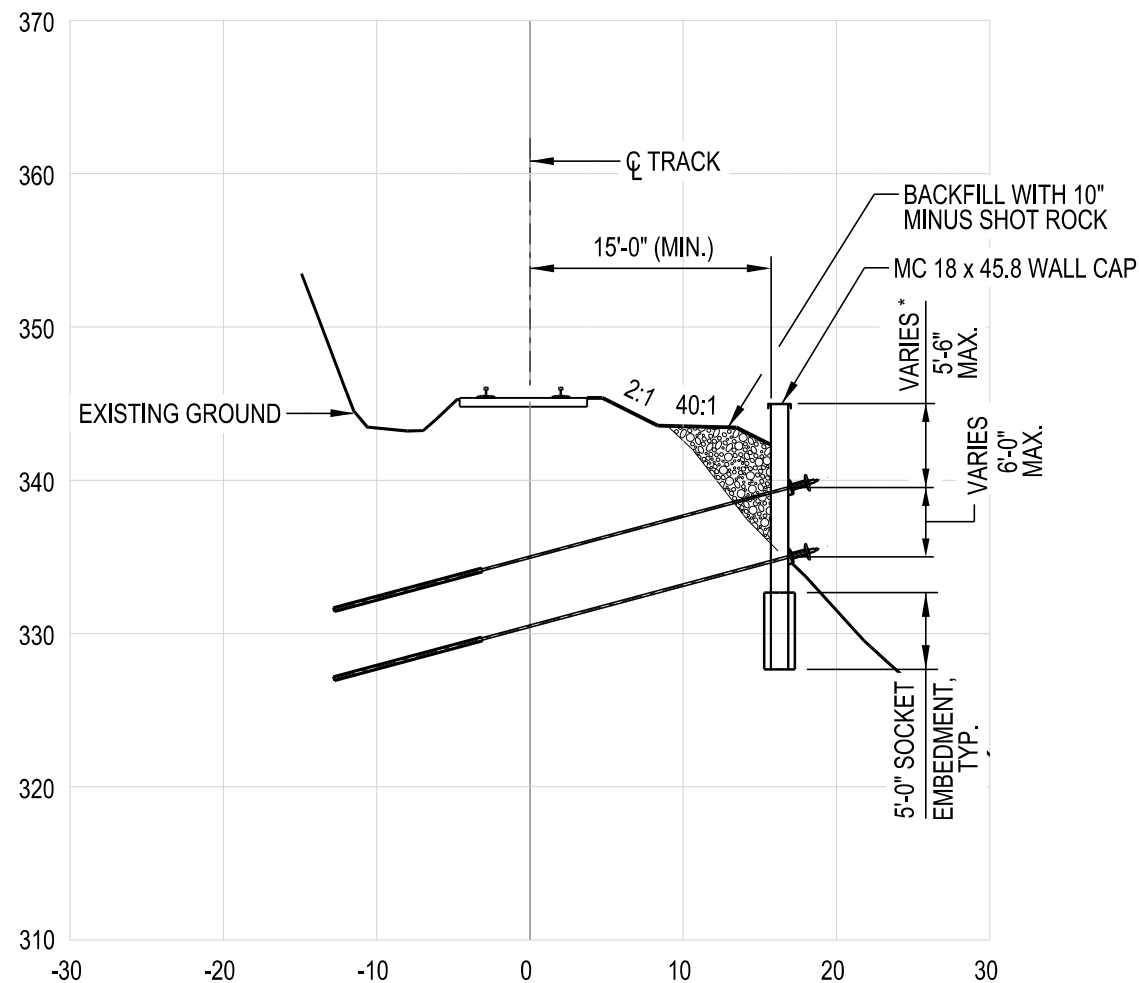
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AFE NO.:

ACAD FILE:

DWG NO.

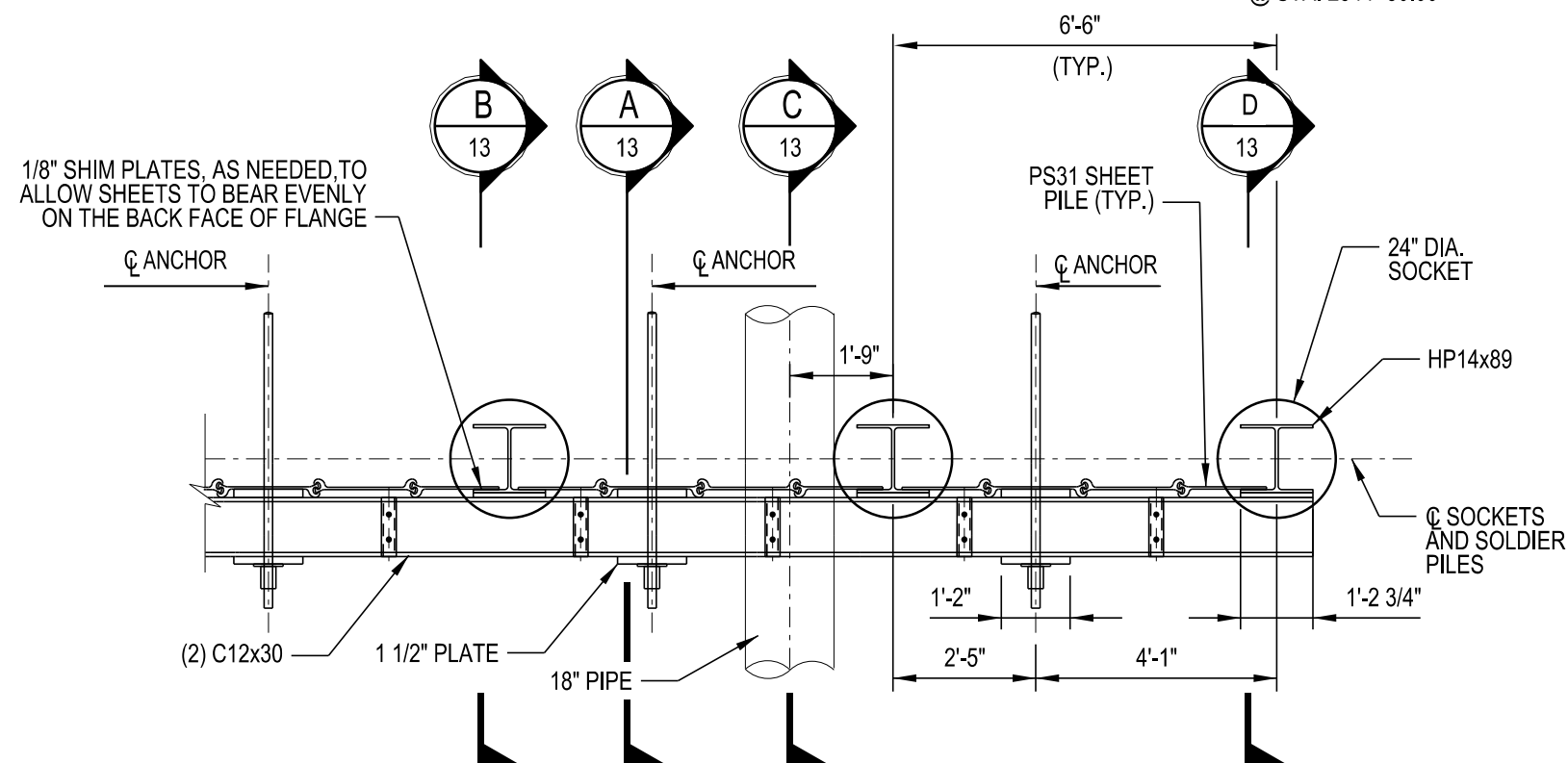
10 OF **15**



TYPICAL CROSS SECTION
@ STA. 2544+50.00

NOTES:

1. PROVIDE MATERIAL AND WORKMANSHIP IN ACCORDANCE WITH THE SPECIAL PROVISIONS AND STANDARD SPECIFICATIONS.
2. SEE SHEET 13/15 FOR SECTION A-A, SECTION B-B, SECTION C-C AND SECTION D-D.
3. SEE SHEET 13/15 FOR ROCK DOWEL DETAIL.
4. BACKFILL BEHIND SHEETING TO ANCHOR ROD LEVEL PRIOR TO INSTALLING ROCK ANCHORS.



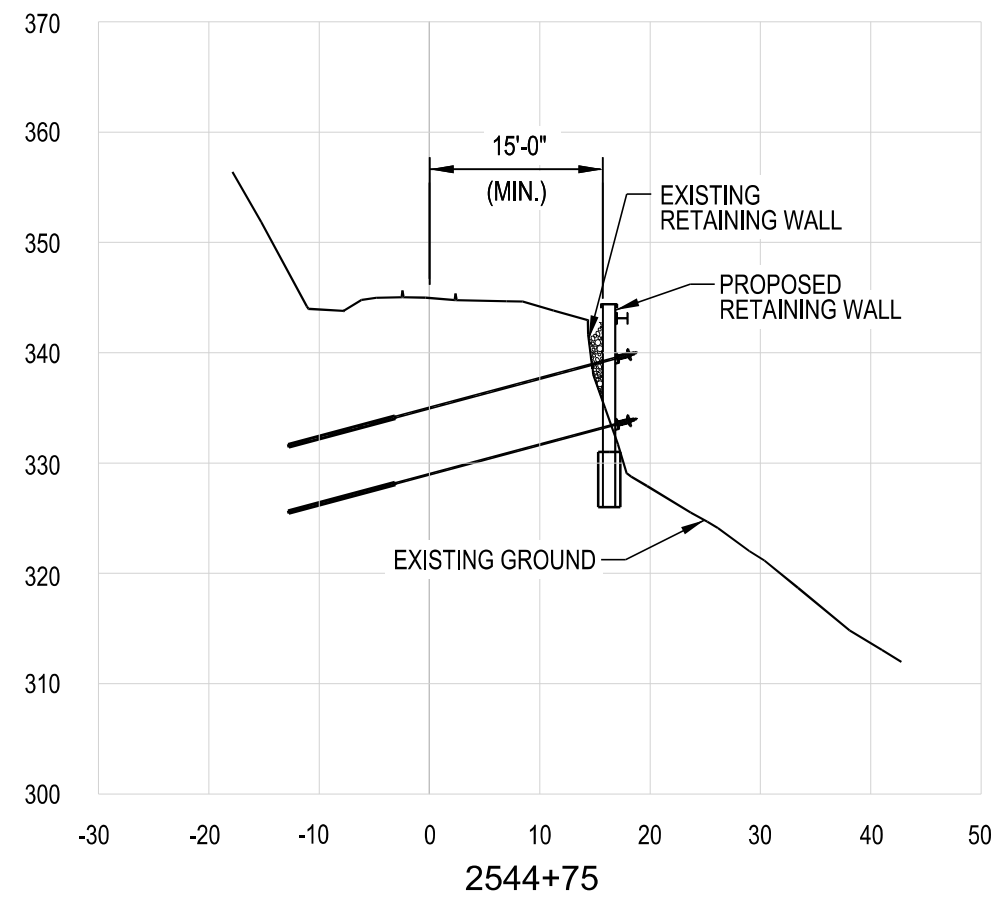
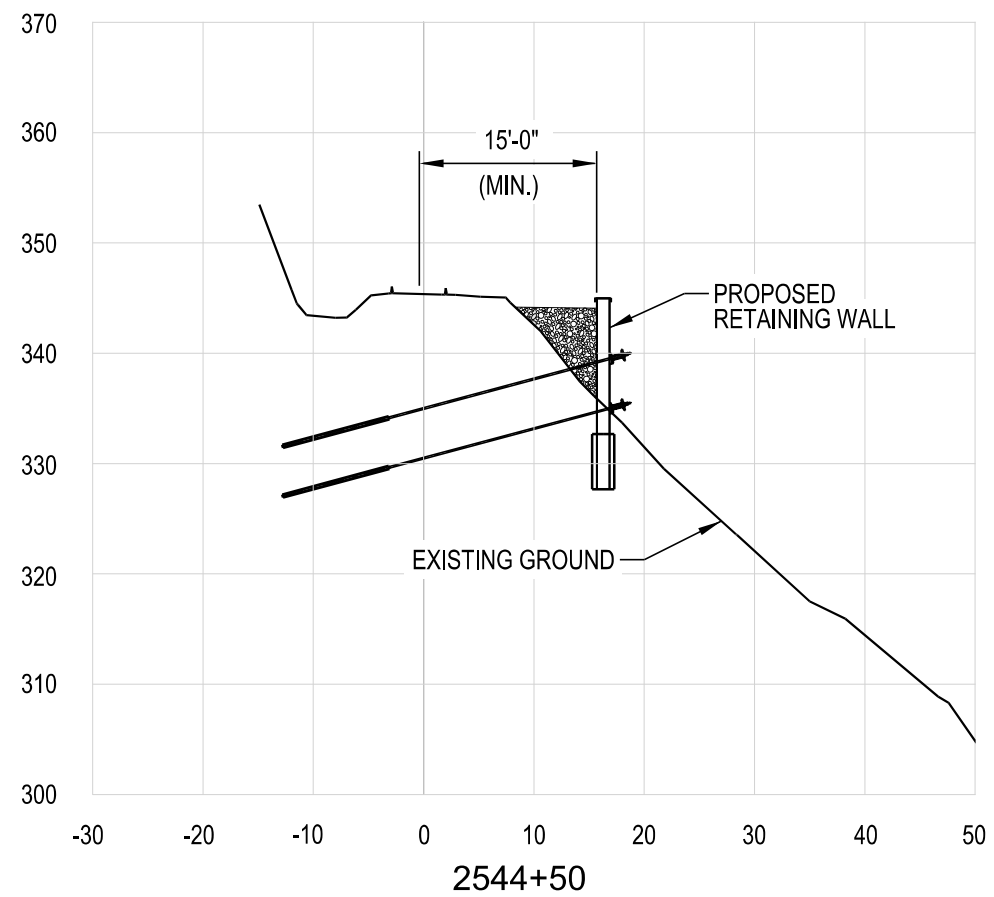
DETAIL B
(NORTH WALL ONLY)

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REV.	DATE	BY	REVISION

 ALASKA RAILROAD CORPORATION ENGINEERING SERVICES P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500			
PROJECT: MP 52.14			
TITLE: RETAINING WALL REPLACEMENT			
TITLE: TYPICAL DETAILS NORTH WALL			
DESIGNED BY: - KAG	SCALE: H: AS NOTED	-	AFE NO.:
DRAWN BY: - NBS	V: AS NOTED		ACAD FILE:
CHECKED BY: - LWH	DATE: 09/05/20		DWG NO.
APPROVED BY: - AWK			11 OF 15

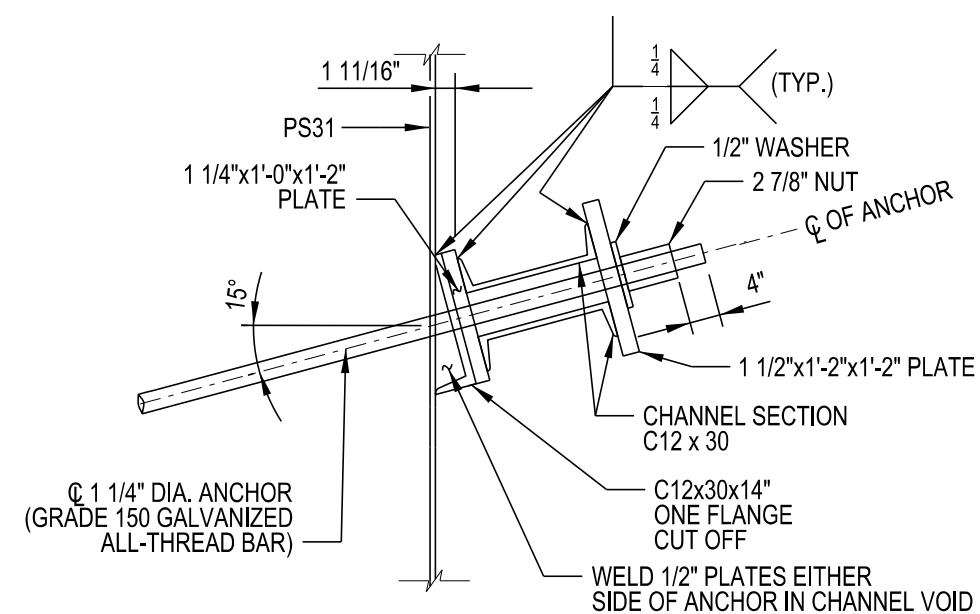


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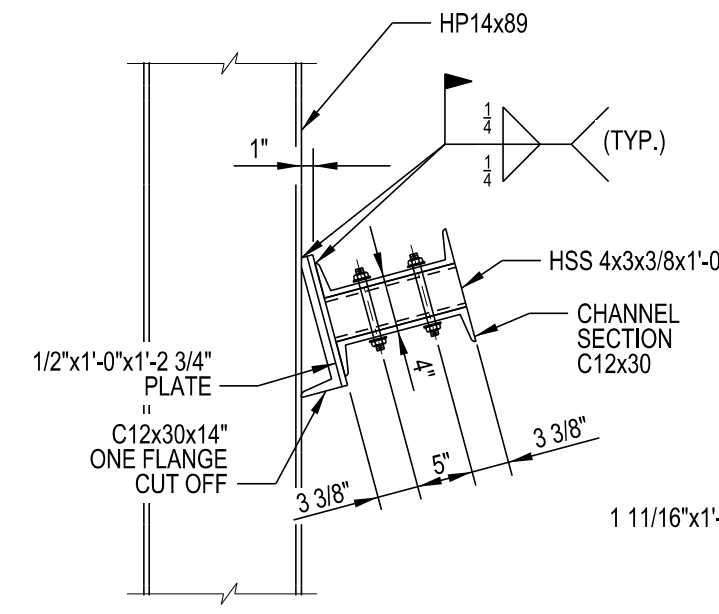


REV.	DATE	BY	REVISION

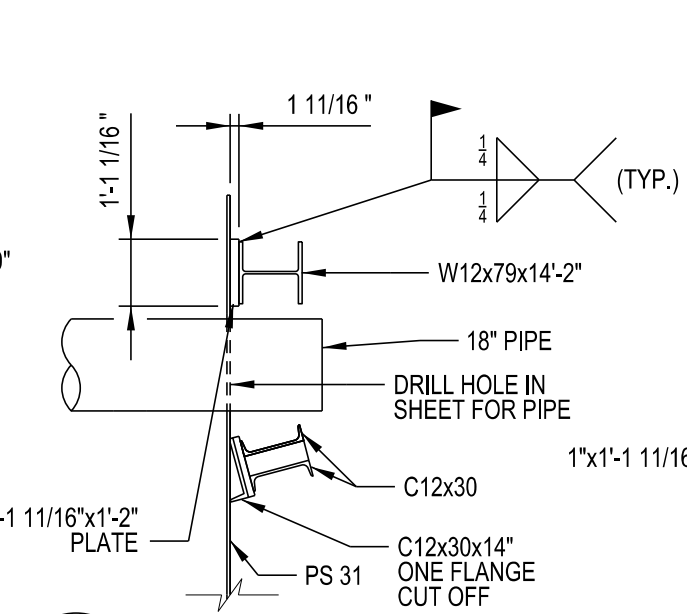
			
ALASKA RAILROAD CORPORATION			
ENGINEERING SERVICES			
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500			
PROJECT :			
MP 52.14			
RETAINING WALL REPLACEMENT			
TITLE:			
CROSS SECTIONS			
NORTH WALL			
DESIGNED BY:	- KAG	SCALE:	
DRAWN BY:	- NBS	H: AS NOTED	
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APPROVED BY:	- AWK	DATE:	09/05/20
			AFE NO.:
			ACAD FILE:
			DWG NO.
			12 OF 15



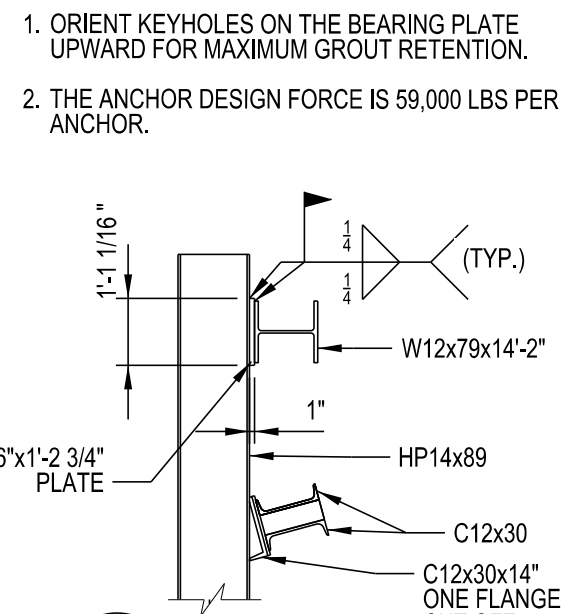
SECTION A-A
6, 11



SECTION B-B
6, 11



SECTION C-C
11

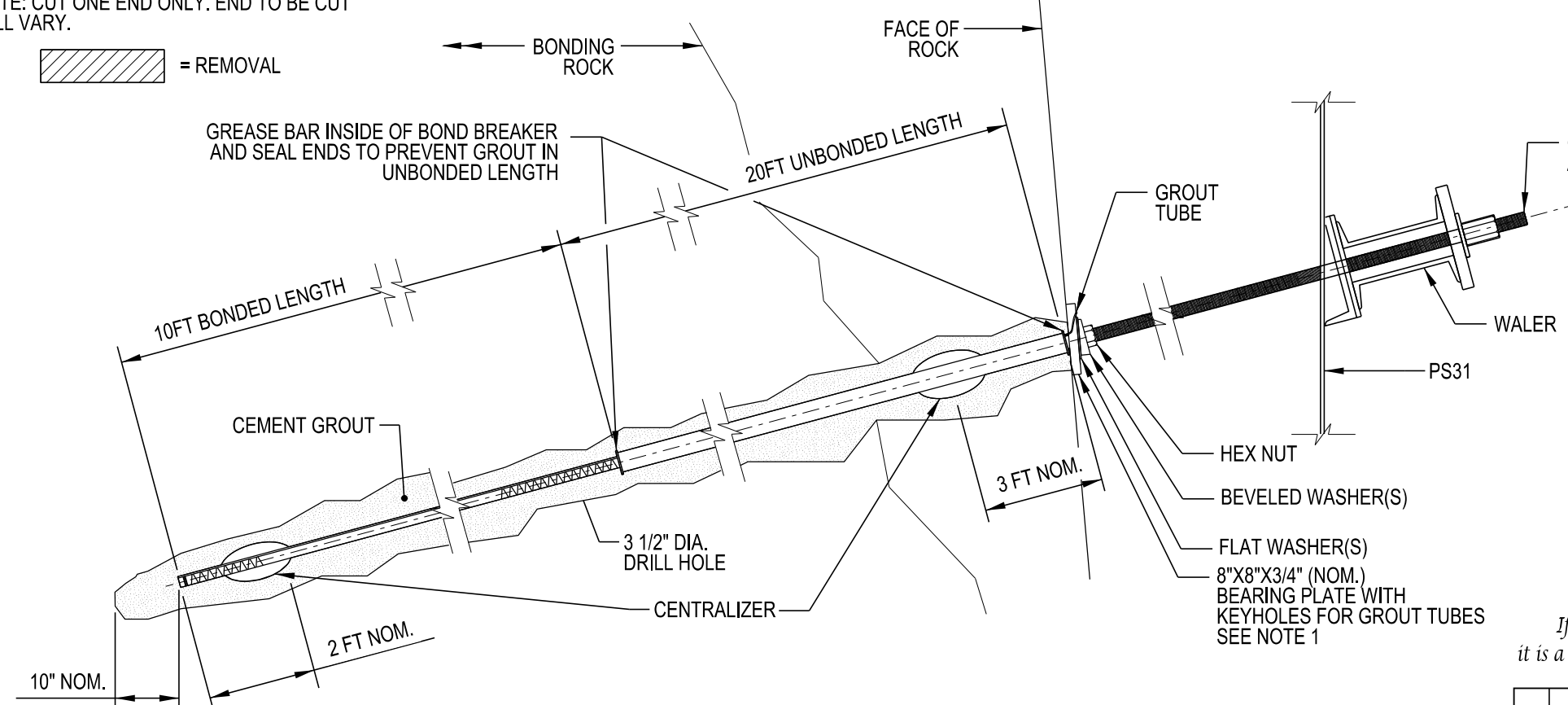
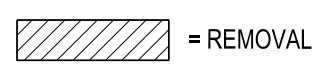


SECTION D-D
11

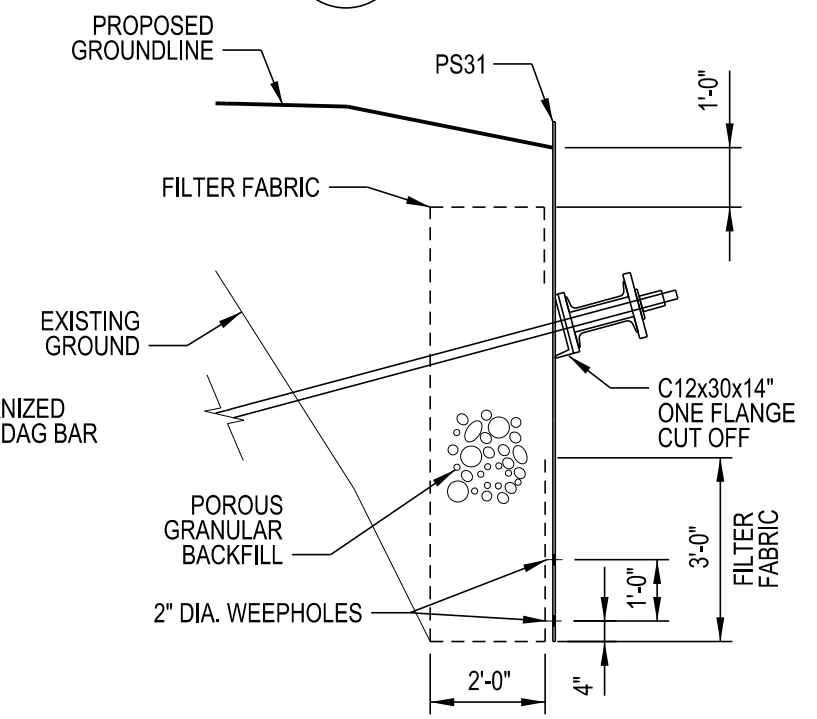


INTERLOCK REMOVAL DETAIL

NOTE: CUT ONE END ONLY. END TO BE CUT WILL VARY.



ROCK ANCHOR DETAIL



BACKFILL DETAIL

NOTES:

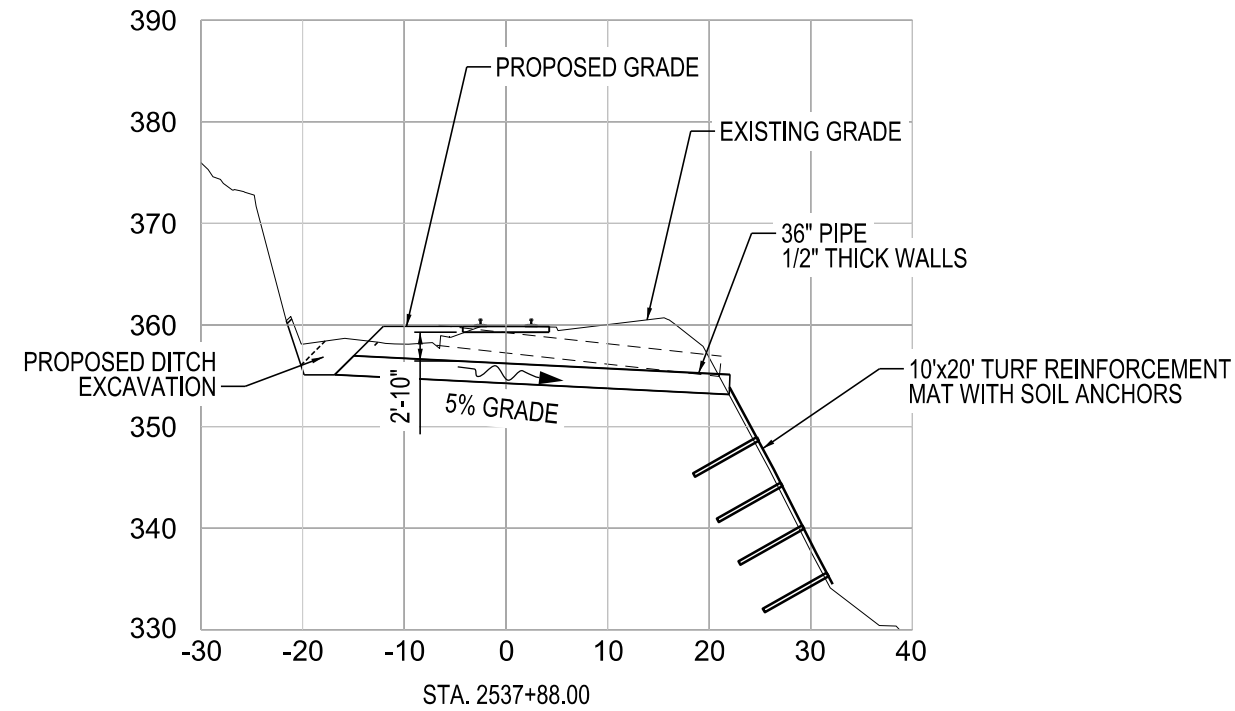
1. ORIENT KEYHOLES ON THE BEARING PLATE UPWARD FOR MAXIMUM GROUT RETENTION.
2. THE ANCHOR DESIGN FORCE IS 59,000 LBS PER ANCHOR.



If this sheet is smaller than 22" x 34", it is a reduced print. adjust scale accordingly.

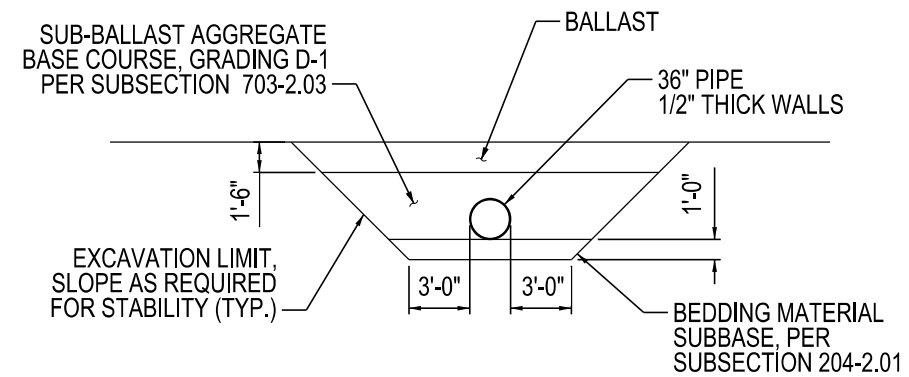
REV.	DATE	BY	REVISION

ALASKA RAILROAD CORPORATION ENGINEERING SERVICES P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500			
PROJECT: MP 52.14			
TITLE: RETAINING WALL REPLACEMENT			
WALL DETAILS			
DESIGNED BY: - KAG	SCALE: H: AS NOTED	AFE NO.:	
DRAWN BY: - NBS	V: AS NOTED	ACAD FILE:	
CHECKED BY: - LWH	DATE: 09/05/20	DWG NO. 13 OF 15	
APPROVED BY: - AWK			



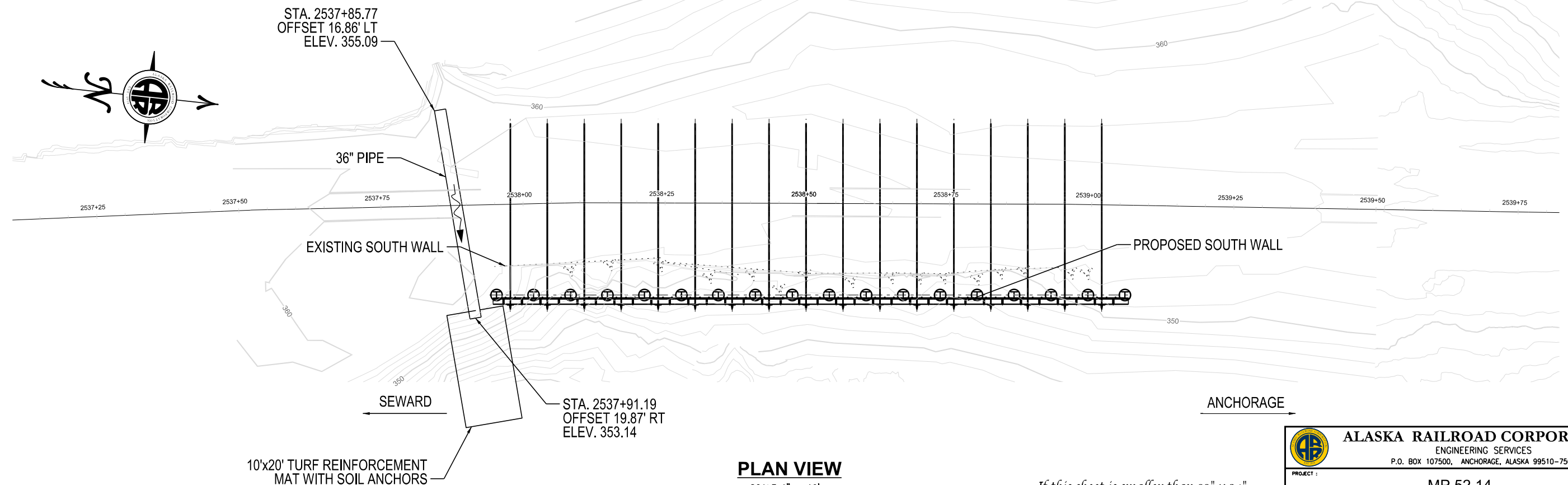
CROSS SECTION

SCALE 1" = 10'



TYPICAL TRENCHING DETAIL

- NOTE:**
1. TURF REINFORCEMENT MATERIAL CAN BE OMITTED IF BEDROCK IS IDENTIFIED BY GEOTECHNICAL EXPLORATION.



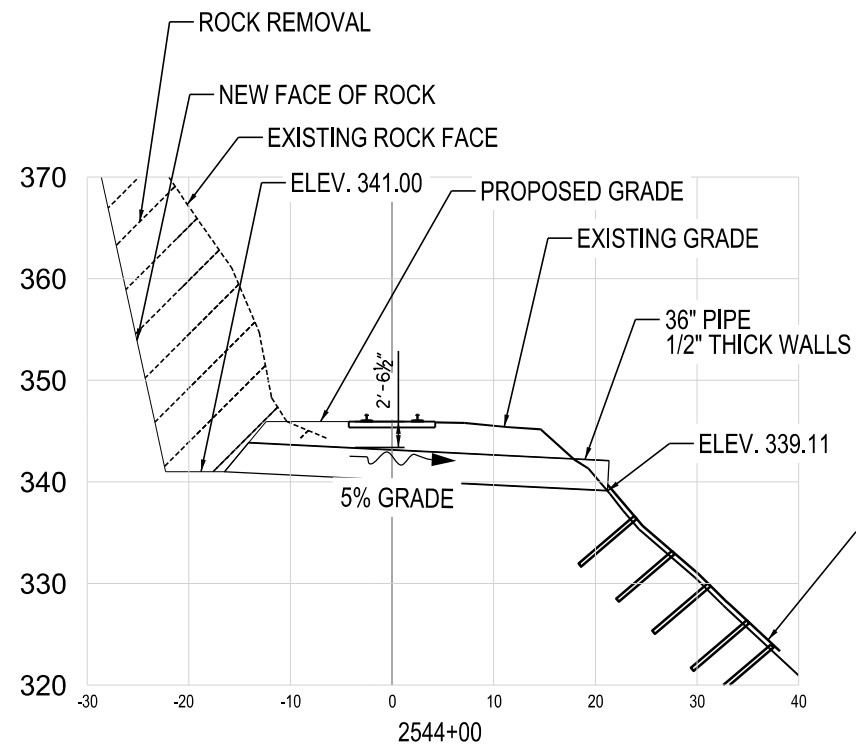
PLAN VIEW

SCALE 1" = 10'

*If this sheet is smaller than 22" x 34",
it is a reduced print. adjust scale accordingly.*

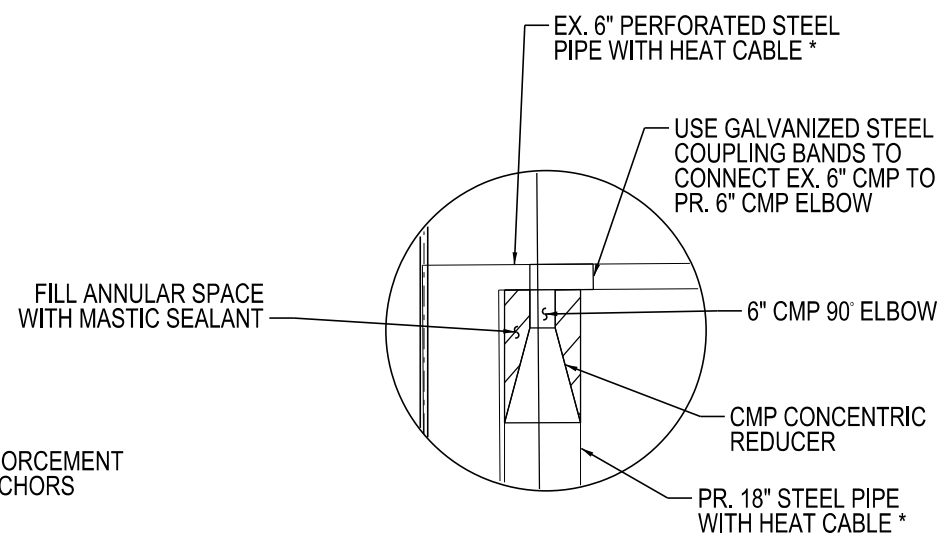
REV.	DATE	BY	REVISION

 ALASKA RAILROAD CORPORATION ENGINEERING SERVICES P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500			
PROJECT : MP 52.14 RETAINING WALL REPLACEMENT			
TITLE: DRAINAGE PLAN SOUTH WALL			
DESIGNED BY: - KAG	SCALE: H: AS NOTED V: AS NOTED	-	AFE NO.:
DRAWN BY: - NBS			ACAD FILE:
CHECKED BY: - L/JH	DATE: 09/05/20		DWG NO.
APPROVED BY: - AWK			14 OF 15



CROSS SECTION

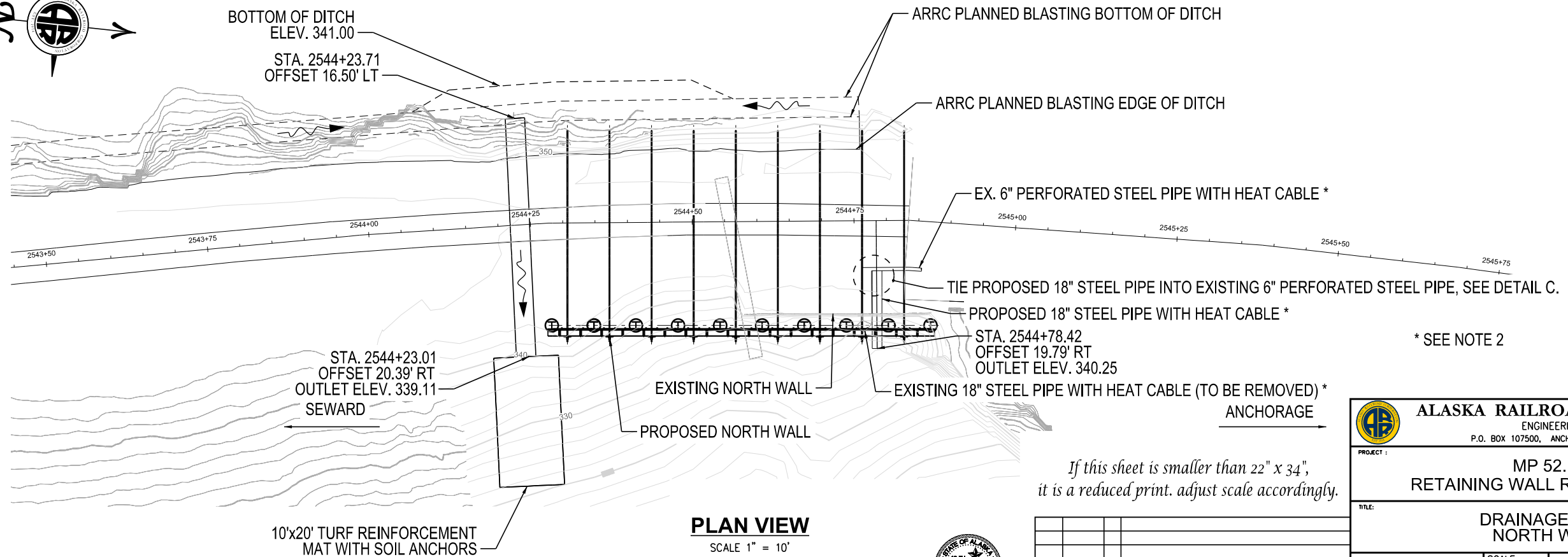
SCALE 1" = 10'



DETAIL C

NOTE:

1. TURF REINFORCEMENT MATERIAL CAN BE OMITTED IF BEDROCK IS IDENTIFIED BY GEOTECHNICAL EXPLORATION.
2. HEAT CABLE REMOVAL AND INSTALLATION TO BE COORDINATED DIRECTLY WITH AARC.



PLAN VIEW

SCALE 1" = 10'

If this sheet is smaller than 22" x 34",
it is a reduced print. adjust scale accordingly.

REV.	DATE	BY	REVISION

			
ALASKA RAILROAD CORPORATION			
ENGINEERING SERVICES			
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500			
PROJECT : MP 52.14			
RETAINING WALL REPLACEMENT			
TITLE: DRAINAGE PLAN NORTH WALL			
DESIGNED BY: - KAG	SCALE: H: AS NOTED	-	AFE NO.:
DRAWN BY: - NBS	V: AS NOTED		ACAD FILE:
CHECKED BY: - LWH	DATE: 09/05/20		DWG NO.
APPROVED BY: - AWK			15 OF 15