



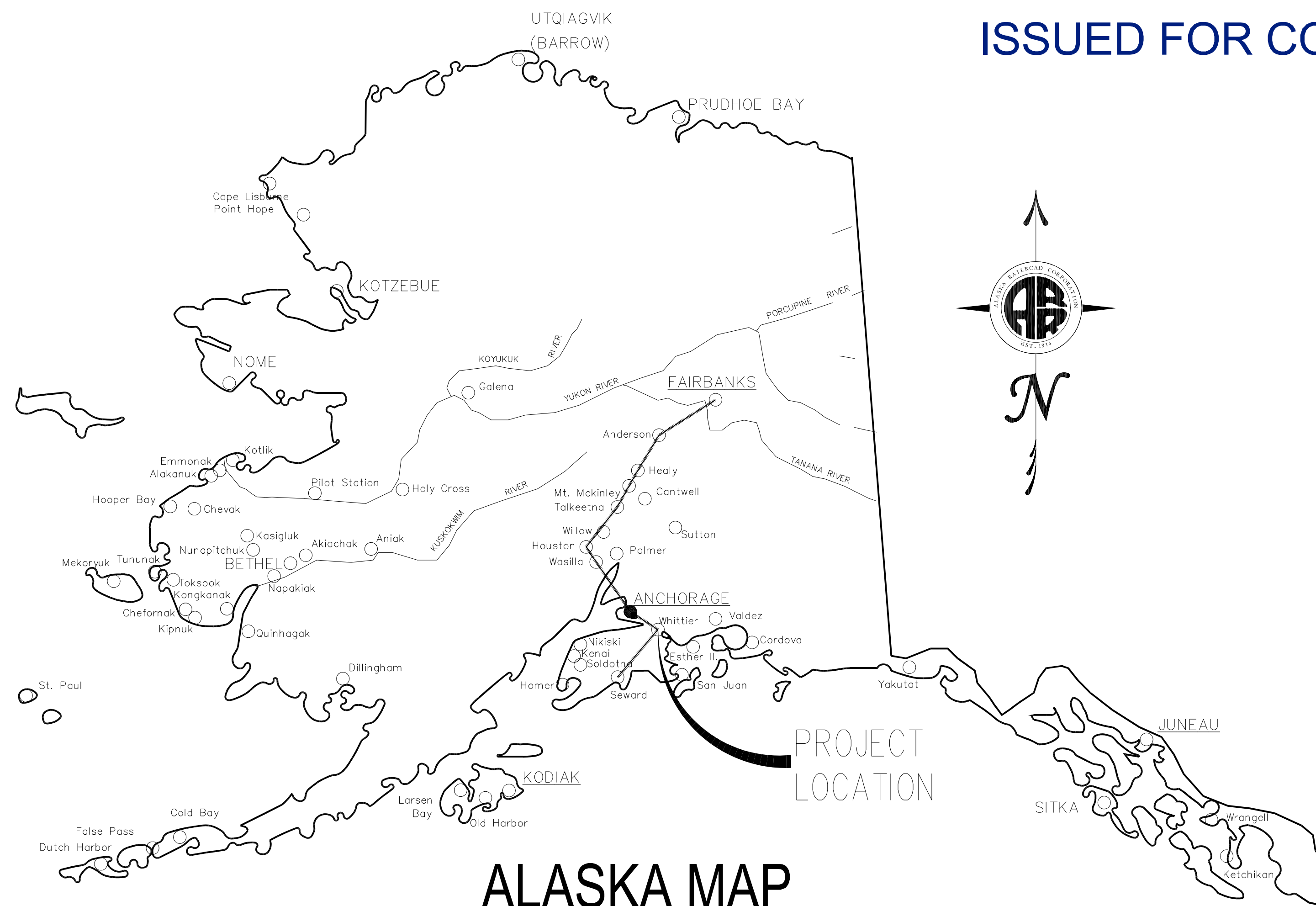
ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES

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

WHITTIER YARD AREA #2 DRAINAGE AND PAVEMENT IMPROVEMENTS

JULY 2020

ISSUED FOR CONSTRUCTION



ALASKA MAP
 NOT TO SCALE



VICINITY MAP
 NOT TO SCALE

INDEX OF DRAWINGS

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1	COVER SHEET
2	DEMOLITION PLAN & SURVEY CONTROL
3	NEW STORMDRAIN SYSTEM PLAN
4	PAVING AND GRADING PLAN
5	DETAIL: DEMOLITION EXISTING PCC COLLARS
6	DETAIL: STRUCTURE A-1
7	DETAIL: 72" DIA. PIPE REPAIR
8	DETAIL: NEW STORM DRAIN MANHOLES & MANHOLE SCHEDULE
9	DETAIL: PROPOSED PAVING TYPICAL SECTION
10-11	CROSS SECTIONS

CONSULTANT:

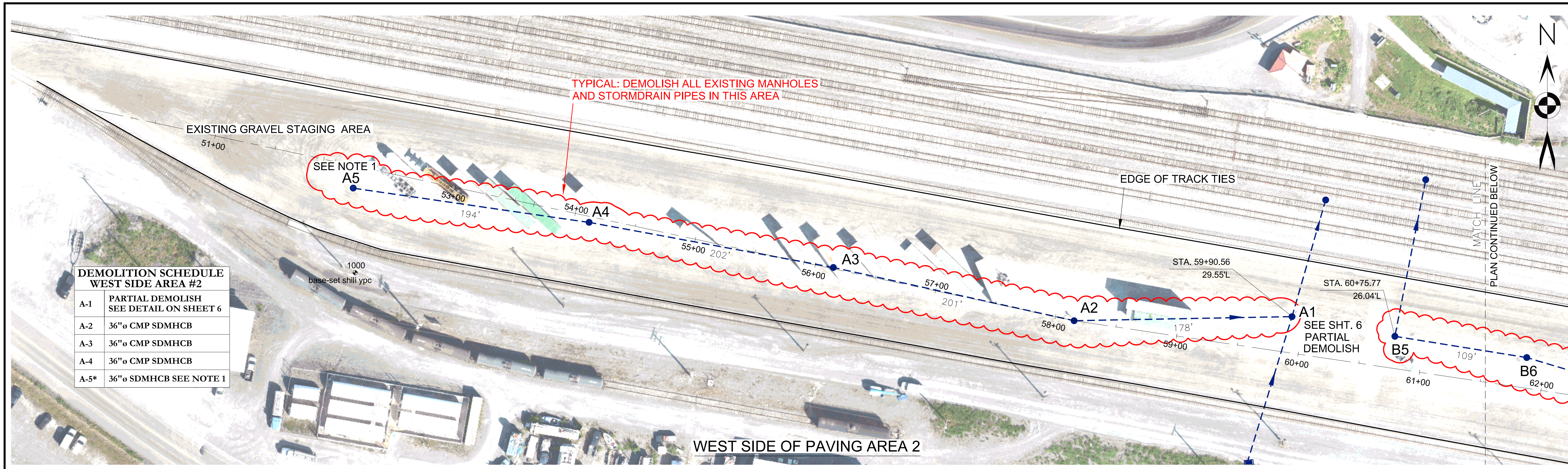
ALL POINTS NORTH
 ALL POINTS NORTH LLC
 17600 E. RAMBLING ROAD
 PALMER, AK 99645-4207
 (907) 746-4185
 www.allpointsnorth.us



06/19/2020

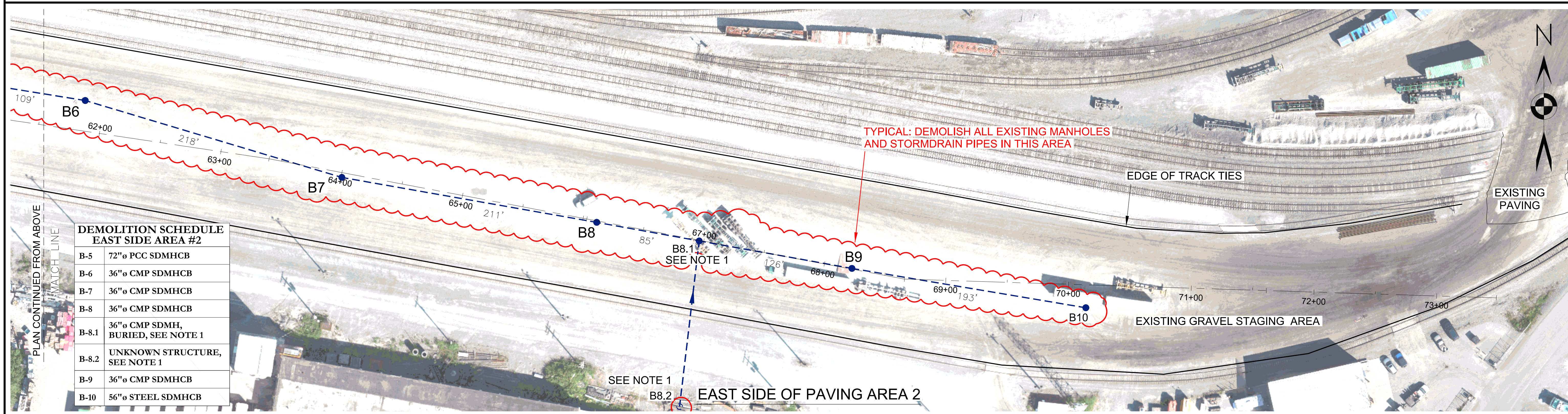
REV.	DATE	BY	REVISION

ALASKA RAILROAD CORPORATION ENGINEERING SERVICES P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500		
PROJECT : WHITTIER YARD AREA #2 DRAINAGE AND PAVING IMPROVEMENTS		
TITLE: COVER SHEET		
DESIGNED BY: MAS/BAO	SCALE : AS NOTED	AFE NO.: -
DRAWN BY: RGJ	DATE : 06/19/2020	ACAD FILE: 19-74
CHECKED BY: GT		DWG NO.
APPROVED BY: BAO		1 OF 11



**DEMOLITION SCHEDULE
WEST SIDE AREA #2**

A-1	PARTIAL DEMOLISH SEE DETAIL ON SHEET 6
A-2	36"Ø CMP SDMHCB
A-3	36"Ø CMP SDMHCB
A-4	36"Ø CMP SDMHCB
A-5*	36"Ø SDMHCB SEE NOTE 1



**DEMOLITION SCHEDULE
EAST SIDE AREA #2**

B-5	72"Ø PCC SDMHCB
B-6	36"Ø CMP SDMHCB
B-7	36"Ø CMP SDMHCB
B-8	36"Ø CMP SDMHCB
B-8.1	36"Ø CMP SDMH, BURIED, SEE NOTE 1
B-8.2	UNKNOWN STRUCTURE, SEE NOTE 1
B-9	36"Ø CMP SDMHCB
B-10	56"Ø STEEL SDMHCB

SURVEY DATUM

HORIZONTAL DATUM AND VERTICAL DATUM IS ALASKA STATE PLANE COORDINATE SYSTEM ZONE 4, NAD83(2011), GEOID12B BASED ON OPUS PROCESSING OF CONTROL POINT 100.

POINT TABLE

Point	Northing	Easting	Elevation	Description
100	2478222.89	1877049.70	17.79	SET REBAR W/ YPC
373	2478227.01	1874051.34	22.78	NOAA BC, 4949D 2007
1000	2477716.73	1874542.54	23.22	SET REBAR W/YPC

NOTE: #373 AND #1000 ARE SHOWN ON SHEET 1 VICINITY MAP



BURIED UTILITIES NOTE

UNDERGROUND UTILITY SURVEY NOT CONDUCTED. CALL THE ALASKA DIGLINE (811) AND VERIFY ALL UNDERGROUND UTILITIES PRIOR TO DIGGING

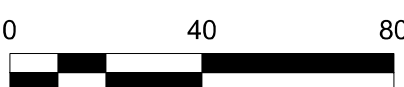
NOTES:

- LOCATIONS OF STRUCTURES AT A-5, B-8.1, AND B8.2 ARE BASED ON AS-BUILT DRAWINGS, LOCATIONS ARE NOT FIELD VERIFIED.
- PRECAST CONCRETE (PCC) COLLARS, AS SHOWN ON SHEET 5 MAY BE FOUND ON THE STRUCTURES.
- SEE SHEET 3 FOR ALIGNMENT COORDINATES.

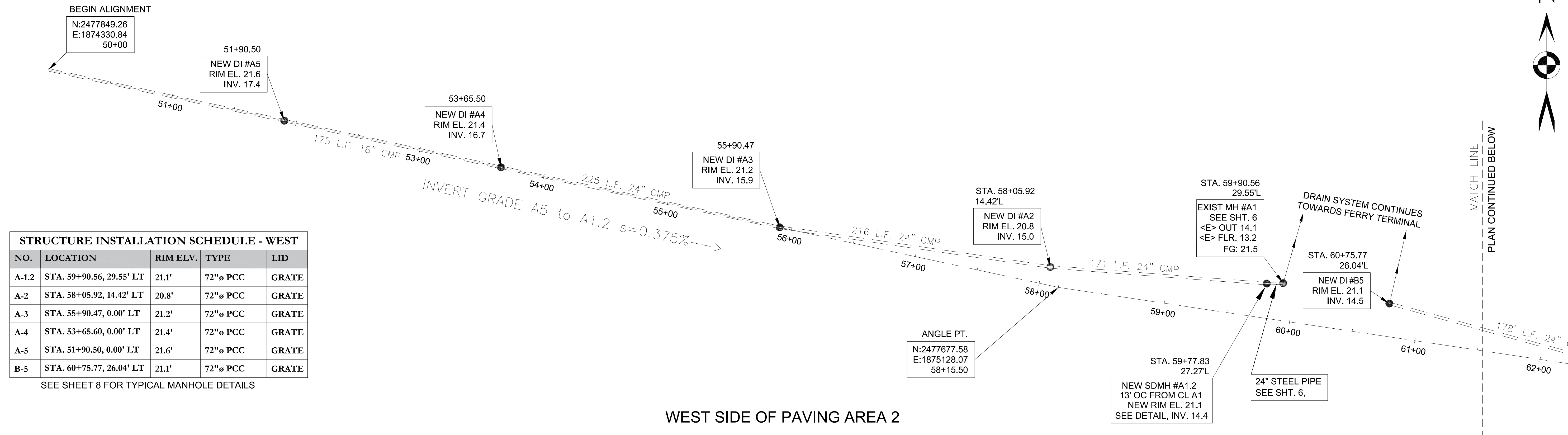
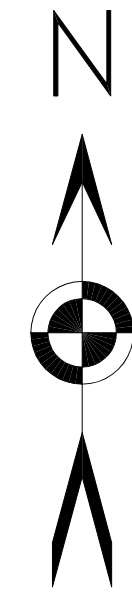
SYM.	REVISIONS	DATE	BY



CLIENT	ALASKA RAILROAD	JOB NUMBER	19-74
PROJECT	WHITTIER YARD AREA #2 DRAINAGE AND PAVEMENT IMPROVEMENTS		
SHEET TITLE	DEMOLITION AND SURVEY CONTROL		



SCALE	1" = 40 FEET
DATE	06/19/2020
SHEET NO.	2 OF 11

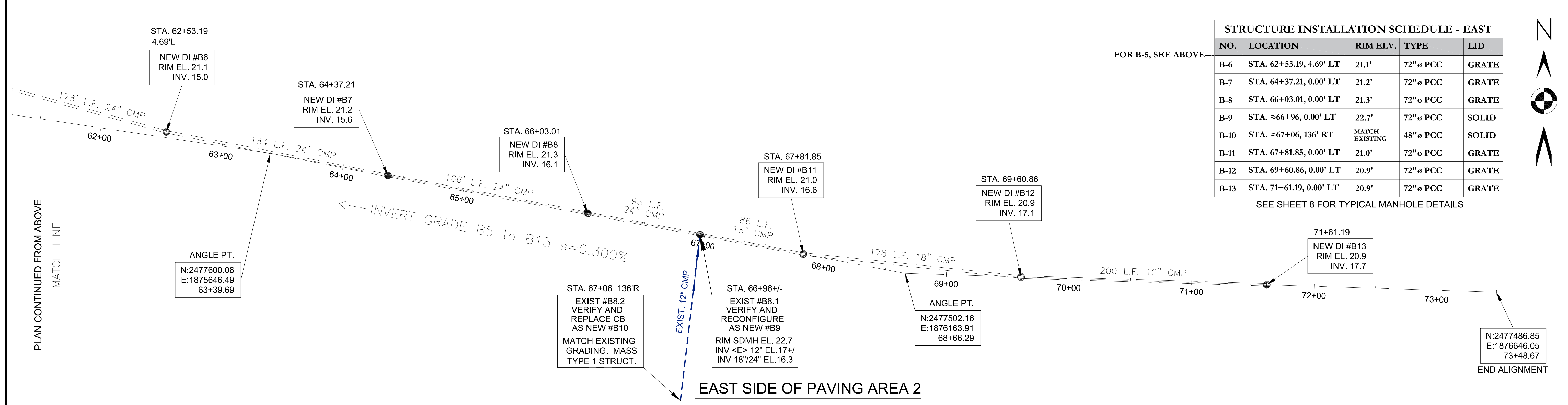


STRUCTURE INSTALLATION SCHEDULE - WEST

NO.	LOCATION	RIM ELV.	TYPE	LID
A-1.2	STA. 59+90.56, 29.55' LT	21.1'	72"ø PCC	GRATE
A-2	STA. 58+05.92, 14.42' LT	20.8'	72"ø PCC	GRATE
A-3	STA. 55+90.47, 0.00' LT	21.2'	72"ø PCC	GRATE
A-4	STA. 53+65.60, 0.00' LT	21.4'	72"ø PCC	GRATE
A-5	STA. 51+90.50, 0.00' LT	21.6'	72"ø PCC	GRATE
B-5	STA. 60+75.77, 26.04' LT	21.1'	72"ø PCC	GRATE

SEE SHEET 8 FOR TYPICAL MANHOLE DETAILS

WEST SIDE OF PAVING AREA 2

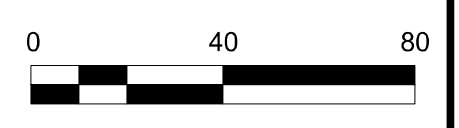
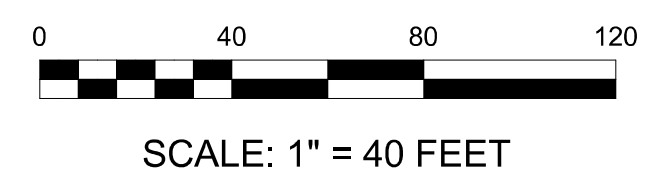


STRUCTURE INSTALLATION SCHEDULE - EAST

NO.	LOCATION	RIM ELV.	TYPE	LID
B-6	STA. 62+53.19, 4.69' LT	21.1'	72"ø PCC	GRATE
B-7	STA. 64+37.21, 0.00' LT	21.2'	72"ø PCC	GRATE
B-8	STA. 66+03.01, 0.00' LT	21.3'	72"ø PCC	GRATE
B-9	STA. ≈66+96, 0.00' LT	22.7'	72"ø PCC	SOLID
B-10	STA. ≈67+06, 136' RT	MATCH EXISTING	48"ø PCC	SOLID
B-11	STA. 67+81.85, 0.00' LT	21.0'	72"ø PCC	GRATE
B-12	STA. 69+60.86, 0.00' LT	20.9'	72"ø PCC	GRATE
B-13	STA. 71+61.19, 0.00' LT	20.9'	72"ø PCC	GRATE

SEE SHEET 8 FOR TYPICAL MANHOLE DETAILS

EAST SIDE OF PAVING AREA 2



SCALE

1" = 40 FEET

DATE 06/19/2020

SHEET NO 3 OF 11

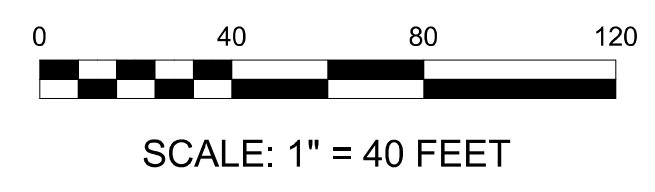
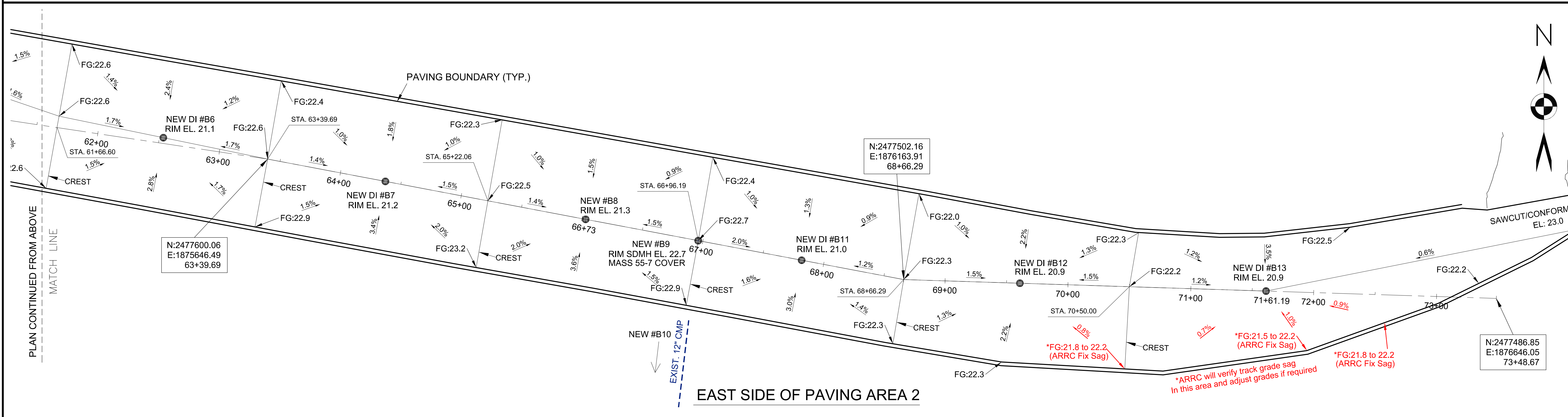
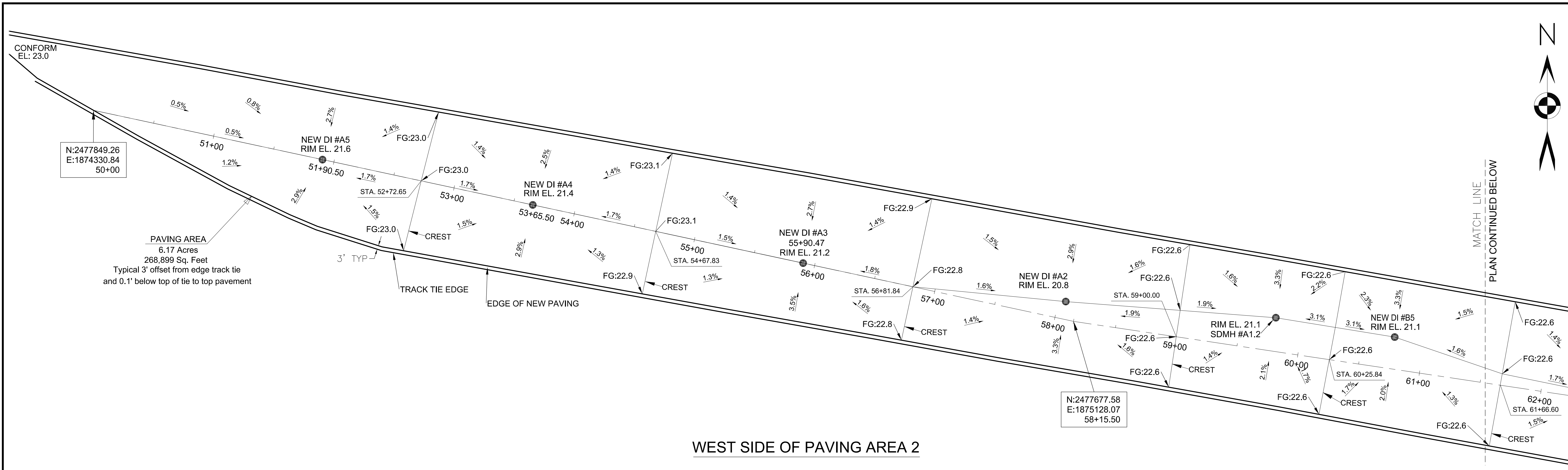
SYM.	REVISIONS	DATE	BY

ALL POINTS NORTH

CLIENT ALASKA RAILROAD CORPORATION JOB NUMBER 19-74

PROJECT WHITTIER YARD AREA #2 DRAINAGE AND PAVEMENT IMPROVEMENTS

SHEET TITLE NEW STORMDRAIN SYSTEM PLAN



SYM.	REVISIONS	DATE	BY



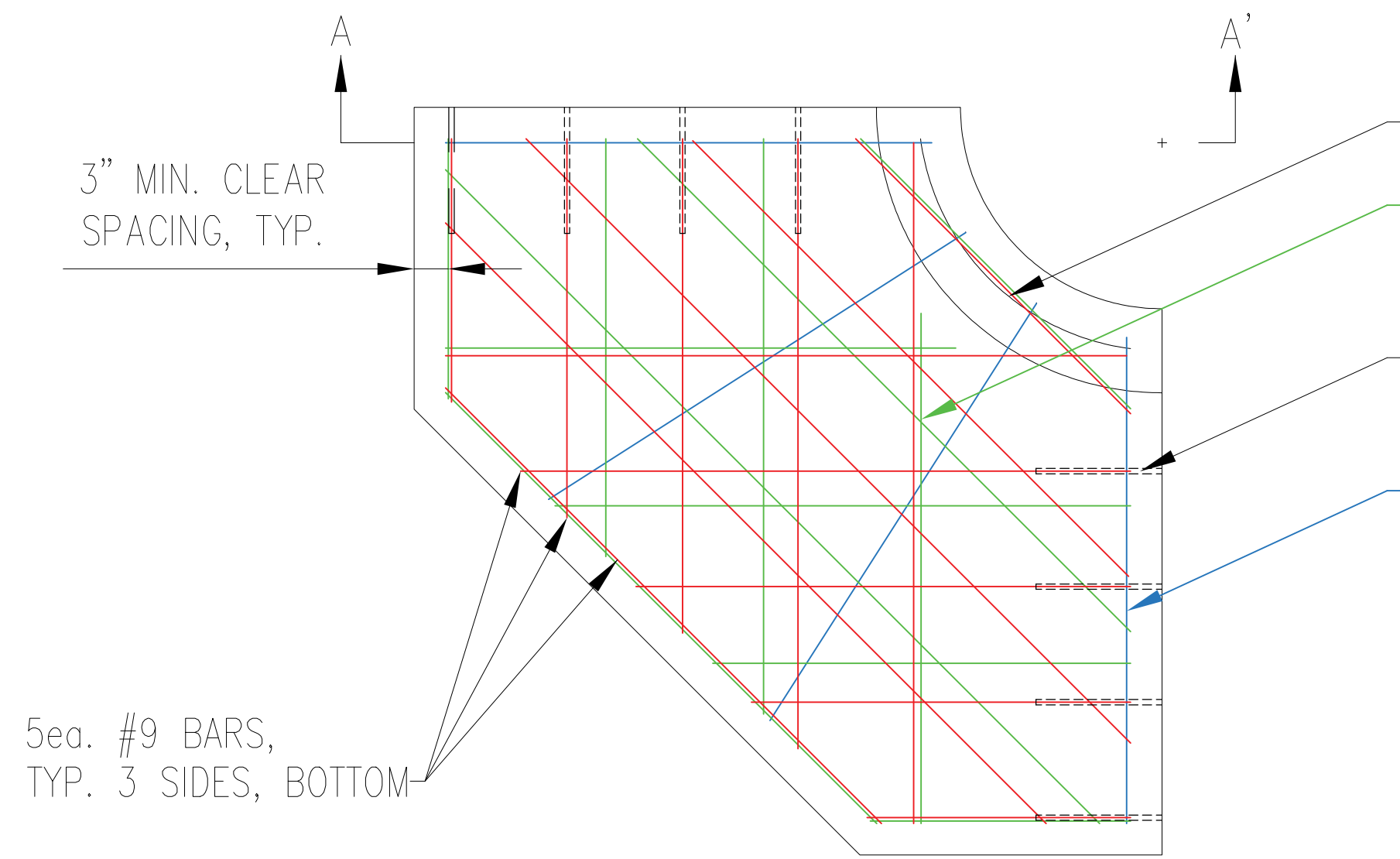
CLIENT	ALASKA RAILROAD CORPORATION	JOB NUMBER	19-74
PROJECT	WHITTIER YARD AREA #2 DRAINAGE AND PAVEMENT IMPROVEMENTS		
SHEET TITLE	PAVING AND GRADING PLAN		

SCALE	1" = 40 FEET
DATE	06/19/2020
SHEET NO	4 OF 11

1
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P.C.C. INLET PROTECTION

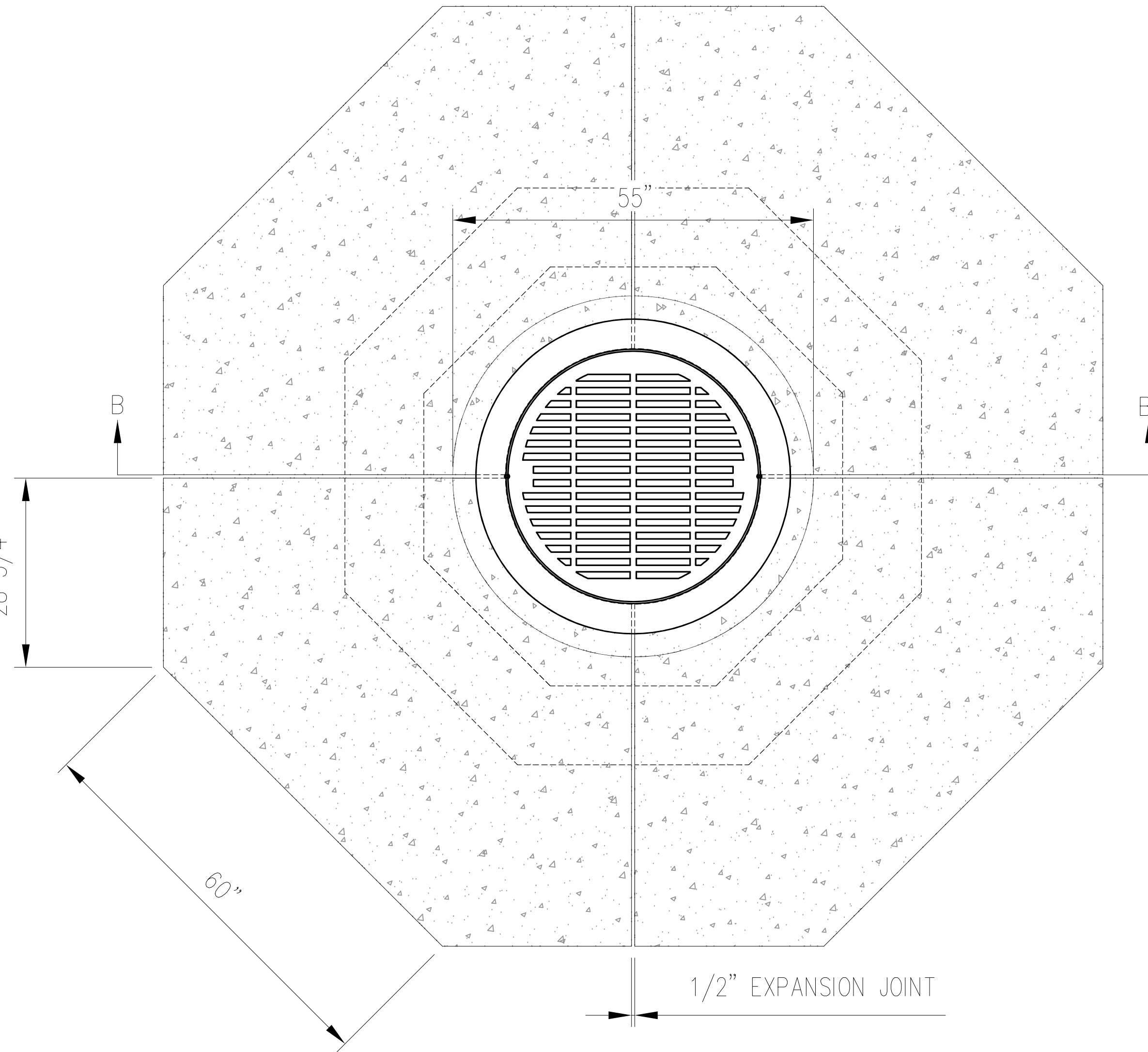
SCALE: NTS - INFORMATION ONLY



P.C.C. INLET COLLAR - QUARTER SECTION

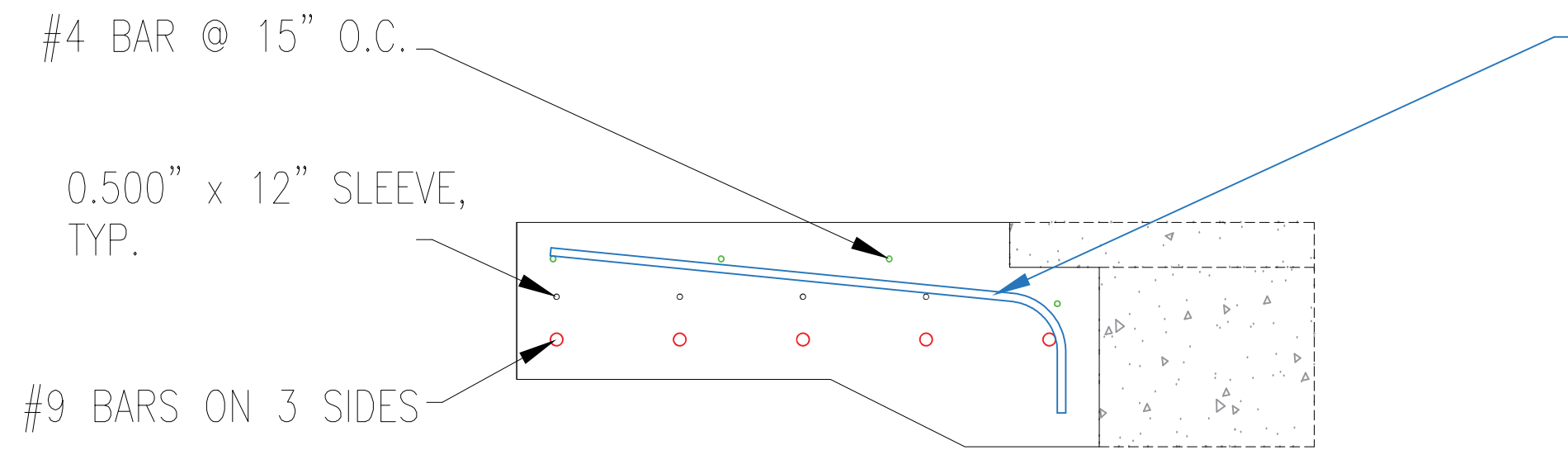
PLAN VIEW WITH REINFORCEMENT

- 1ea. #4 HOOP
- #4 BAR @ 15" O.C. E.W., TOP
- 10ea. 0.500"Ø x 12" SLEEVE W/ 23.5" DOWEL
- 4ea. #4 BAR @ 10" O.C.



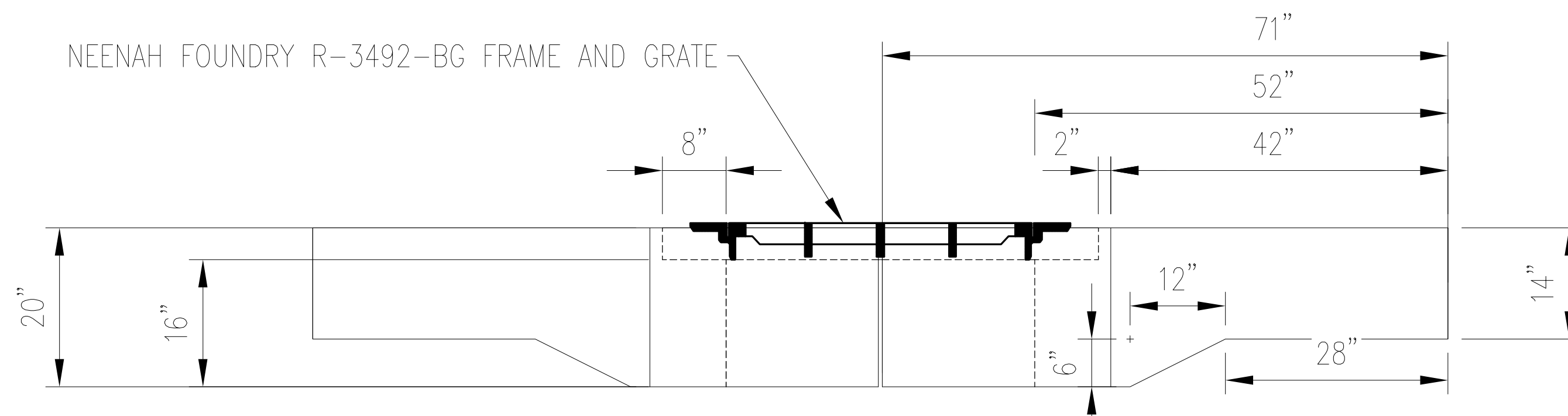
P.C.C. INLET COLLAR - COMPLETE

PLAN VIEW



P.C.C. INLET COLLAR - SECTION A-A'

SECTION VIEW WITH REINFORCEMENT



P.C.C. INLET COLLAR - SECTION B-B'

SECTION VIEW

NOTES:

1. APPROXIMATE WEIGHT OF COMPLETE STRUCTURE IS 20,000#.

NOTE: THIS RECORD DRAWING IS PROVIDED FOR DEMOLITION INFORMATION PURPOSES. IT IS ANTICIPATED THAT MANY OF THE EXISTING MANHOLES TO BE DEMOLISHED WILL INCLUDE CONCRETE STRUCTURES AS SHOWN. AS SUCH, THEY WILL REQUIRE ADDITIONAL DEMOLITION EFFORT COMPARED TO MANHOLES WITHOUT COLLARS.

PROJECT : ARRC Whittier Yard: Sub-grade Drainage Improvements - Area 2		
TITLE : P.C.C. Inlet Collar Record Drawing		
DESIGNED BY: BAO	SCALE : AS NOTED	AFE NO.:
DRAWN BY: BAO	DATE : 06/19/2020	ACAD FILE:
CHECKED BY: DJS		DWG NO. 5 OF 11
APPROVED BY: CDR		

1
6

STRUCTURE A-1 INSTALLATION DETAIL

SCALE: NTS - CONTRACTOR TO FIELD VERIFY

PROPOSED PAVING, GRADED
TO DRAIN TO STRUCTURE A1.2

STRUCTURE A1
RIM EL. 21.1 EXISTING

FG: 21.5

EXISTING A-1: REMOVE
48"Ø CMP INLET
STRUCTURE AND LID,
REPAIR 72"Ø PIPE

STRUCTURE A1.2
RIM EL. 21.1

NEW A-1: DL SUPPLY P-3492 STEEL FRAME
AND P-2575 SLOTTED LID, OR APPROVED EQUAL

SEE SHEET 7

0.500" t EXPANSION JOINT

LONGITUDINAL #4
BARS, AS NEEDED.

1
7 72"Ø STEEL PIPE REPAIR, TYPICAL.

ENCAPSULATE PIPE WITH CONCRETE

#4 SPIRAL, BEGIN WITH FULL WRAP

INV. EL. 14.4'

INV. EL. 14.1'

SEE SHEET 7

REMOVE ? 4 LF OF
24"Ø CMP AND
REPAIR 72"Ø PIPE

72"Ø STEEL PIPE, EXISTING

NEW STORM DRAIN STRUCTURE INSTALLATION

SECTION VIEW

TO A2


68" MAX, TYPICAL

20"
MIN.
SUMP

6" O.C.

NOTES:

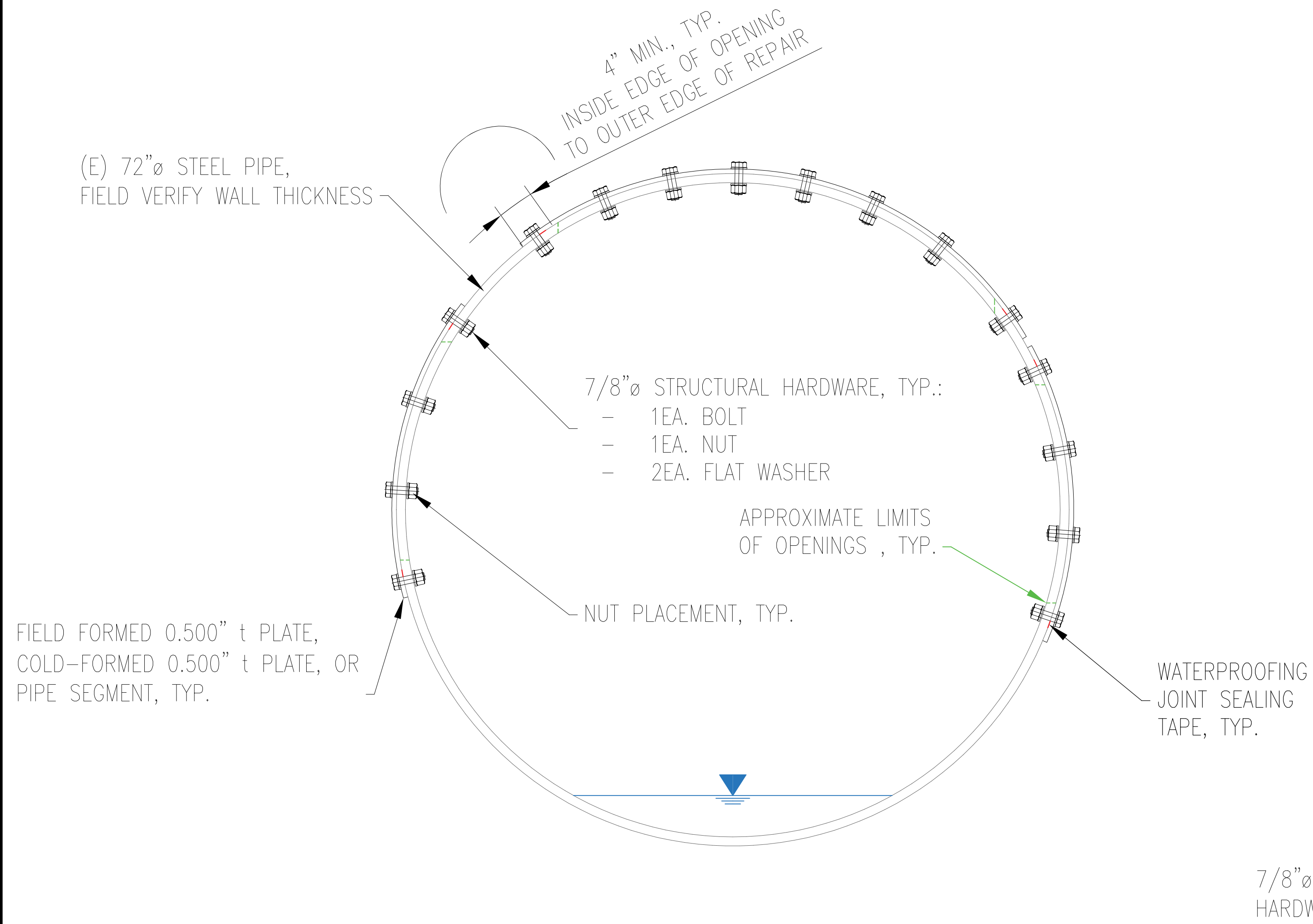
1. F'c = 4,000psi, minimum.

 ALASKA RAILROAD CORPORATION ENGINEERING SERVICES P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500		
PROJECT : ARRC Whittier Yard: Sub-grade Drainage Improvements - Area 2		
TITLE: Drainage Installation Detail Location A-1		
DESIGNED BY: BAO	SCALE : NOT TO SCALE	AFE NO.:
DRAWN BY: BAO		ACAD FILE:
CHECKED BY: DJS	DATE : 06/19/2020	DWG NO.:
APPROVED BY: CDR		6 OF 11

1
7

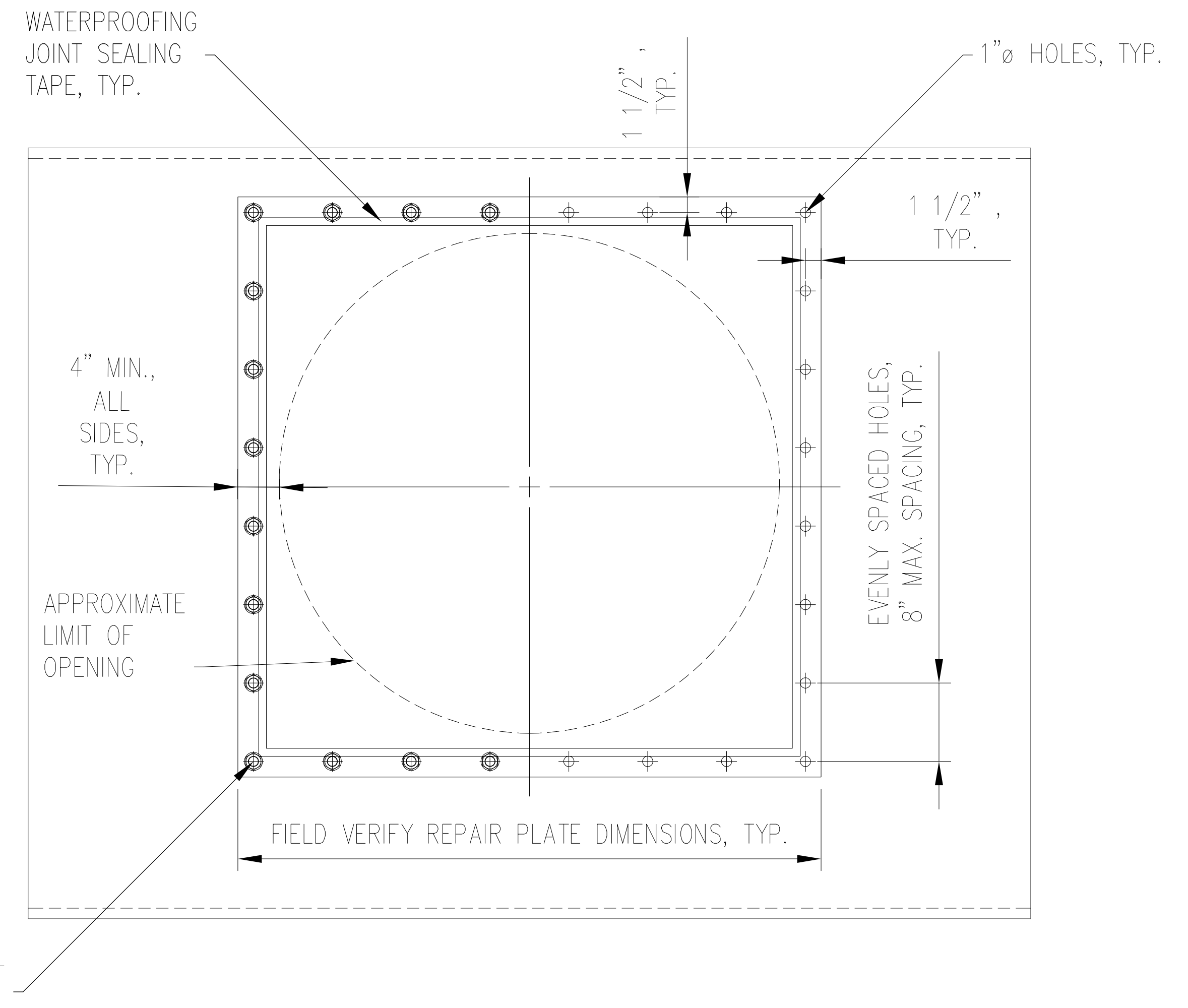
72"Ø STEEL PIPE REPAIR

SCALE: NTS – CONTRACTOR TO FIELD VERIFY



72"Ø STEEL PIPE REPAIR DETAIL


SECTION VIEW

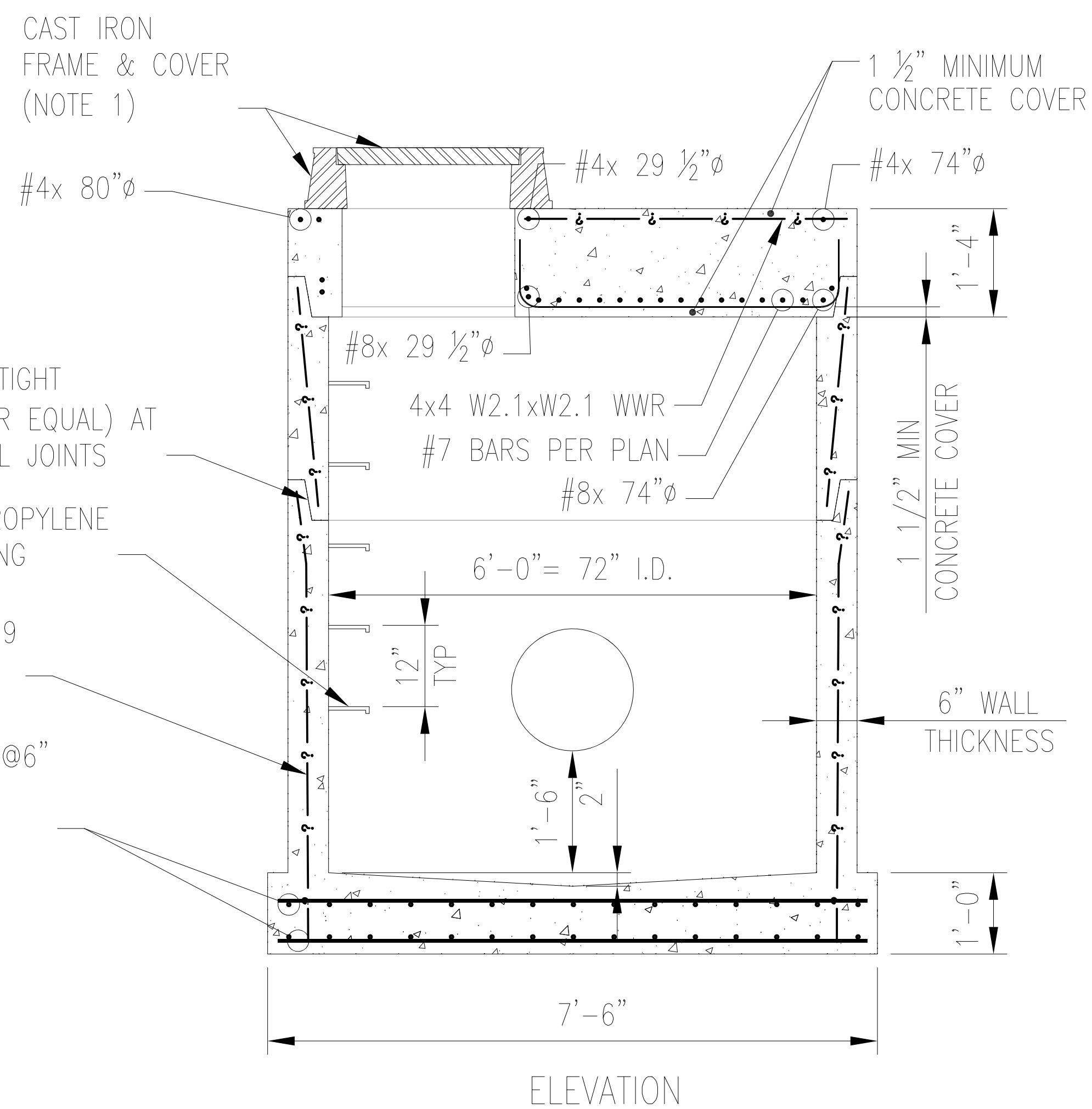
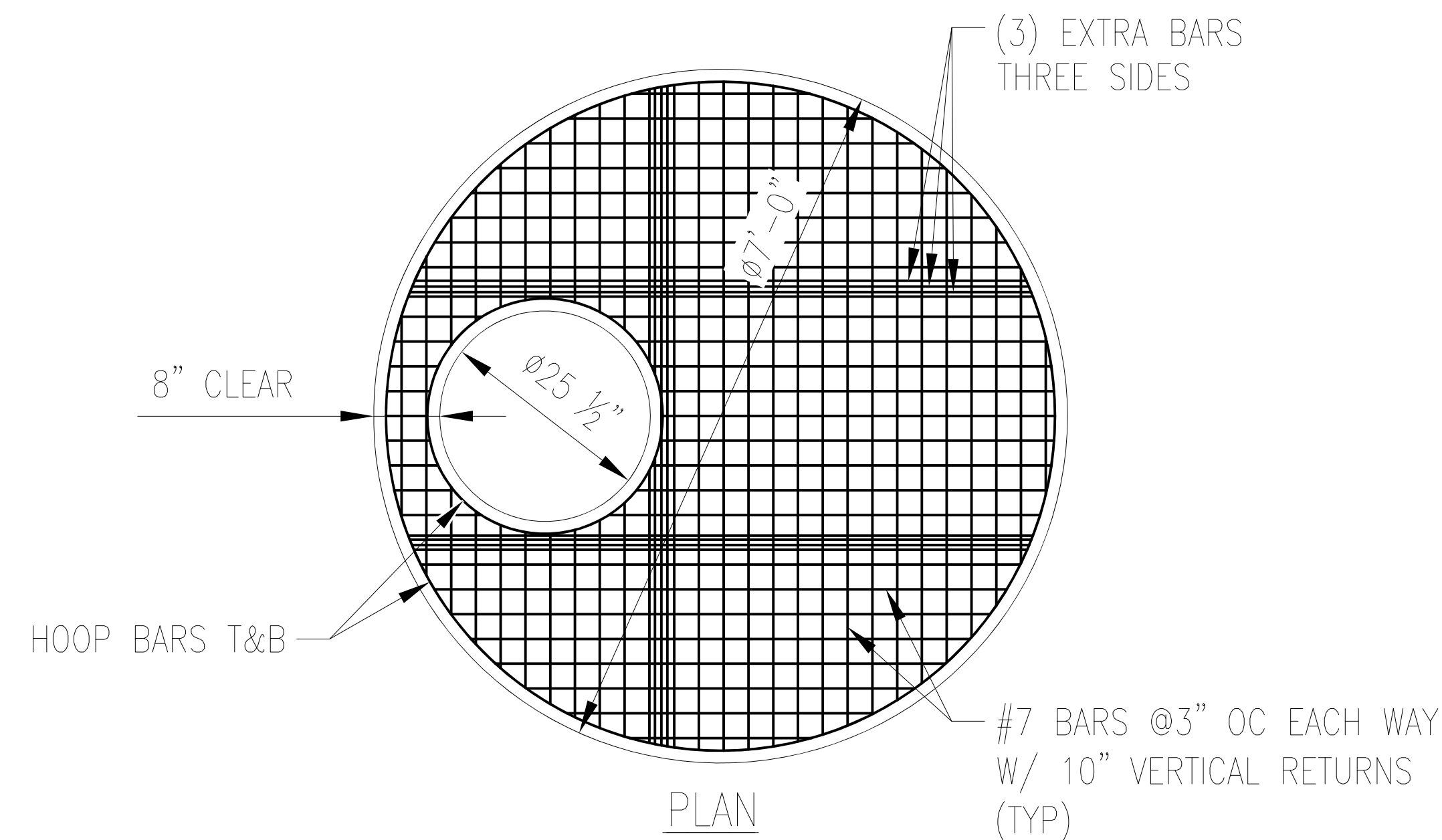


72"Ø STEEL PIPE REPAIR DETAIL

TOP VIEW

C:\Carlson Projects\19-74-ARRC Whittier\2020 Work\SHF5-7.dwg VPort: 7 Plot Style: Color.ctb

 ALASKA RAILROAD CORPORATION ENGINEERING SERVICES P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500		
PROJECT : ARRC Whittier Yard: Sub-grade Drainage Improvements – Area 2		
TITLE: 72"Ø Steel Pipe Repair Repair Details		
DESIGNED BY: BAO	SCALE : NOT TO SCALE	AFE NO.:
DRAWN BY: BAO	DATE : 06/19/2020	ACAD FILE:
CHECKED BY: DJS		DWG NO.:
APPROVED BY: CDR		7 OF 11



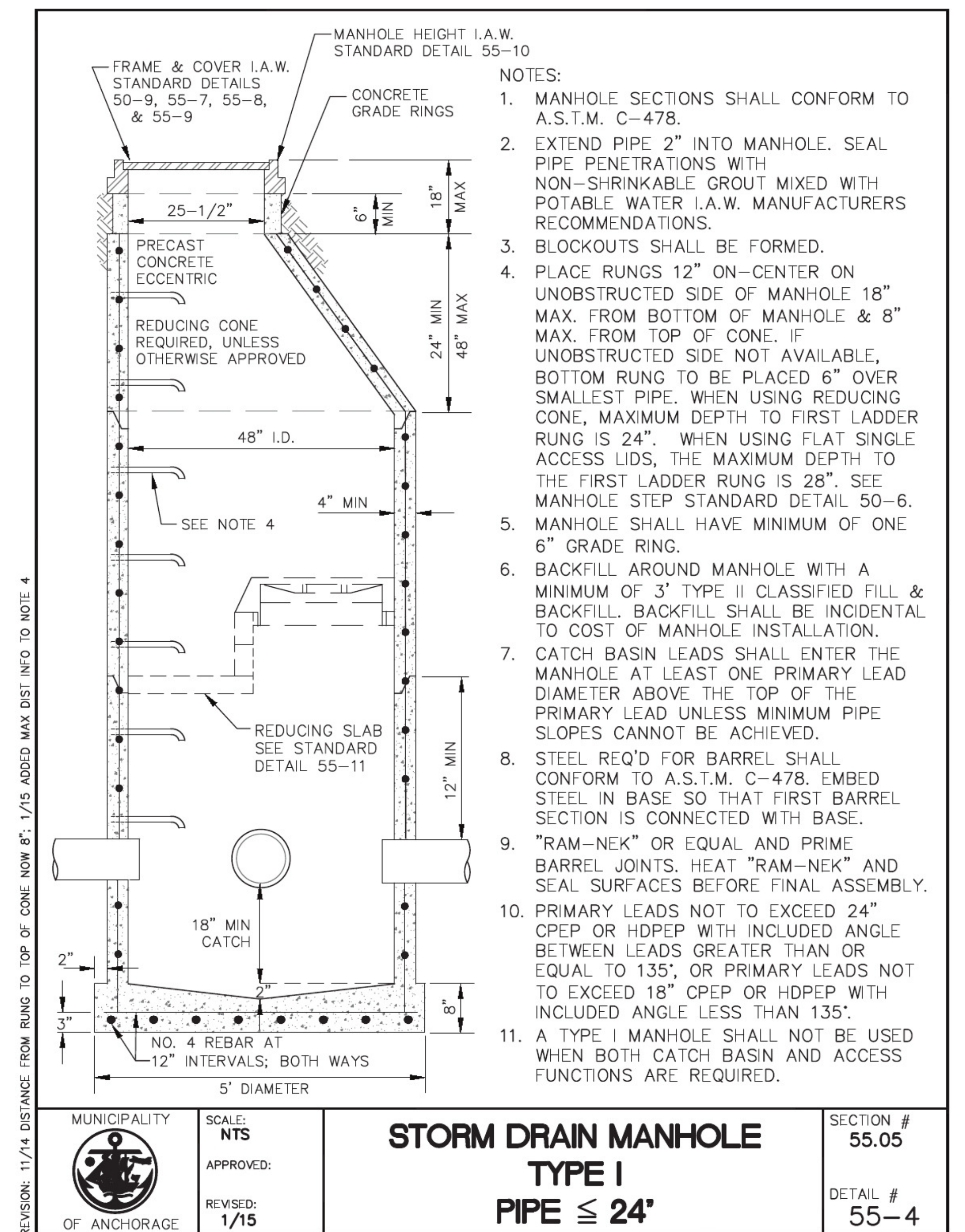
72" DIA. MANHOLE
NTS, USE EVERYWHERE EXCEPT A-1, B-10

- NOTE:**
- CAST IRON MANHOLE LID:
D&L SUPPLY P-3492 FRAME
P-2575 SLOTTED LID
(OR APPROVED EQUAL)
 - REFERENCE FIERRO ENGINEERING (2130 SHORE DRIVE, ANCHORAGE, AK 99515), D&S CONCRETE (FOR ARRC, 2 SHEETS), HEAVY DUTY FORKLIFT-RATED MANHOLE LID, TYPE II (6 FT Ø) MANHOLE LID, DATED 8/31/2017 AND STORM MANHOLE (72" DIA.)
 - DESIGN REFERENCES:
 - ASTM C 478-15
 - ASTM C 857-16
 - ACI 318-11
 - DESIGN MATERIALS:

CONCRETE: $f'_c = 4,000$ psi
 $w/c = 0.45$ max

REBAR: $f_y = 60,000$ psi
ASTM A615 gr 60

WWR: ASTM A185
 - ALL STRUCTURE DESIGN CRITERIA CONFORMS TO OR EXCEEDS A.S.T.M DESIGNATION C 478-15
 - LID LOAD-RATED FOR 125.4 KIPS (INCLUDES 20% IMPACT INCREASE).

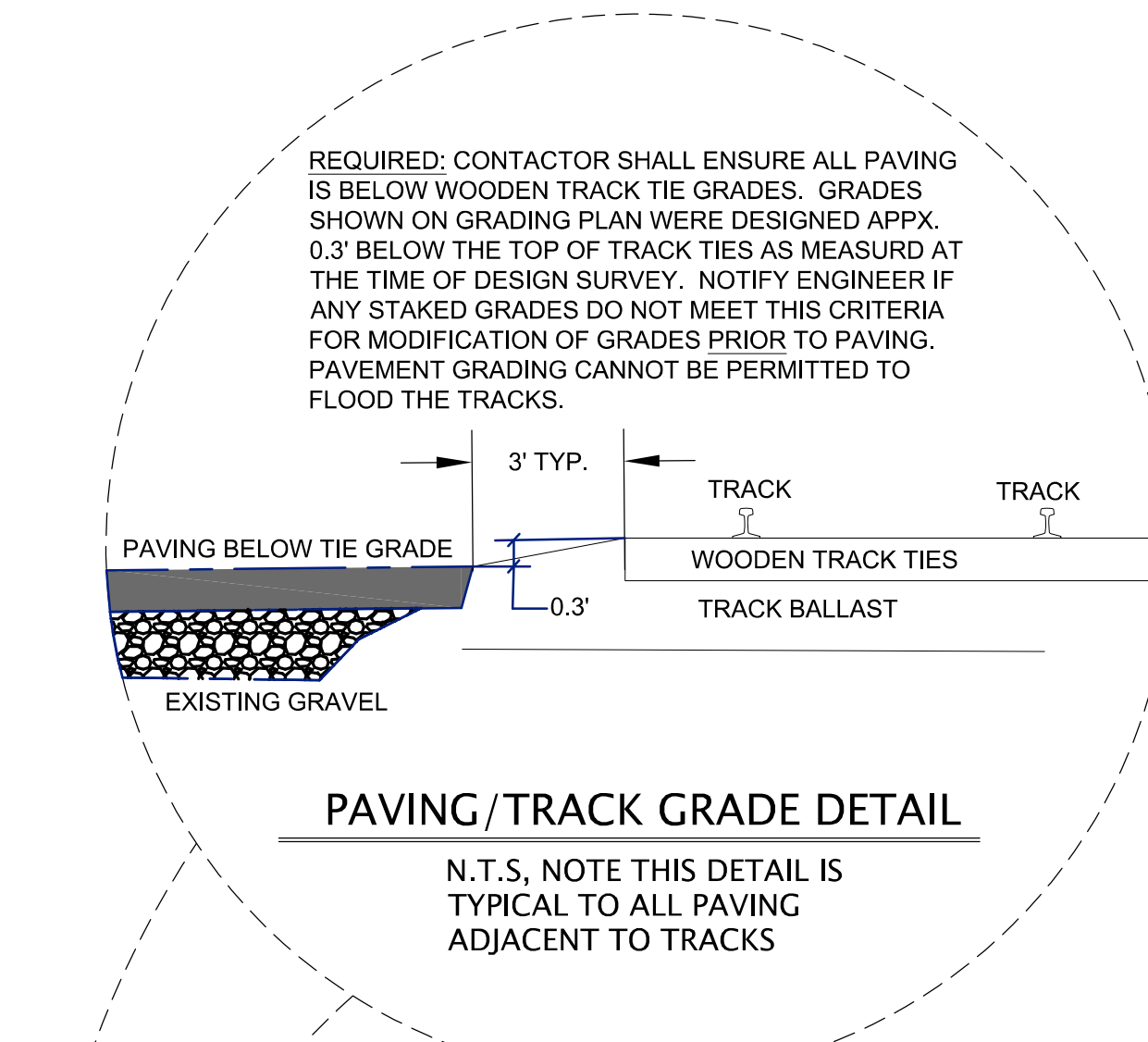
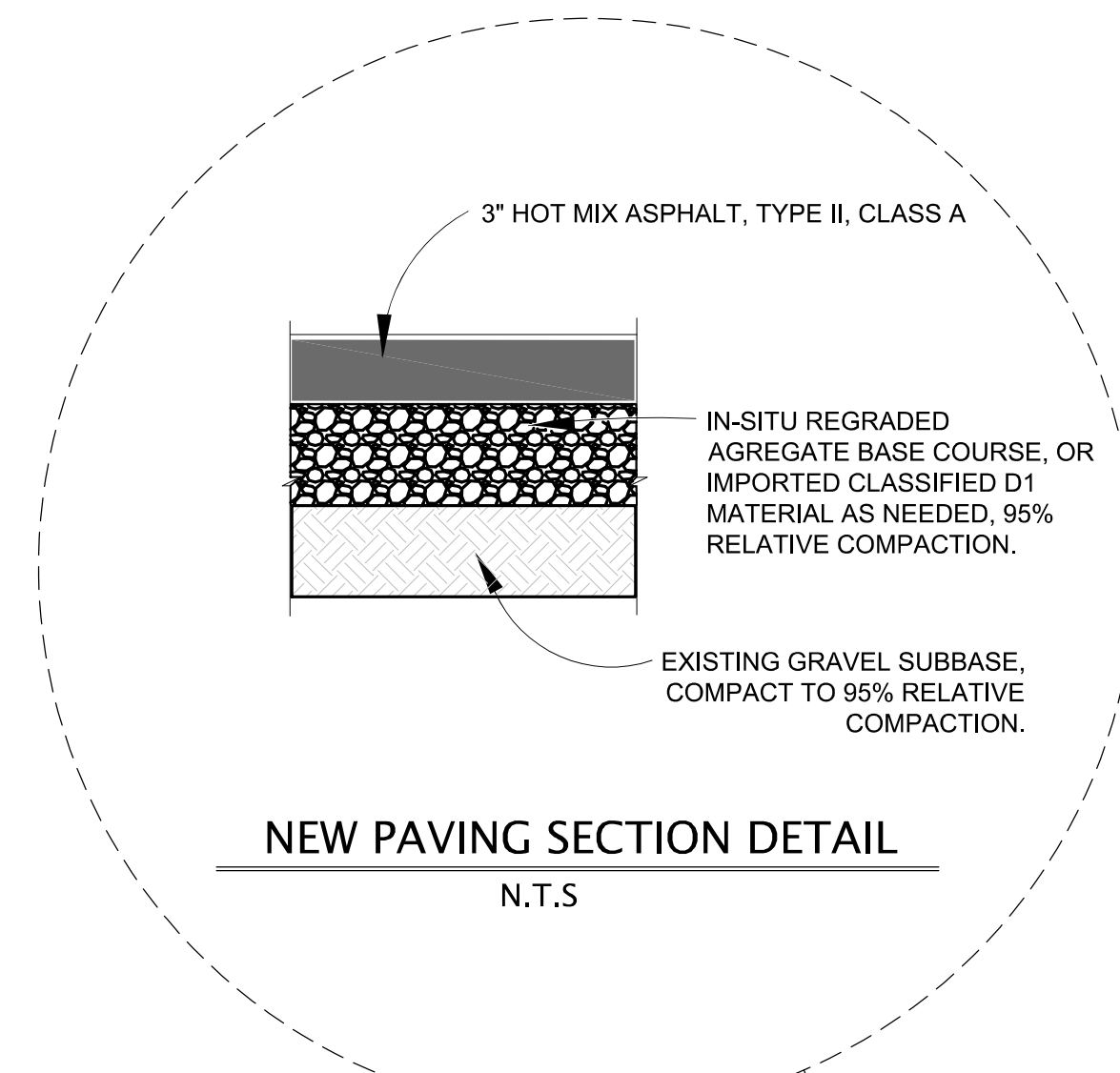


- NOTES:**
- MANHOLE SECTIONS SHALL CONFORM TO A.S.T.M. C-478.
 - EXTEND PIPE 2" INTO MANHOLE. SEAL PIPE PENETRATIONS WITH NON-SHRINKABLE GROUT MIXED WITH POTABLE WATER I.A.W. MANUFACTURERS RECOMMENDATIONS.
 - BLOCKOUTS SHALL BE FORMED.
 - PLACE RUNGS 12" ON-CENTER ON UNOBSTRUCTED SIDE OF MANHOLE 18" MAX. FROM BOTTOM OF MANHOLE & 8" MAX. FROM TOP OF CONE. IF UNOBSTRUCTED SIDE NOT AVAILABLE, BOTTOM RUNG TO BE PLACED 6" OVER SMALLEST PIPE. WHEN USING REDUCING CONE, MAXIMUM DEPTH TO FIRST LADDER RUNG IS 24". WHEN USING FLAT SINGLE ACCESS LIDS, THE MAXIMUM DEPTH TO THE FIRST LADDER RUNG IS 28". SEE MANHOLE STEP STANDARD DETAIL 50-6.
 - MANHOLE SHALL HAVE MINIMUM OF ONE 6" GRADE RING.
 - BACKFILL AROUND MANHOLE WITH A MINIMUM OF 3' TYPE II CLASSIFIED FILL & BACKFILL. BACKFILL SHALL BE INCIDENTAL TO COST OF MANHOLE INSTALLATION.
 - CATCH BASIN LEADS SHALL ENTER THE MANHOLE AT LEAST ONE PRIMARY LEAD DIAMETER ABOVE THE TOP OF THE PRIMARY LEAD UNLESS MINIMUM PIPE SLOPES CANNOT BE ACHIEVED.
 - STEEL REQ'D FOR BARREL SHALL CONFORM TO A.S.T.M. C-478. EMBED STEEL IN BASE SO THAT FIRST BARREL SECTION IS CONNECTED WITH BASE.
 - "RAM-NEK" OR EQUAL AND PRIME BARREL JOINTS. HEAT "RAM-NEK" AND SEAL SURFACES BEFORE FINAL ASSEMBLY.
 - PRIMARY LEADS NOT TO EXCEED 24" CPEP OR HDPEP WITH INCLUDED ANGLE BETWEEN LEADS GREATER THAN OR EQUAL TO 135°, OR PRIMARY LEADS NOT TO EXCEED 18" CPEP OR HDPEP WITH INCLUDED ANGLE LESS THAN 135°.
 - A TYPE I MANHOLE SHALL NOT BE USED WHEN BOTH CATCH BASIN AND ACCESS FUNCTIONS ARE REQUIRED.

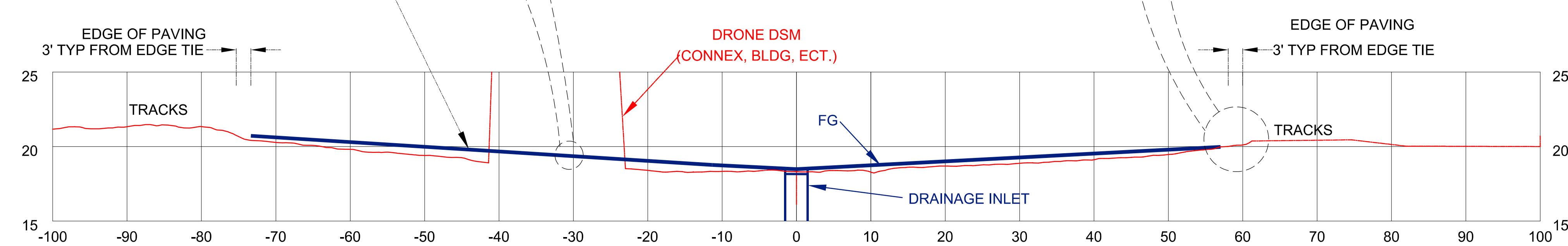
MUNICIPALITY OF ANCHORAGE	SCALE: NTS APPROVED: REVISED: 1/15	STORM DRAIN MANHOLE TYPE I PIPE ≤ 24"	SECTION # 55.05 DETAIL # 55-4
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48" DIA. MANHOLE
SCALE: NTS, USE AT STRUCTURE B10

ALASKA RAILROAD CORPORATION ENGINEERING SERVICES P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500		
PROJECT: ARRC Whittier Yard: Sub-grade Drainage Improvements - Area 2		
TITLE: NEW STORM DRAIN MANHOLE DETAIL		
DESIGNED BY: RJT	SCALE: AS NOTED	A/E NO.:
DRAWN BY: DxD	DATE: 06/19/2020	ACAD FILE:
CHECKED BY: MAS		DWG NO. 8 OF 11
APPROVED BY: BAO		



3" ASPHALT OVER AGGREGATE BASE. GRADE TO CATCH BASINS 0.5-3.5%. PAVING CANNOT BE HIGHER THAN ADJACENT TRACK TIES SEE DETAILS ABOVE.



TERRAIN MODEL VOLUMES

Volumes by Triangulation (Prisms) REV. 6-15-2020
Existing Surface: Paving Area 2 OG - May 2020.tin
Final Surface: FG2 JUNE 2020 0P3 BELOW TRACK TIE.tin

Cut volume: 21,970.5 C.F., 813.72 C.Y.
Fill volume: 79,272.6 C.F., 2,936.02 C.Y.

Area in Cut : 90,527.0 S.F., 2.08 Acres
Area in Fill: 178,371.7 S.F., 4.09 Acres
Total inclusion area: 268,898.8 S.F., 6.17 Acres

Average Cut Depth: 0.24 feet
Average Fill Depth: 0.44 feet
Cut to Fill ratio: 0.28
Import Volume: 2,122.3 C.Y.
Elevation Change To Reach Balance: -0.213
Volume Change Per .1 ft: 995.9 C.Y.

Cut (C.Y.) / Area (acres): 131.82
Fill (C.Y.) / Area (acres): 475.62

Max Cut: 0.978 at 1874514.781,2477809.653
Max Fill: 1.530 at 1874775.337,2477741.702

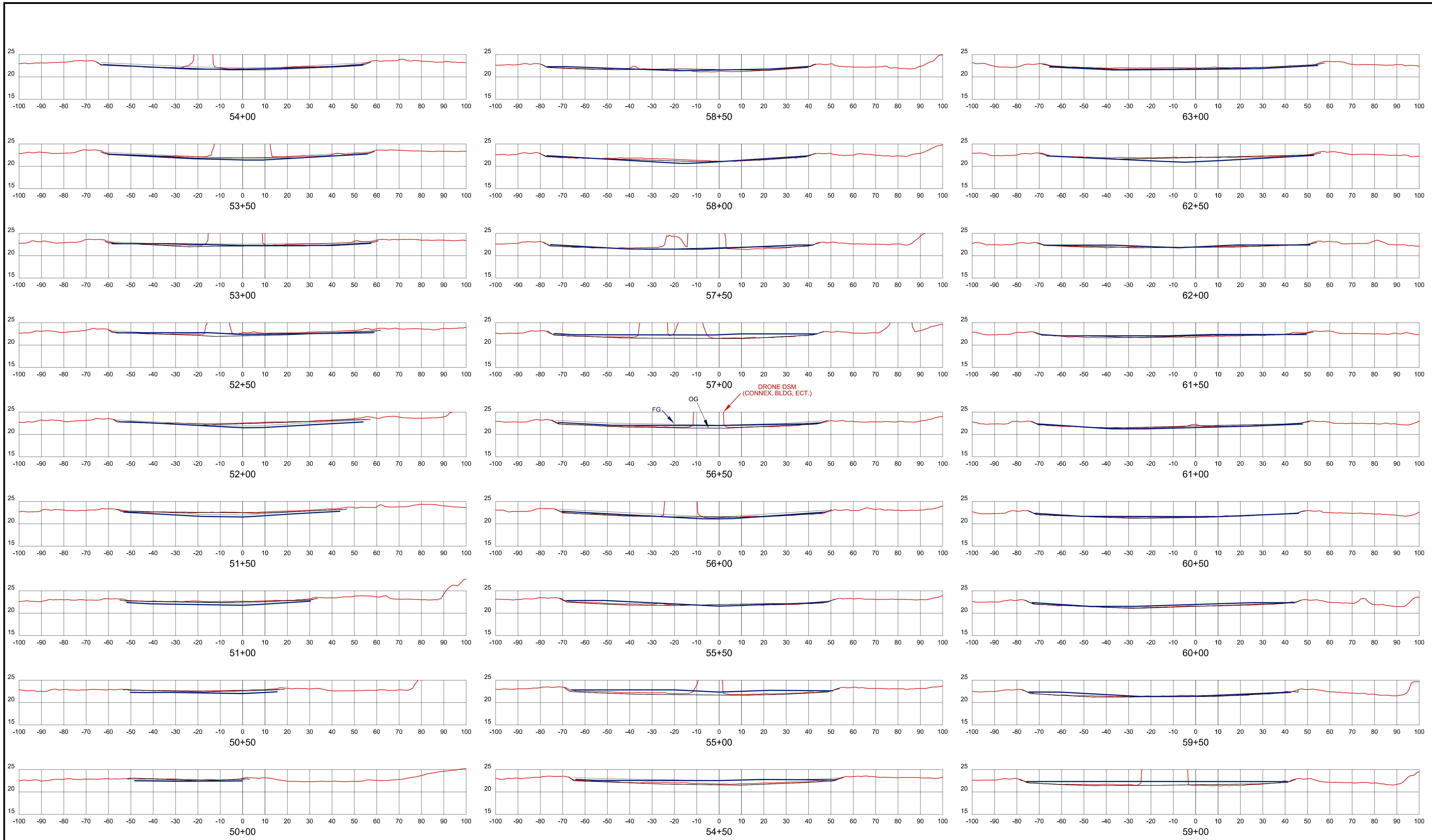
PAVING QUANTITIES

ASPHALT PAVING: 268,899 S.F. * 3"/12" = 67225 C.F. = 2490 C.Y.

NOTE:
QUANTITIES CALCULATED TO THE LEFT ARE FROM EXISTING GROUND SURFACE TO FINISHED PAVING SURFACE. THESE QUANTITIES DO NOT INCLUDE EXCAVATION REQUIRED TO REMOVE/DEMOLISH EXISTING STORMDRAIN SYSTEM.

				CLIENT: ALASKA RAILROAD CORPORATION PROJECT: WHITTIER YARD AREA #2 DRAINAGE AND PAVEMENT IMPROVEMENTS SHEET TITLE: DETAILS	JOB NUMBER: 19-74 DATE: 06/19/2020 SHEET NO: 9 OF 11
SYM.	REVISIONS	DATE	BY		

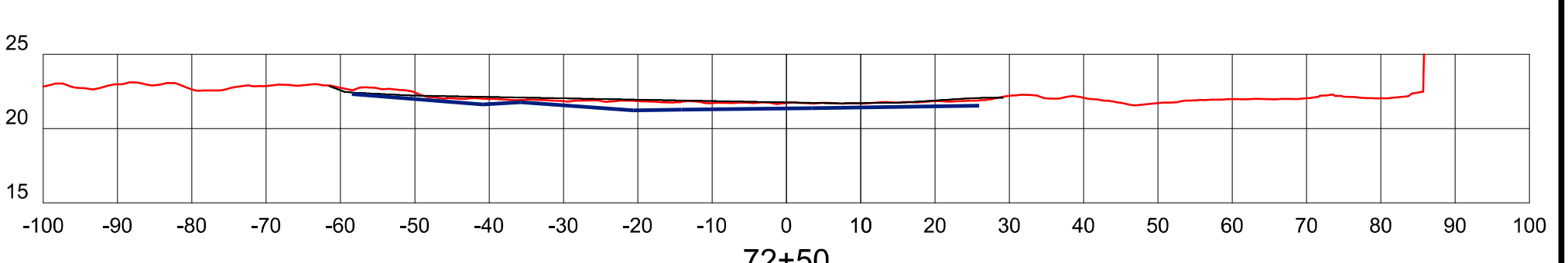
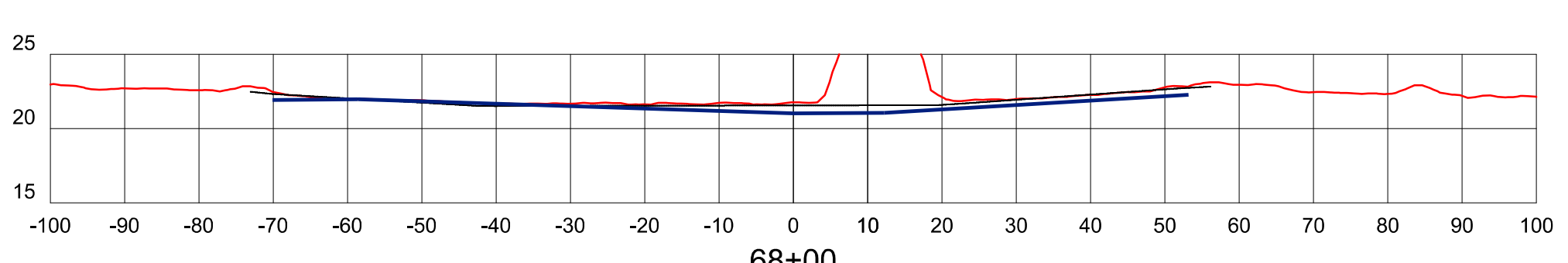
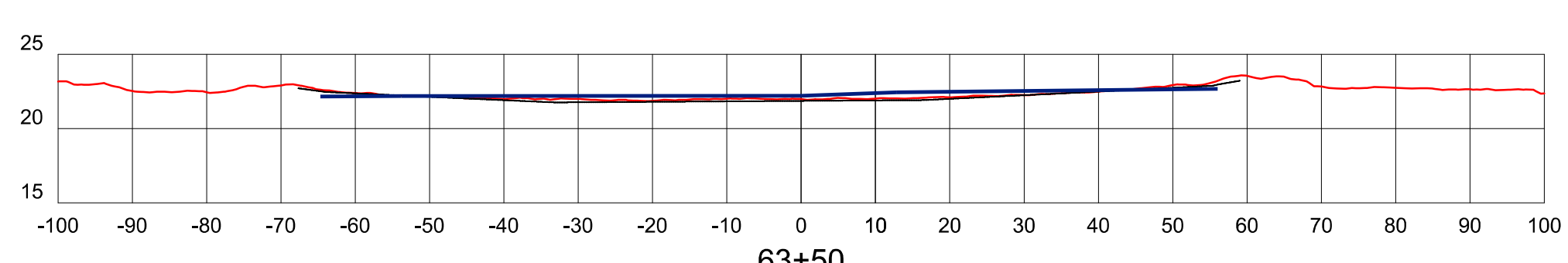
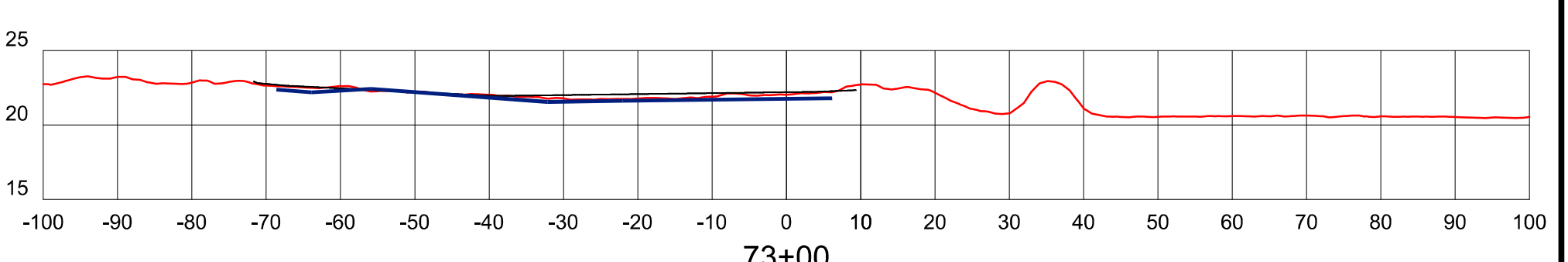
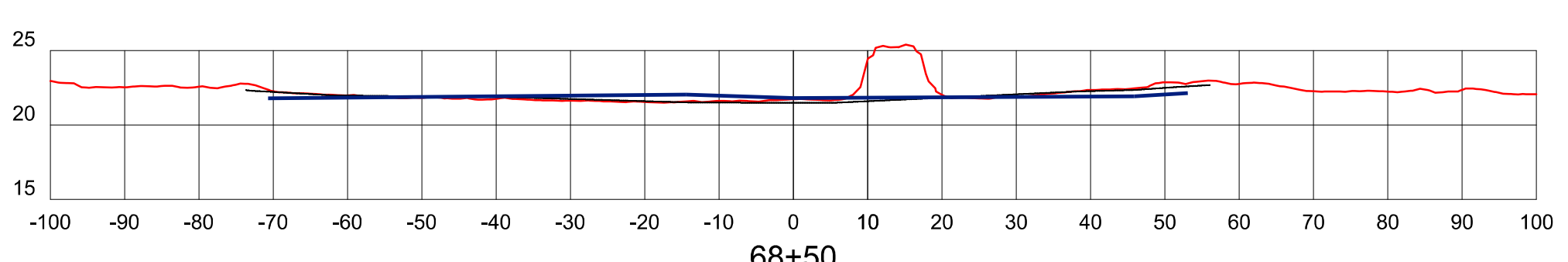
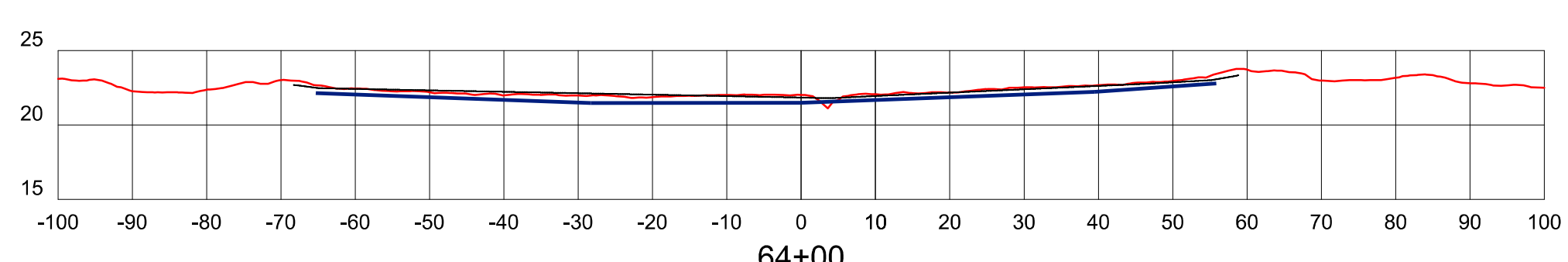
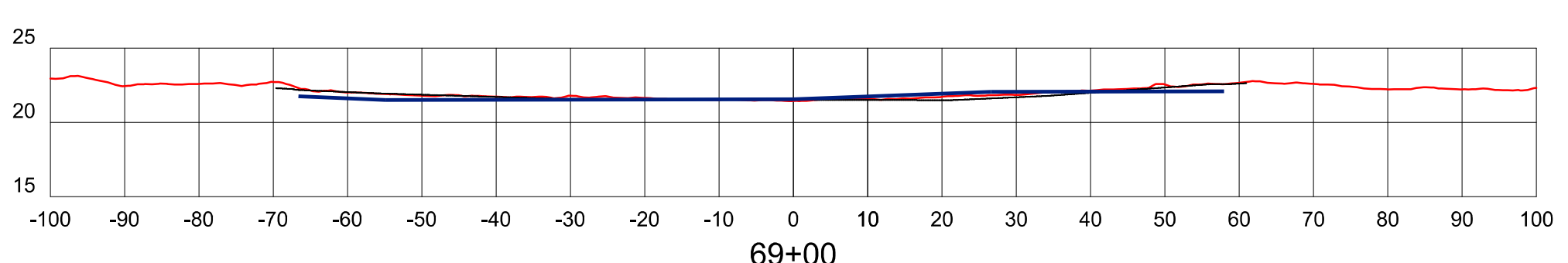
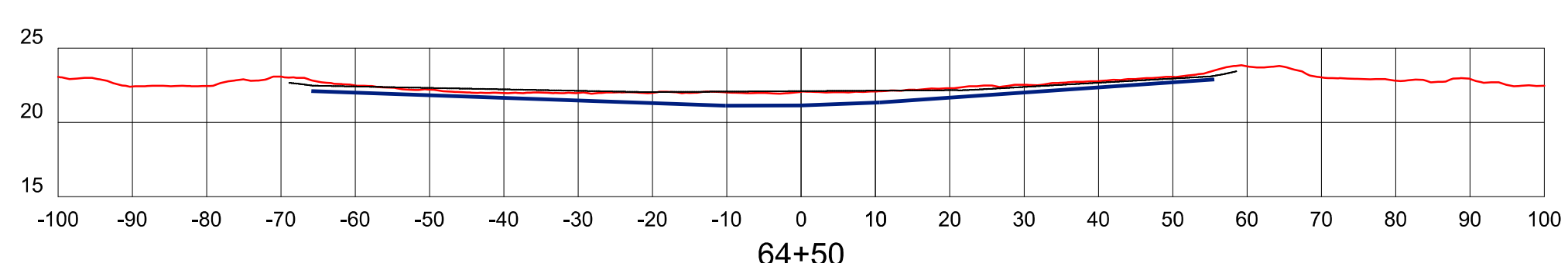
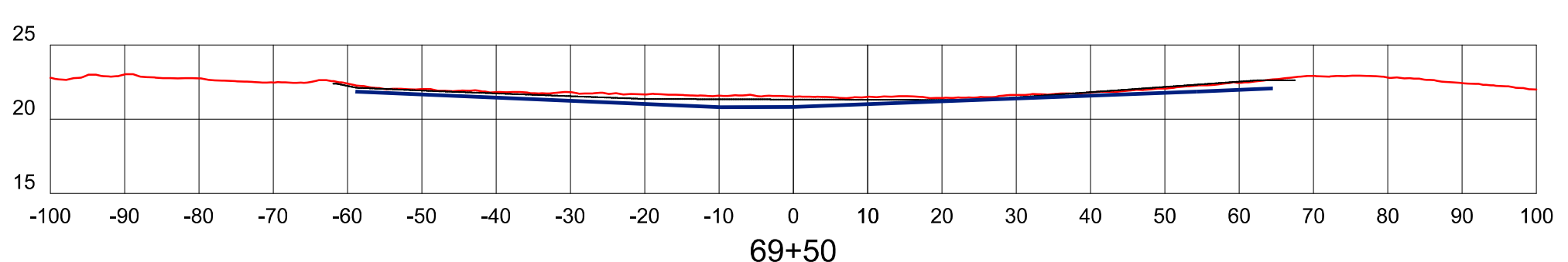
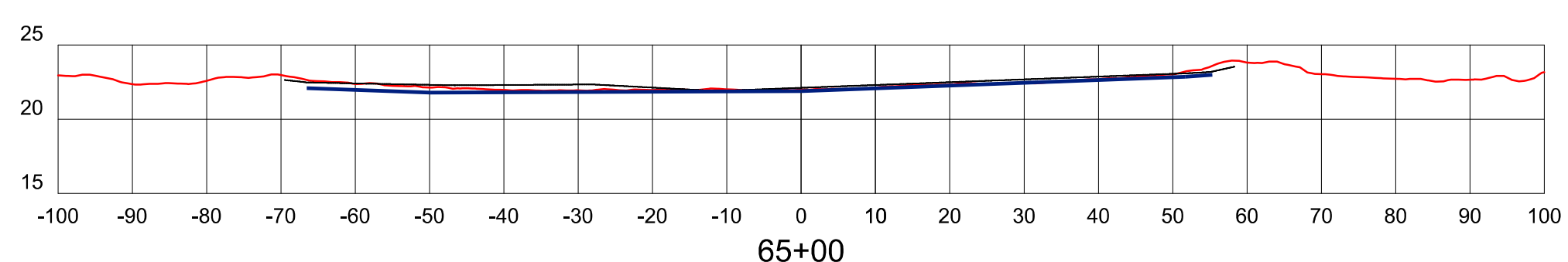
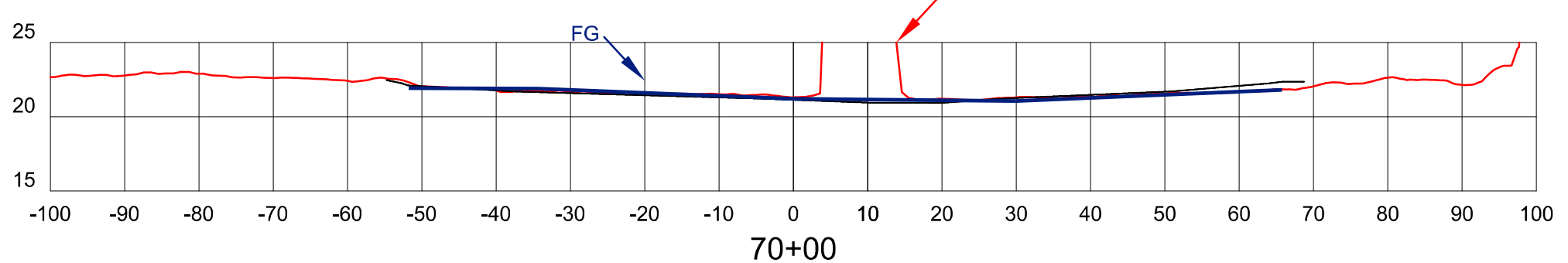
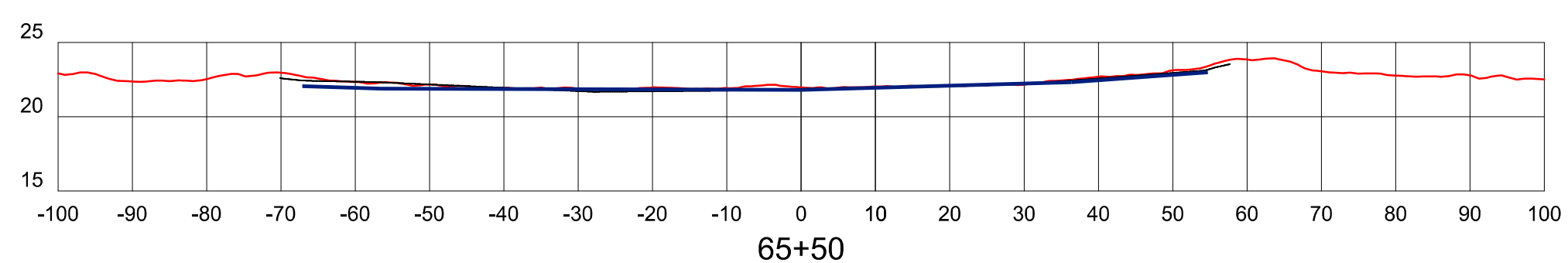
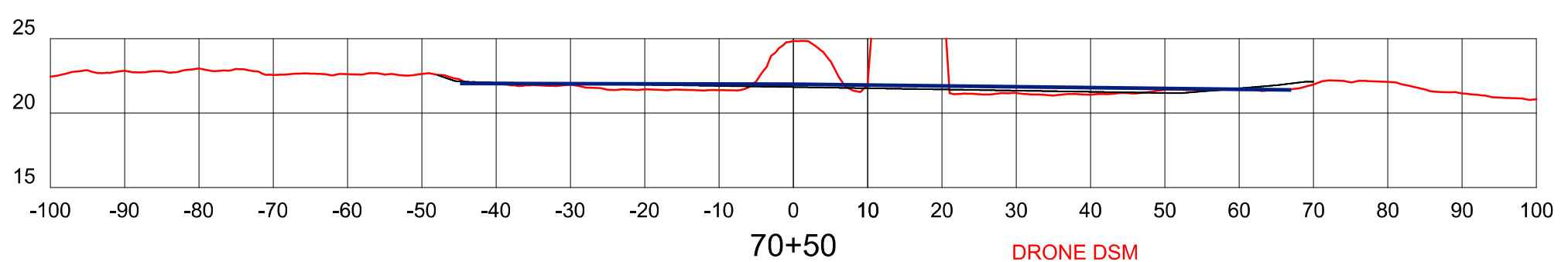
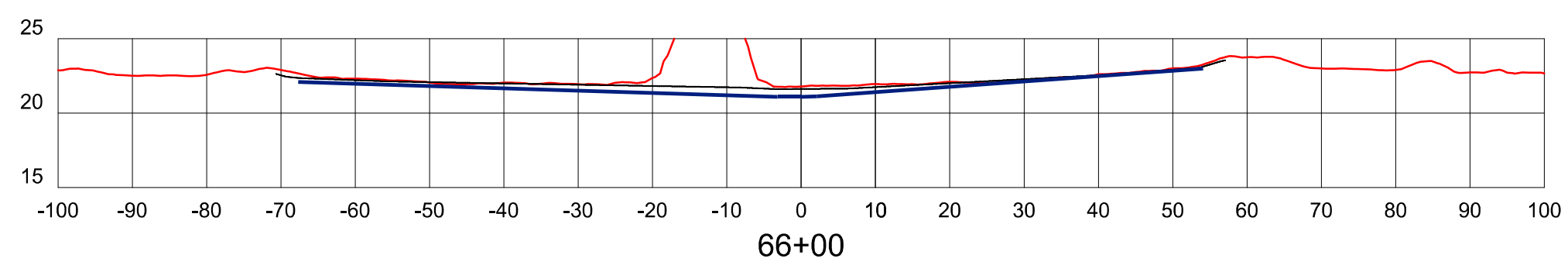
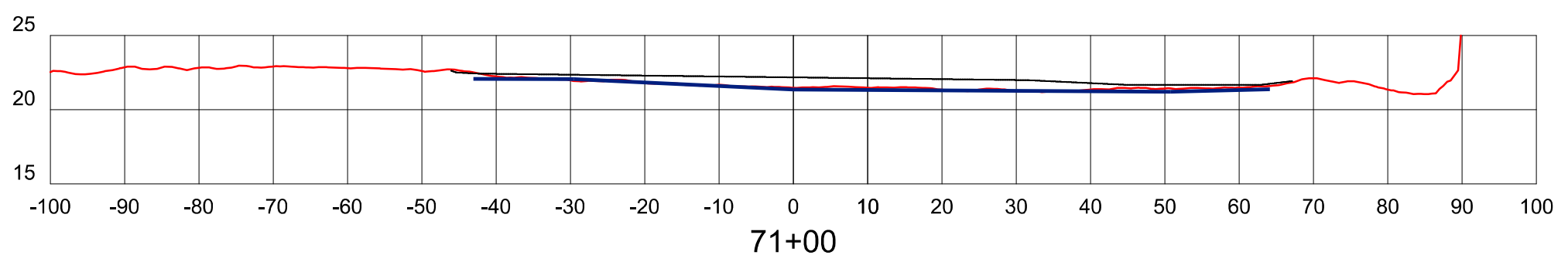
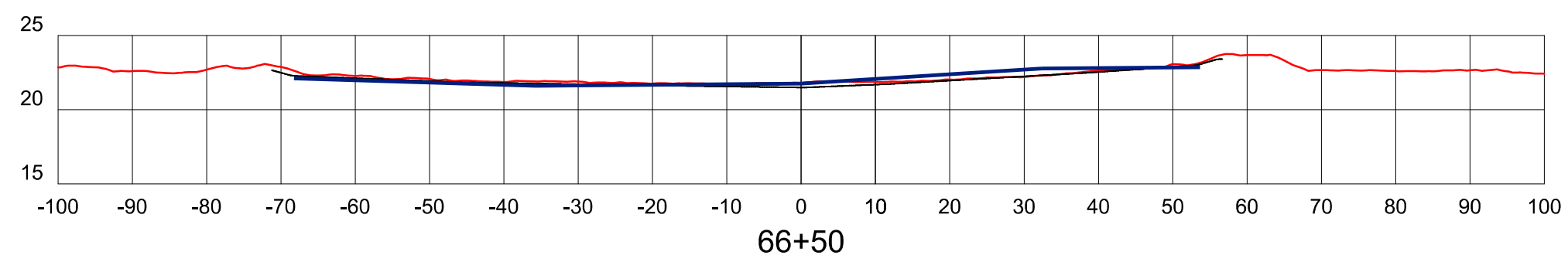
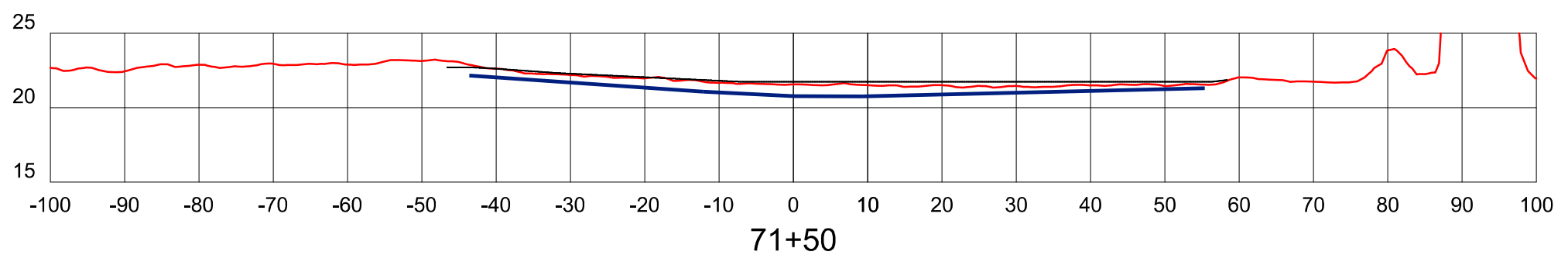
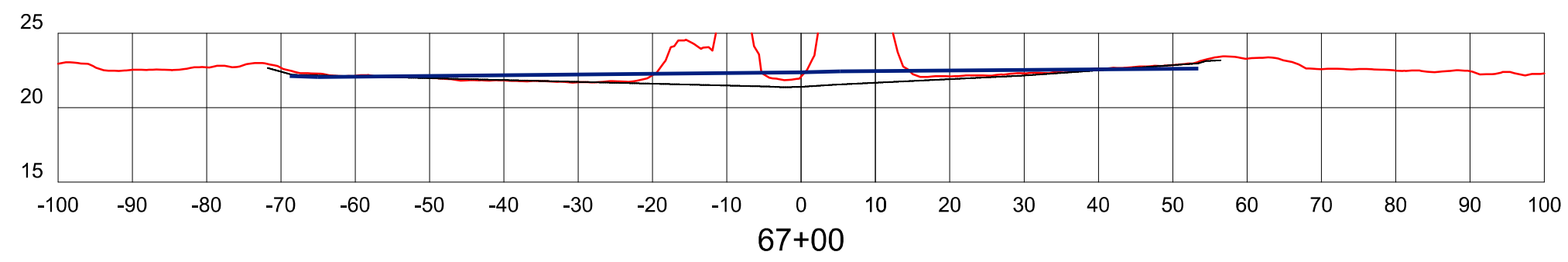
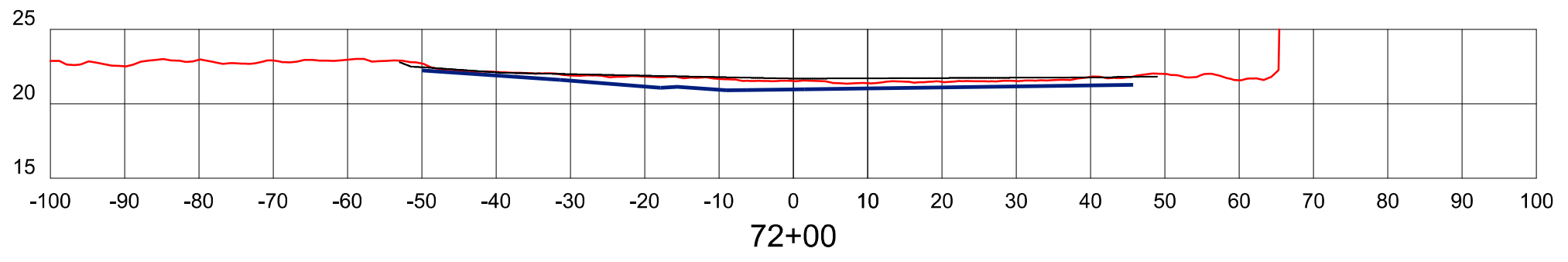
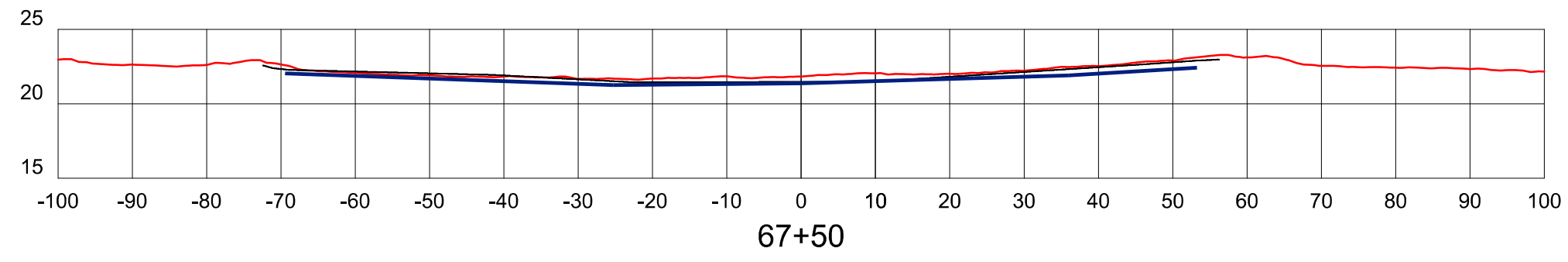
SCALE 1": 10 FEET HORIZ.
1": 5 FEET VERT.



SYM.	REVISIONS	DATE	BY

CLIENT **ALASKA RAILROAD CORPORATION** JOB NUMBER **19-74**
 PROJECT **WHITTIER YARD AREA #2 DRAINAGE AND PAVEMENT IMPROVEMENTS**
 SHEET TITLE **PAVING AREA 2 CROSS SECTIONS**

SCALE **1" = 20 FEET HORIZ.**
1" = 10 FEET VERT.
 DATE **06/19/2020**
 SHEET NO **10 OF 11**



SYM.	REVISIONS	DATE	BY

CLIENT	ALASKA RAILROAD CORPORATION	JOB NUMBER	19-74
PROJECT	WHITTIER YARD AREA #2 DRAINAGE AND PAVEMENT IMPROVEMENTS		
SHEET TITLE	PAVING AREA 2 CROSS SECTIONS		

SCALE	1": 20 FEET HORIZ. 1": 10 FEET VERT.
DATE	06/19/2020
SHEET NO	11 OF 11