

ADAIR CO.
BRIDGE AND APPROACHES-PPCB
BRF-092-3(36)--38-01

LETTING DATE
 12/17/2019



Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

ADAIR COUNTY

BRIDGE AND APPROACHES-PPCB

Marvel Creek 0.3 mi W of Co Rd P33

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

Value Engineering Saves. Refer to Article 1105.14 of the Specifications.



REVISIONS

TOTAL

PROJECT IDENTIFICATION NUMBER

15-01-092-010

PROJECT NUMBER

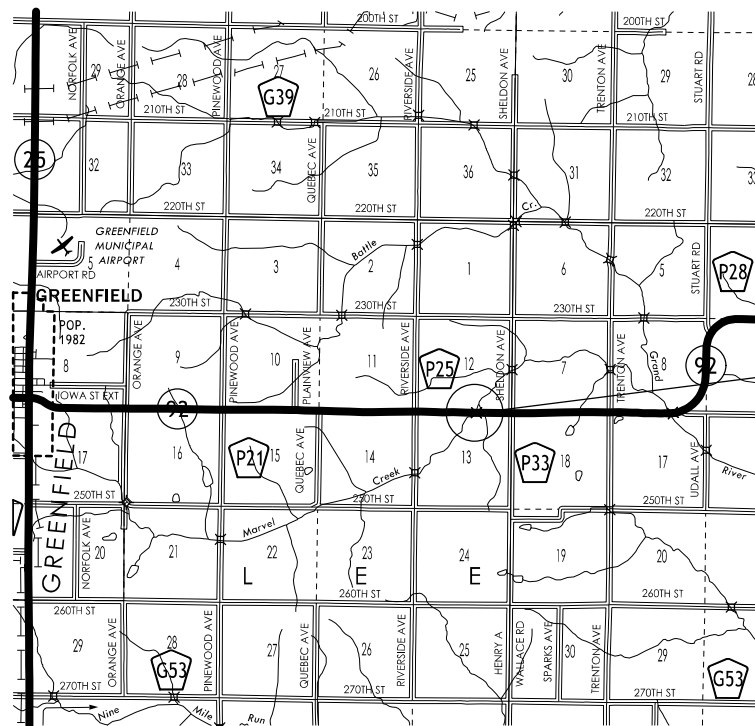
BRF-092-3(36)--38-01

R.O.W. PROJECT NUMBER

STPN-092-3(37)--2J-01

STPN-092-3(37)--2J-01

STPN-092-3(37)--2J-01



PROJECT LOCATION
 Ref. Loc. 85.90

DESIGN DATA RURAL

2020 AADT	1,100	V.P.D.
2040 AADT	1,200	V.P.D.
20-- DHV	--	V.P.H.
TRUCKS	23	%
Total Design ESALs	--	

INDEX OF SEALS

SHEET NO.	NAME	TYPE
A.1	X	Primary Signature Block
X	X	X

D4 - 8/20/2019

PRELIMINARY PLANS

Subject to change by final design.

D5 PLAN - Date: 7/13/2018

FILE NO. 31557

ENGLISH

DESIGN TEAM Holst \ Strum \ Bennett

ADAIR COUNTY

PROJECT NUMBER

BRF-092-3(36)--38-01

SHEET NUMBER

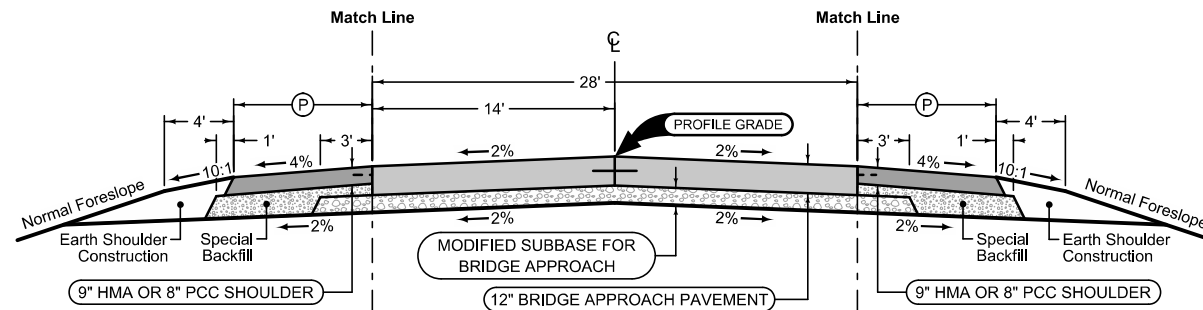
A.1

Paved Shoulder at Guardrail

PCC Shoulder Jointing:
 Longitudinal joint: BT-1 or BT-5
 Transverse joints: C at mainline spacing
 HMA Shoulder Jointing:
 Longitudinal joint: B

2_P_Guard_10-17-17		(P)
STATION TO STATION		Feet
613+86.57	614+77.40	*
616+56.60	617+75.93	*

* See Typical 7156 and cross sections



Mainline Jointing:
 See BR-203

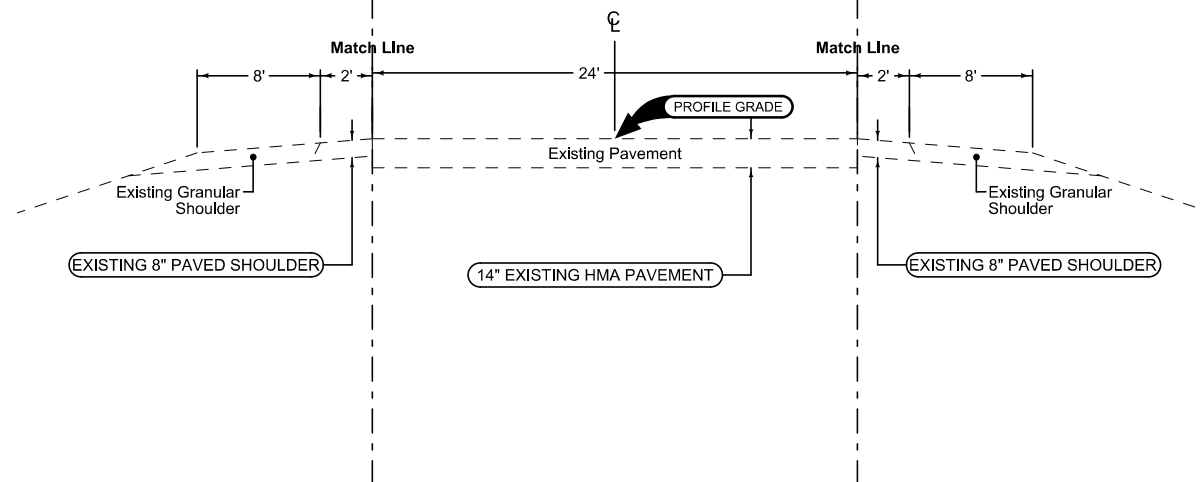
2P_10-19-10	
STATION TO STATION	
614+27.40	615+00.40
616+33.60	617+06.60

Paved Shoulder at Guardrail

PCC Shoulder Jointing:
 Longitudinal joint: BT-1 or BT-5
 Transverse joints: C at mainline spacing
 HMA Shoulder Jointing:
 Longitudinal joint: B

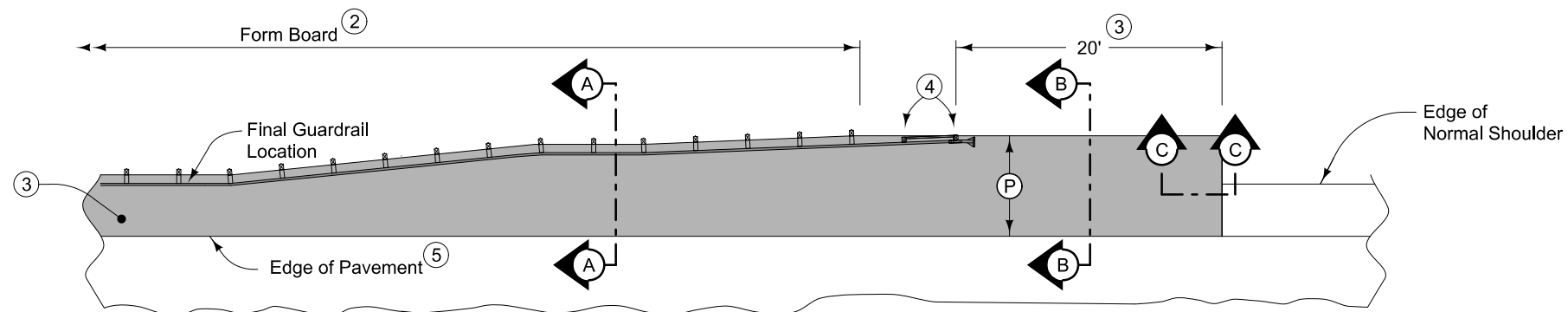
2_P_Guard_10-17-17		(P)
STATION TO STATION		Feet
613+58.07	614+77.40	*
616+56.60	617+47.41	*

* See Typical 7156 and cross sections



See Tab 100-24 or 100-25 for pavement quantities.
 See Tab 112-9 for shoulder quantities.

IA 92



PLAN VIEW

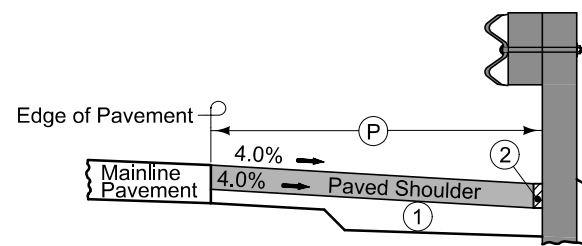
9" HMA Paved Shoulder at guardrail. 8" PCC may be substituted with the following jointing layout:

Match mainline pavement joint spacing. When mainline pavement is 8" or greater in thickness, place additional transverse 'C' joints in shoulder at mid-panel of the mainline pavement. Place longitudinal 'C' joint at P/2 from edge of mainline pavement when P is greater than 10' wide. Terminate longitudinal joint at transverse joint less than 10' in length.

Compaction of HMA is required to face of guardrail post. Hand compaction will be allowed under guardrail. Removal and reinstallation of guardrail will be allowed with no additional payment.

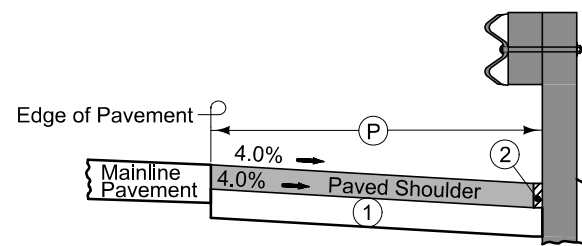
Refer to Tabulation 112-9 for shoulder quantities.

- ① 6" modified subbase.
- ② PCC option only: When guardrail posts are installed prior to construction of PCC paved shoulder, fasten form board to the face of guardrail posts for the length shown. Refer to note 4 for final 2 posts.
- ③ Continue paved shoulder to existing paved shoulder or 20 feet beyond the center of the first post.
- ④ Shoulder may be notched for final 2 posts or post sleeves may be installed through pavement. Do not drive posts through pavement.
- ⑤ 'KT-1 joint for PCC shoulder. 'B' joint for HMA shoulder.

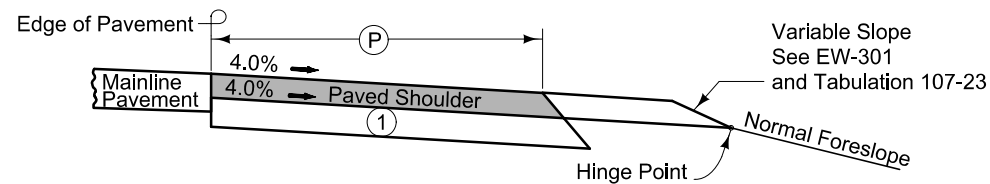


Section A-A

NEW CONSTRUCTION

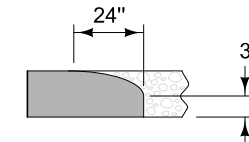


Section A-A



Section B-B

EXISTING SHOULDER



Section C-C
Roll down at granular shoulder or earth.

PAVED SHOULDER AT GUARDRAIL

SURVEY SYMBOLS

SURVEY SYMBOLS

- BM Bench Mark
- PCP Photo Control Point
- WC Wild Card (Misc. Field Shot)
- PLG Location of General Photo
- BCL Bridge Centerline
- SNP Unpaved Shoulder
- SH Paved Shoulder
- OUT Tile Outlet
- Tile --- TIL Tile Line
- CON Concrete or A/C Slab
- EP Edge of Paved Roads (ML or SR)
- C Centerline BL of Road (ML or SR)
- LIN Miscellaneous Line
- ENU Edge Unpaved Entrance & Parking
- ENT Centerline BL of Entrance
- BD Bridge Deck
- BRG Bridge
- BL Topo Breakline
- BBB Bottom of Bridge Beam
- PRO Profile Shot
- CUL Culvert
- SOP Size of Pipe or Culvert
- ← DU Centerline Draw or Stream (Up)
- PIP Pipe Culvert
- TPD Telephone Pedestal
- D Centerline Draw or Stream (Down)
- BNK Stream Bank
- EW Edge of Water
- SP Stream Profile
- TW Top of Water
- VS Channel Cross Section
- REF Reference Tie Point
- GR Ground Shot
- F02 --- FO2D Fiber Optic Co. 2 - Quality D
- F03 --- FO3D Fiber Optic Co. 3 - Quality D
- F0 --- FO1D Fiber Optic Co. 1 - Quality D
- W --- WL1D Water Line Co. 1 - Quality D
- FENO FENO Monument
- CP Control Point
- SCR Section Corner
- SBR Size of Bridge

UTILITY LEGEND

- F0 - FO1D Fiber Optic Windstream - Quality D
- F02 - FO2D Fiber Optic MCI Verizon - Quality D
- F03 - FO3D Fiber Optic Century Link - Quality D
- W - WL1D Water Line Southern Iowa Rural Water Association - Quality D

PLAN VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

LINEWORK	Design Color No.	
Green	(2)	Existing Topographic Features and Labels
Blue	(1)	Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
Magenta	(5)	Existing Utilities
SHADING		
Design Color No.		
Yellow	(4)	Highlight for Critical Notes or Features
Red	(3)	Delineates Restricted Areas
Lavender	(9)	Temporary Pavement Shading
Gray, Light	(48)	Proposed Pavement Shading
Gray, Med	(80)	Proposed Granular Shading
Gray, Dark	(112)	Proposed Grade and Pave Shading "In conjunction with a paving project"
Brown, Light	(236)	Grading Shading
Tan	(8)	Proposed Sidewalk Shading
Blue, Light	(230)	Proposed Sidewalk Landing Shading
Pink	(11)	Proposed Sidewalk Ramp Shading

PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

LINEWORK	Design Color No.	
Green	(2)	Existing Ground Line Profile
Blue	(1)	Proposed Profile and Annotation
Magenta	(5)	Existing Utilities
Blue, Light	(230)	Proposed Ditch Grades, Left
Black	(0)	Proposed Ditch Grades, Median
Rust	(14)	Proposed Ditch Grades, Right

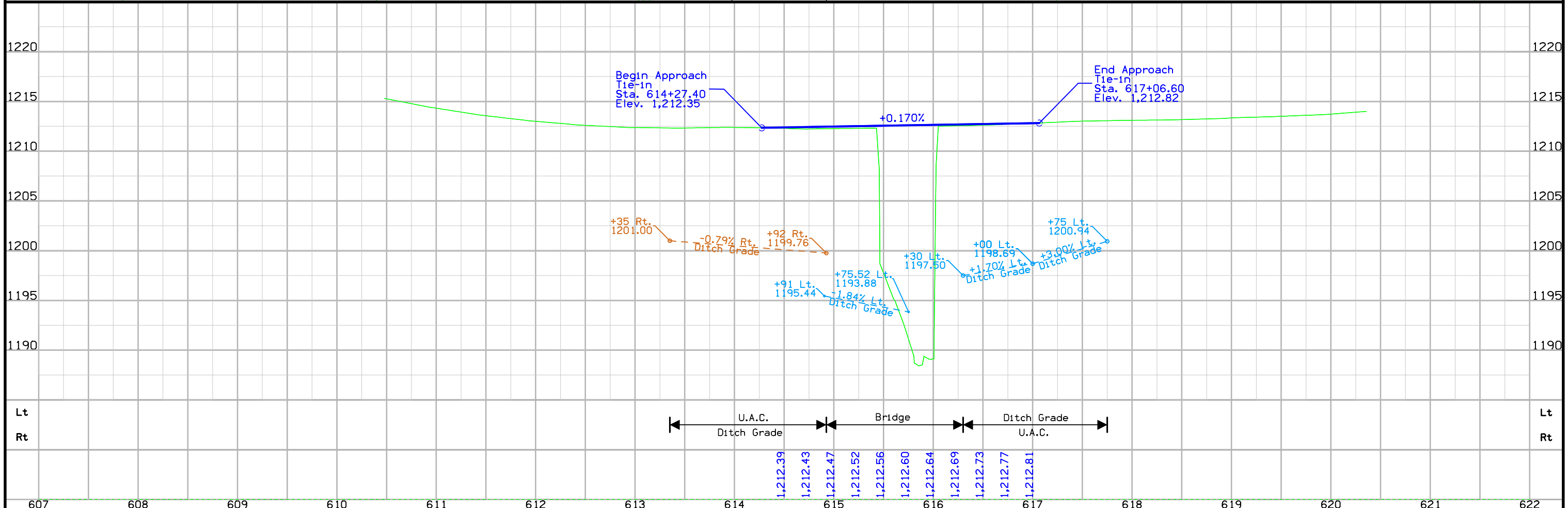
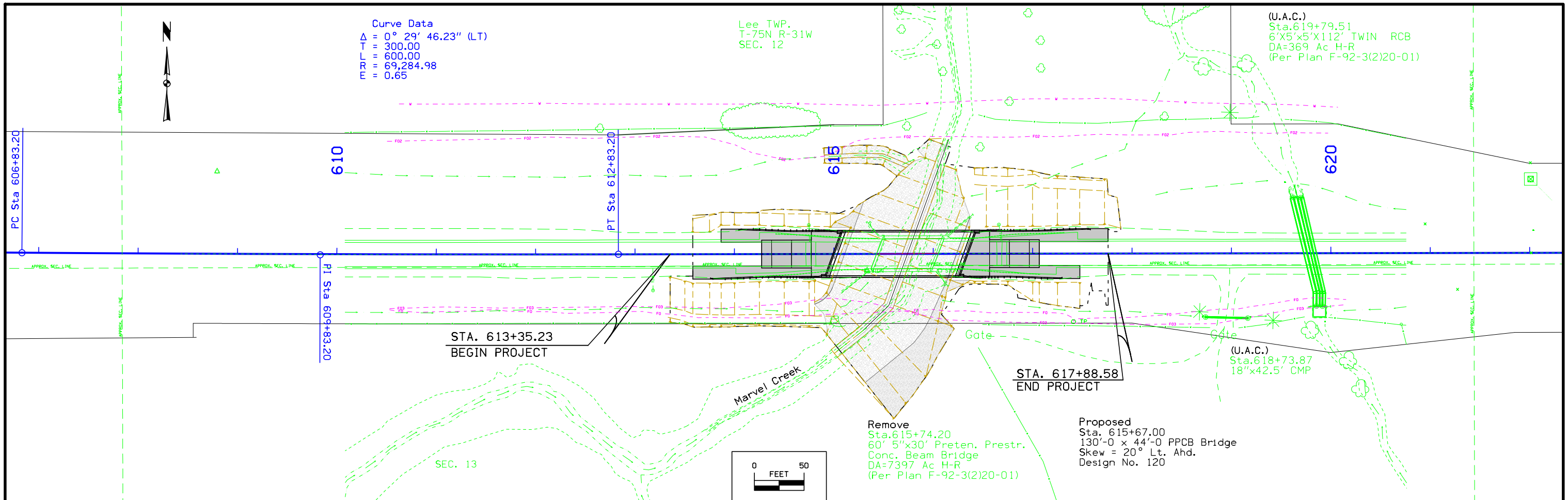
- Reference Point
- Station
- Survey Line
- Section Corner
- Ground Line Intercept
- Saw Cut
- Guardrail
- Trench Drain
- HighTension Cable Guardrail
- Sheet Pile
- Pavement Removal
- Clearing & Grubbing Area

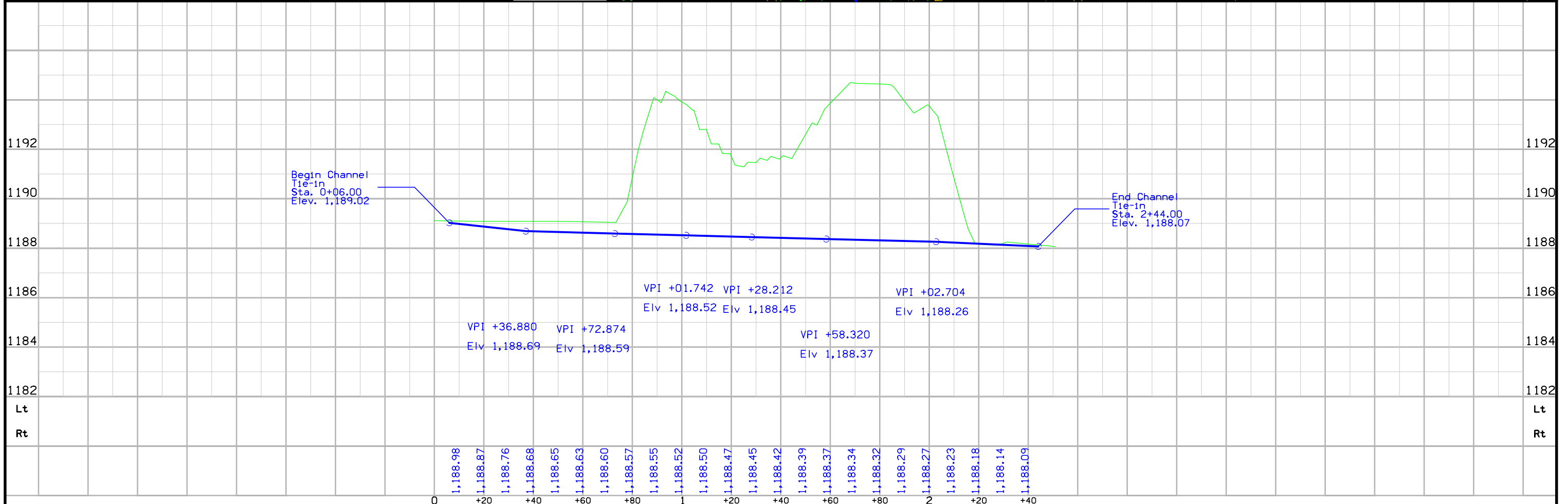
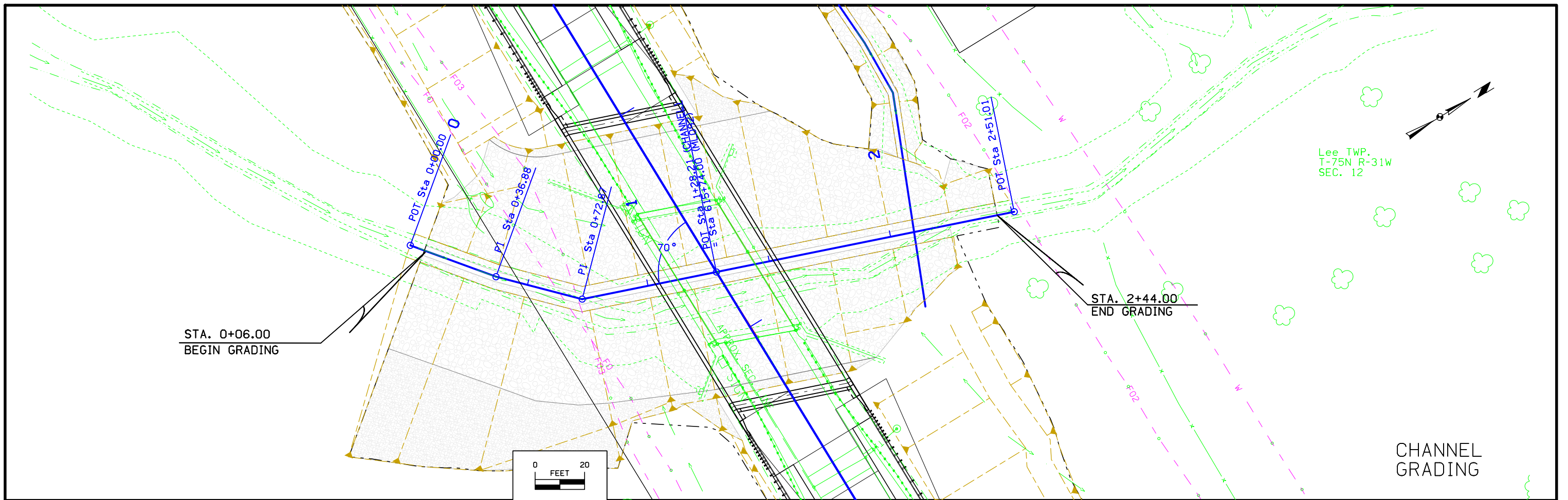
RIGHT-OF-WAY LEGEND

- Proposed Right-of-Way
- Existing Right of Way
- Existing and Proposed Right-of-Way
- Easement and Existing Right-of-Way
- Easement (Temporary)
- Easement
- Access Control
- Property Line

PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

(COVERS SHEET SERIES D, E, F, & K)





Survey Information

Adair County
BRFN-092-3(36)--39-01
Marvel Creek Bridge 0.3 mi
W of Co Rd P33
PIN 15-01-092-010
Sap-0885

General Information

Measurement units for this survey are US survey feet. This survey is for proposed Bridge reconstruction over Marvel Creek along Iowa Highway 92. Project datum and control information is provided by Design Survey Office. This project is a Partial DTM with Photo control.

Vertical Control

Vertical datum for this survey is NAVD88 (Computed using Geoid12A), GRS80 Ellipsoidal Height was computed at project Pt. 69001 by doing 6-hour static observations. The project control is relative to nearby Iowa RTN Base Stations.

Horizontal Control

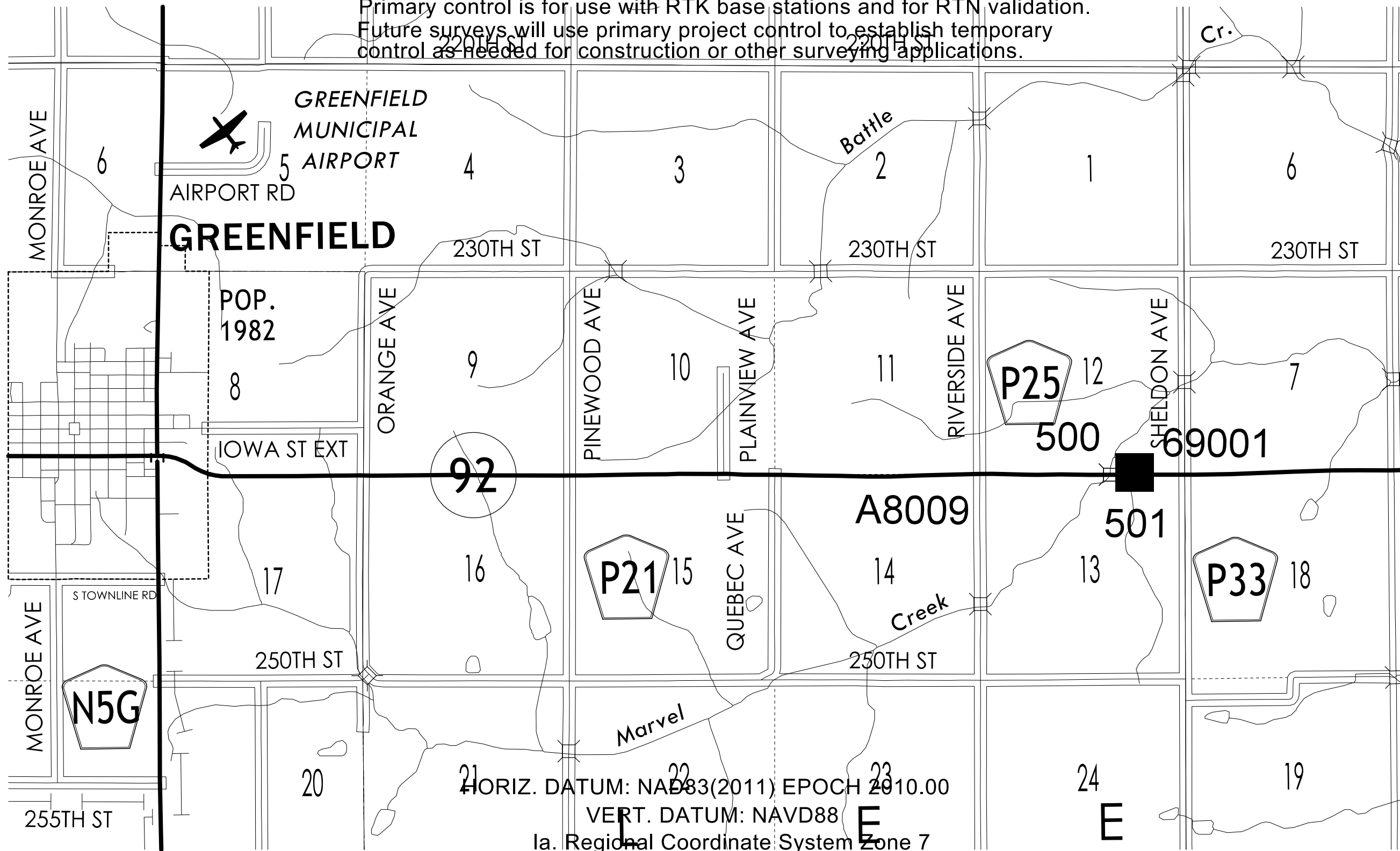
The project coordinate system for this survey is Iowa RCS Zone 7 (U.S. Survey Feet). This survey control is relative to IaRTN reference stations. IaRTN Reference Station coordinates are relative to the National Reference Station network datum: NAD83 (2011) for Epoch 2010.00. Coordinates were determined by conducting a six-hour static observation. Additional control points were placed throughout the project using a GNSS Base-Rover setup relative to point 69001.

Alignment Information

The alignment for this project was provided by District 4.

CONTROL POINT VICINITY MAP

This map is a guide to the vicinity of the primary project control points
 Primary control is for use with RTK base stations and for RTN validation.
 Future surveys will use primary project control to establish temporary control as needed for construction or other surveying applications.



HORIZ. DATUM: NAD83(2011) EPOCH 2010.00
 VERT. DATUM: NAVD88
 1a. Regional Coordinate System Zone 7

Coordinate listing from next sheet will be used with 1aRTN for monument recovery. No other reference ties are given.

HORIZONTAL AND VERTICAL PROJECT CONTROL COORDINATE LISTING

HORIZ. DATUM: NAD83(2011) EPOCH 2010.00

VERT. DATUM: NAVD88

Ia. Regional Coordinate System Zone 7

Name	Northing	Easting	Elevation	Feature Definition	Description
500	7183276.5700	17574011.1790	1212.4950	BM 500 FND IHC BUTTON SW WING BRIDGE OVER MARVEL CREEK	
501	7183278.3430	17574011.3210	1214.9510	BM 501 FND DOT BUTTON SW WING POST BRIDGE OVER MARVEL CREEK	
69001	7183368.3050	17574678.9120	1220.3450	FENO 69001 SET FENO MONUMENT 115ft NE OF DELINEATOR POST 75FT N OF CL HWY 16FT S OF WOOD FENCE POST	
A8009	7183279.9980	17570688.3130	1307.5200	SCR SCR SE COR 11-75-31 FND CM	

Adair	ROW: STPN-092-3(37)--2J-01				PIN	15-01-092-010													
	Marvel Creek 0.3 mi W of Co Rd P33																		
		STATE		COUNTY		CITY			TEMP EASE	BORROW									
PARCEL NO.	OWNER NAME	FEE	EASE	FEE	EASE	FEE	EASE	EXCESS		FEE	T.E.	MITIGATION	OTHER	HOUSE	BUILDING(S)	A/C ONLY	TOTAL ACQ.		
1	LENTS, BETTY J. TRUST & LENTS JIMMIE D. TRUST - Fee	.38 AC							694 SF										
1 Parcel	"TOTALS	0.38 AC	0 AC	0 AC	0 AC	0 AC	0 AC	0 AC	694 SF	0 AC	0 AC	0 AC							
		0 SF	0 SF	0 SF	0 SF	0 SF	0 SF	0 SF	0 SF	0 SF									

NO ACCESS RIGHTS ARE TO BE ACQUIRED ON THIS PROJECT.

Lee TWP.
T-75N R-31W
SEC.12

Lee TWP.
T-75N R-31W
SEC.13

LENTS, BETTR J. & LENTS, JIMMIE D. TRUST

TEMPORARY EASEMENT
TO CONSTRUCT & SHAPE
694 Sq. Ft.

613+20
±70'±EX.R/W

613+25
±70'±EX.R/W

613+60
±78'

613+60
±84'

614+50
±78'

614+55
±84'

615+65
±216'

616+60
±70'EX.R/W

610

620



Right of Way Design Information	
THIS SHEET INCLUDED FOR INFORMATION ONLY	
ROW Team: HUGHES/LARSON	
ROW #: STPN-092-3(37)--2J-01	
Plan Date: 9-20-2018	
Color Legend:	
	Property Lines
	Temporary Easement
	Permanent Acquisition

108-23A
08-01-08

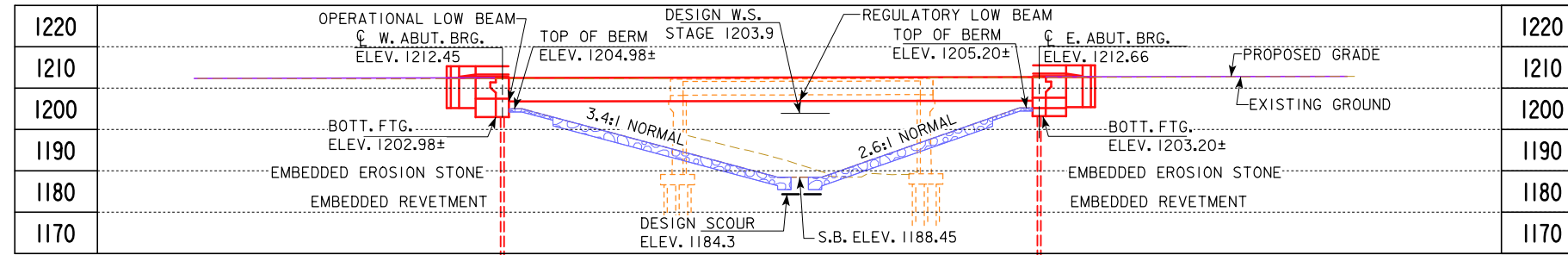
TRAFFIC CONTROL PLAN

IA 92 will be closed to traffic. Offsite detour will be provided, installed and maintained by DOT.

108-25
10-21-14

511 TRAVEL RESTRICTIONS

Route	Direction	County	Location Description	Feature Crossed	Object Type	Maint. Bridge No., Structure ID, or FHWA No.	Type of Restriction	Existing Measurement	Construction Measurement	Construction Measurement as Signed	Projected As Built Measurement	Remarks
IA 92	BOTH	Adair	Bridge over Marvel Creek on IA 92				Closed					

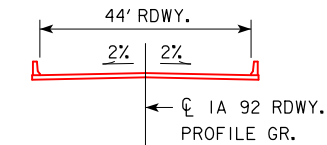


- NOTES:
- TOP OF BRIDGE DECK CROWN '0.03' BELOW PROFILE GRADE.
 - TL-4 RAILING PROPOSED.
 - BTD PROPOSED (4'-6" DEPTH)

LONGITUDINAL SECTION ALONG CL APPROACH ROADWAY

G = +0.170 %
 VPI STA = 614+27.400
 VPI ELEV. = 1212.350
 VPI STA = 617+06.600
 VPI ELEV. = 1212.825

PROPOSED PROFILE
 GRADE IA 92



TYPICAL BRIDGE SECTION

HYDRAULIC DATA

DRAINAGE AREA = 10.4 SQ. MI.
 STREAM SLOPE = 13.7 FT./MI.
 AVG. LOW WATER STAGE = 1189.4

Q₅₀ = 4350 CFS
 STAGE = 1203.9
 BACKWATER = 0.6 FT.
 AVG. BRIDGE VELOCITY = 4.8 FPS
 REGULATORY LOW BEAM ELEV. = 1206.85

Q₁₀₀ = 5290 CFS
 STAGE = 1204.5
 BACKWATER = 0.8 FT.
 OPERATIONAL LOW BEAM ELEV. = 1206.73

Q₂₀₀ = 6220 CFS
 STAGE = 1205.0
 CALCULATED DESIGN SCOUR = 1184.3

Q₅₀₀ = 7360 CFS
 STAGE = 1205.5
 CALCULATED CHECK SCOUR = 1183.3

ROADWAY OVERTOP ELEV. = 1212.2
 STA. 614+72

TRAFFIC ESTIMATE

200_ AADT _____ V.P.D.
 202_ AADT _____ V.P.D.
 202_ DHV _____ V.P.H.
 TRUCKS _____ %
 TOTAL DESIGN ESALs _____

LOCATION

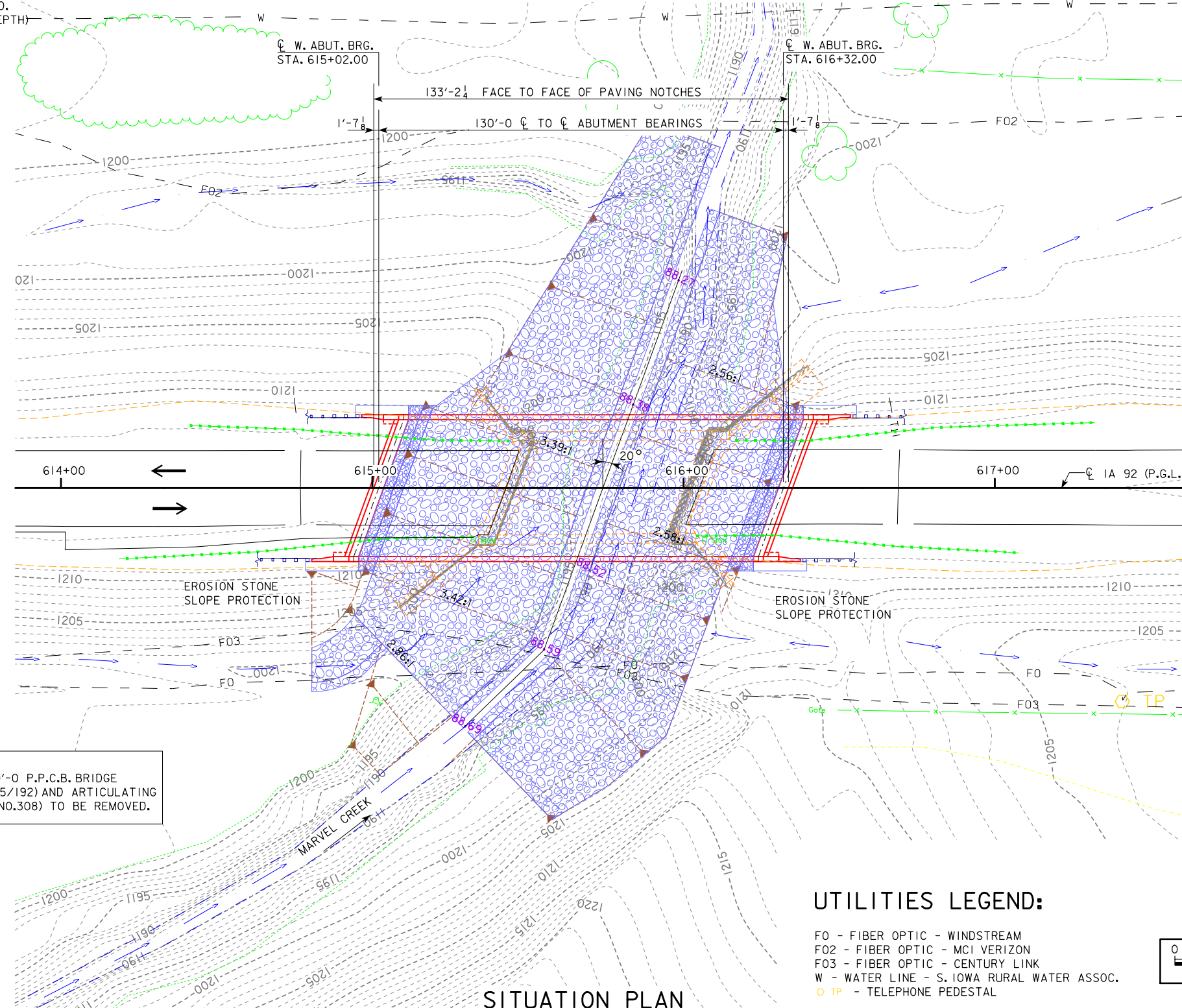
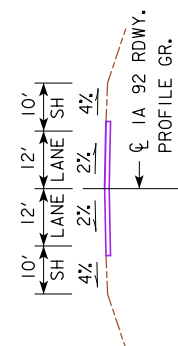
IA 92 OVER MARVEL CREEK
 T-75N R-31W
 SECTION 12 & 13
 LEE TOWNSHIP
 ADAIR COUNTY
 FHWA NO. 13051
 BRIDGE MAINT. NO. 0185.95092
 LATITUDE 41.301675°
 LONGITUDE -94.363867°
 PRELIMINARY

DESIGN FOR 20° SKEW (L.A.)
130'-0" X 44'-0" PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

130'-0" SPAN (BTD BEAM)
SITUATION PLAN
 STATION 615+67.00 (IA 92)
ADAIR COUNTY
 OCTOBER 2017

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. 1 OF 2 FILE NO. 31557 DESIGN NO. 120

TYPICAL APPROACH SECTION



STA. 615+74.20
 EXISTING 60'-4" X 30'-0" P.P.C.B. BRIDGE
 (DESIGN NO. 3323/1165/192) AND ARTICULATING
 BLOCK MAT (DESIGN NO.308) TO BE REMOVED.

UTILITIES LEGEND:

- F0 - FIBER OPTIC - WINDSTREAM
- F02 - FIBER OPTIC - MCI VERIZON
- F03 - FIBER OPTIC - CENTURY LINK
- W - WATER LINE - S. IOWA RURAL WATER ASSOC.
- TP - TELEPHONE PEDESTAL



SITUATION PLAN

ESTIMATED BERM ARMORING QUANTITIES				
LOCATION	REVETMENT CL. E (TON)	EROSION STONE (TON)	ENGINEERING FABRIC (SY)	EXCAVATION (CY)
BERM LINING - WEST ABUTMENT	XX	XX	XX	XX
BERM LINING - EAST ABUTMENT	XX	XX	XX	XX
TOTALS	XX	XX	XX	XX

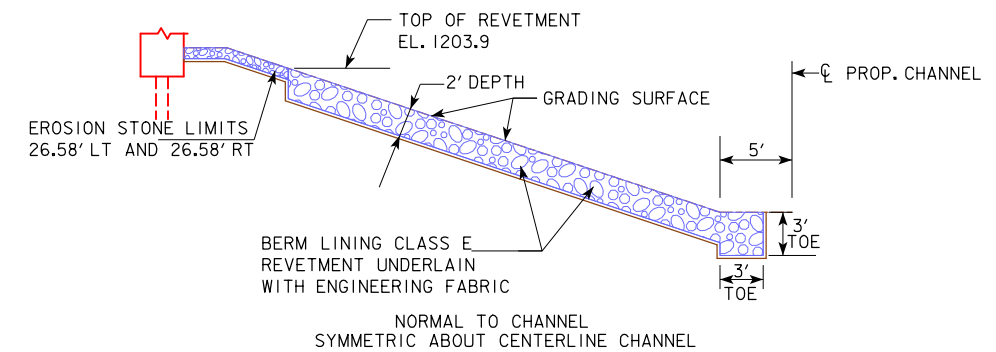
EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE.

BERM SLOPE LOCATION TABLE						
POINTS	WEST ABUTMENT			EAST ABUTMENT		
	STATION	OFFSET	ELEV.	STATION	OFFSET	ELEV.
A1	615+78.36	26.58' LT	1188.38	615+89.00	26.58' LT	1188.37
A2	615+59.01	26.58' RT	1188.53	615+69.65	26.58' RT	1188.52
B1	615+16.46	26.58' LT	1204.98	616+36.89	26.58' LT	1205.20
B2	614+97.11	26.58' RT	1204.98	616+17.54	26.58' RT	1205.20
W1	614+96.51	26.58' LT	1211.88	616+53.51	26.58' LT	1212.14
W2	614+80.49	26.58' RT	1211.85	616+37.49	26.58' RT	1212.11

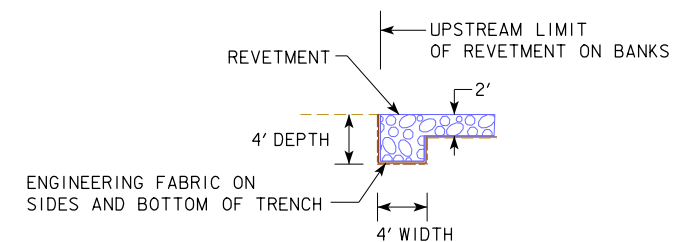
BERM SLOPE ELEVATIONS REFLECT THE GRADING SURFACE

☉ PROP. CHANNEL GRADING CONTROL POINTS

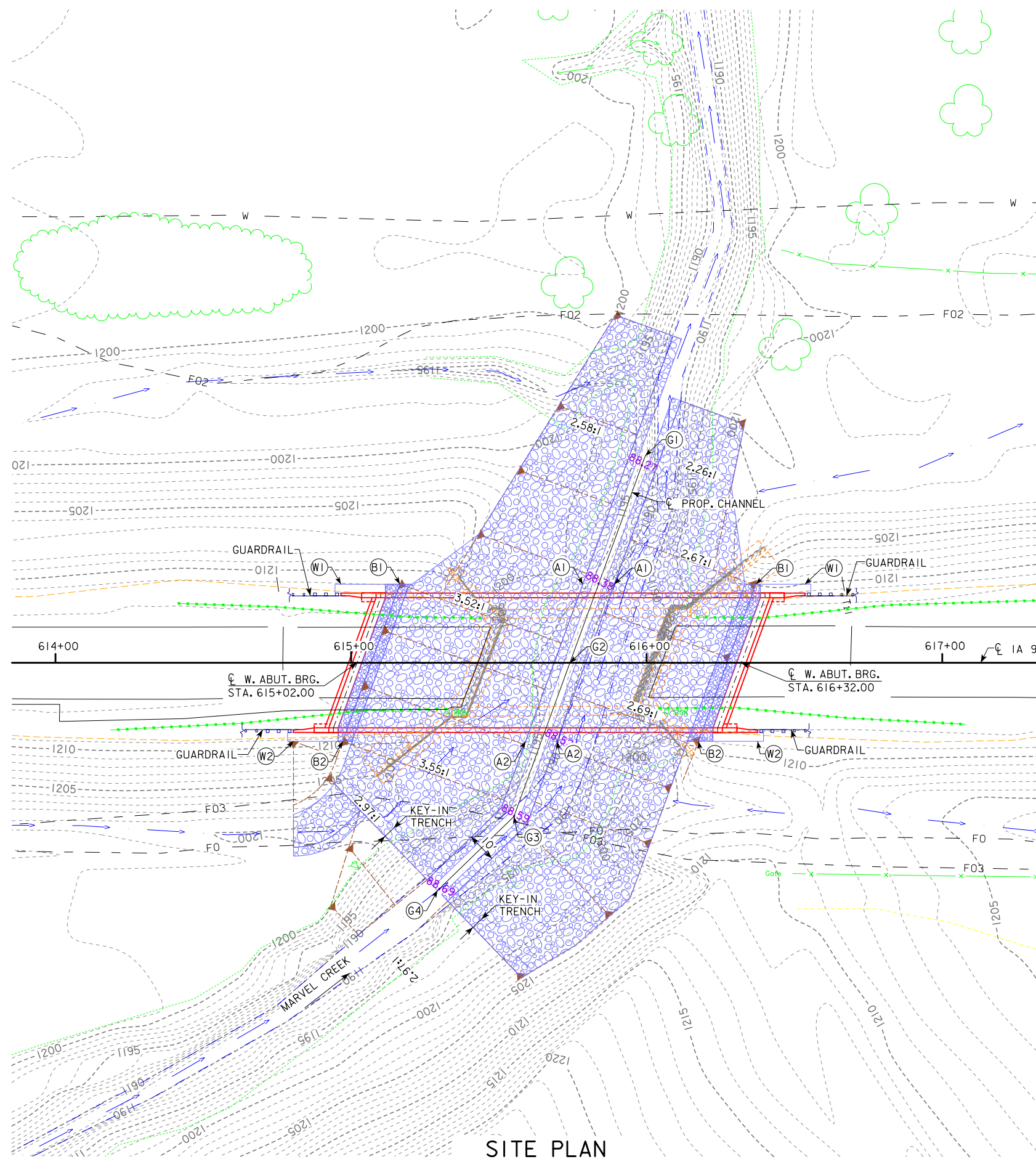
- G1: STA. 615+99.48, 70.00' LT, ELEV. 1188.27 BEGIN CHANNEL REVETMENT
- G2: STA. 615+74.00, 0.0' OFFSET, ELEV. 1188.45
- G3: STA. 615+55.08, 52.00' RT, ELEV. 1188.59
- G4: STA. 615+29.18, 77.00' RT, ELEV. 1188.69 END CHANNEL REVETMENT



SECTION THRU EMBEDDED CHANNEL REVETMENT



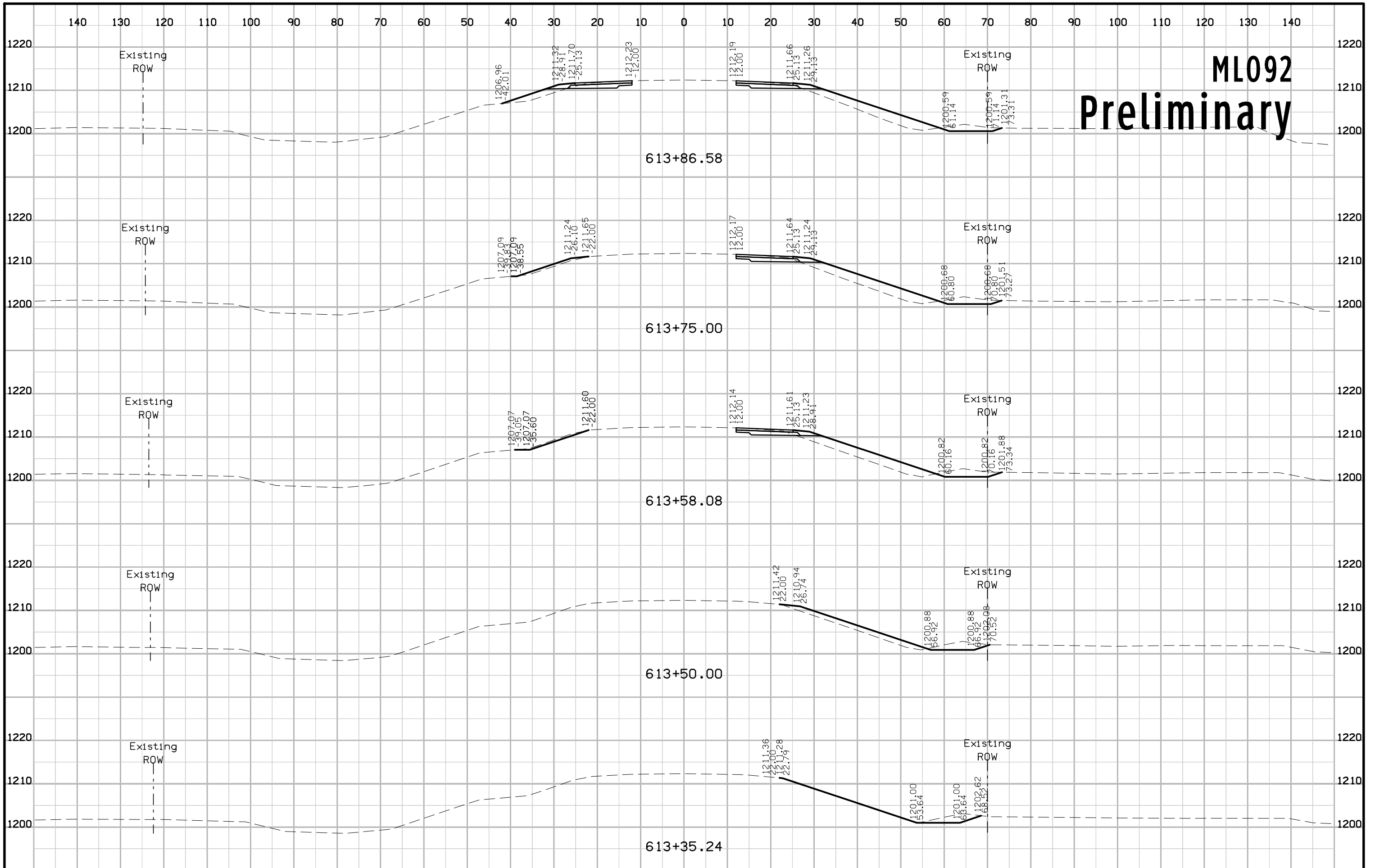
SECTION THROUGH KEY-IN TRENCH



SITE PLAN

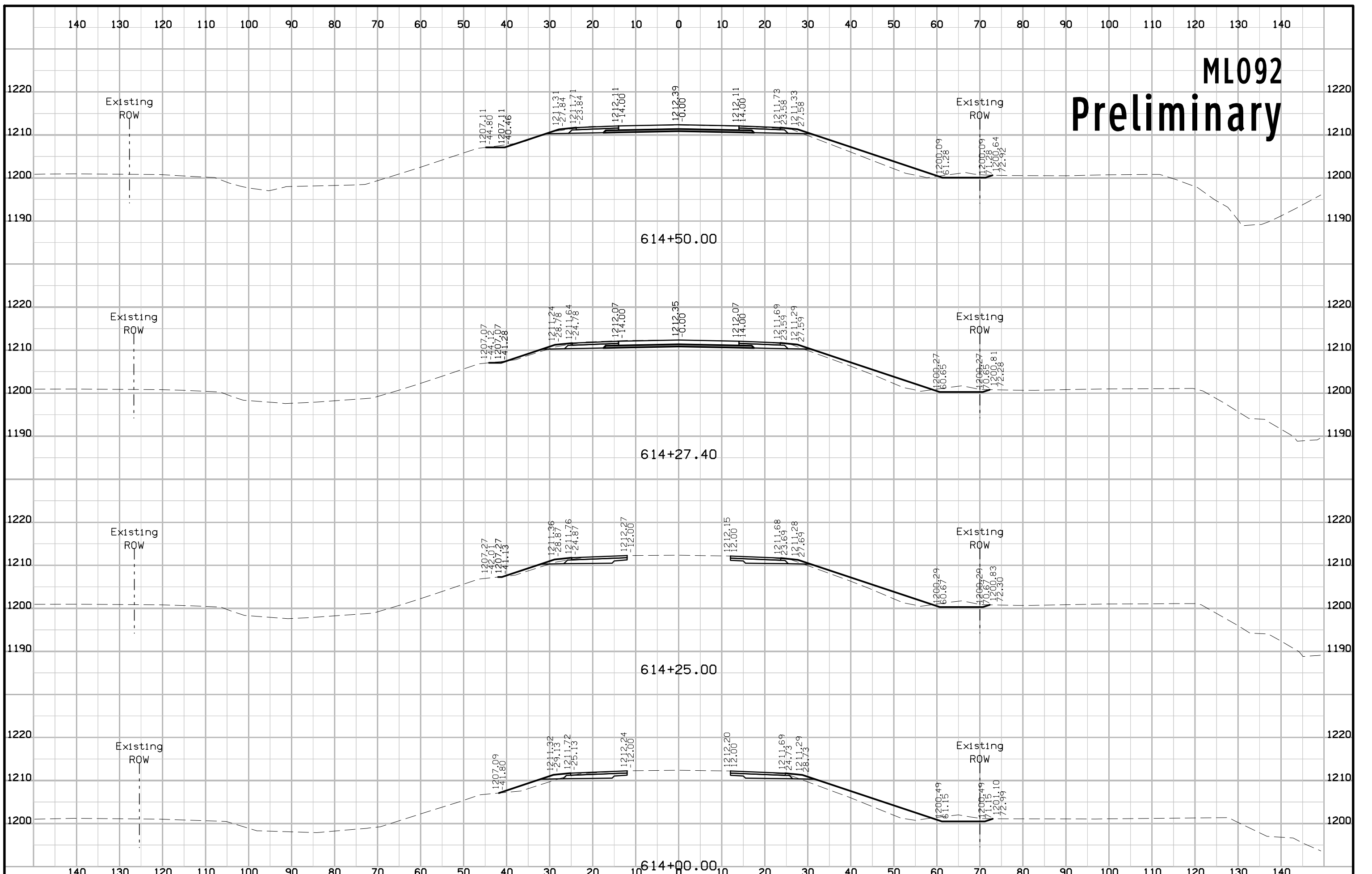
PRELIMINARY
 DESIGN FOR 20° SKEW (L.A.)
130'-0 X 44'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE
 130'-0 SPAN (BTD BEAM)
SITUATION PLAN - SITE
 STATION 615+67.00 (IA 92) OCTOBER 2017
ADAIR COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. 2 OF 2 FILE NO. 31557 DESIGN NO. 120

ML092 Preliminary

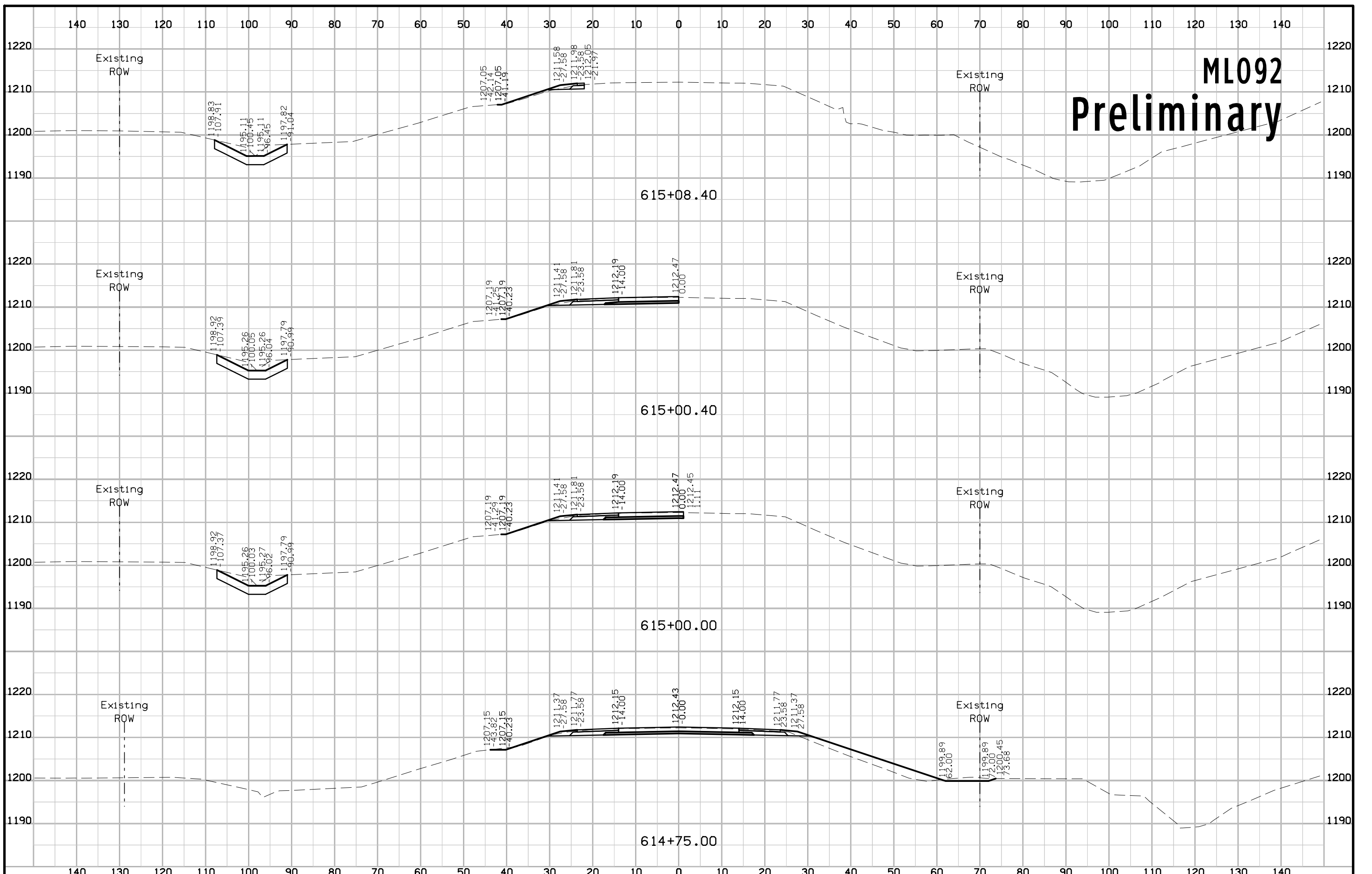


ML092

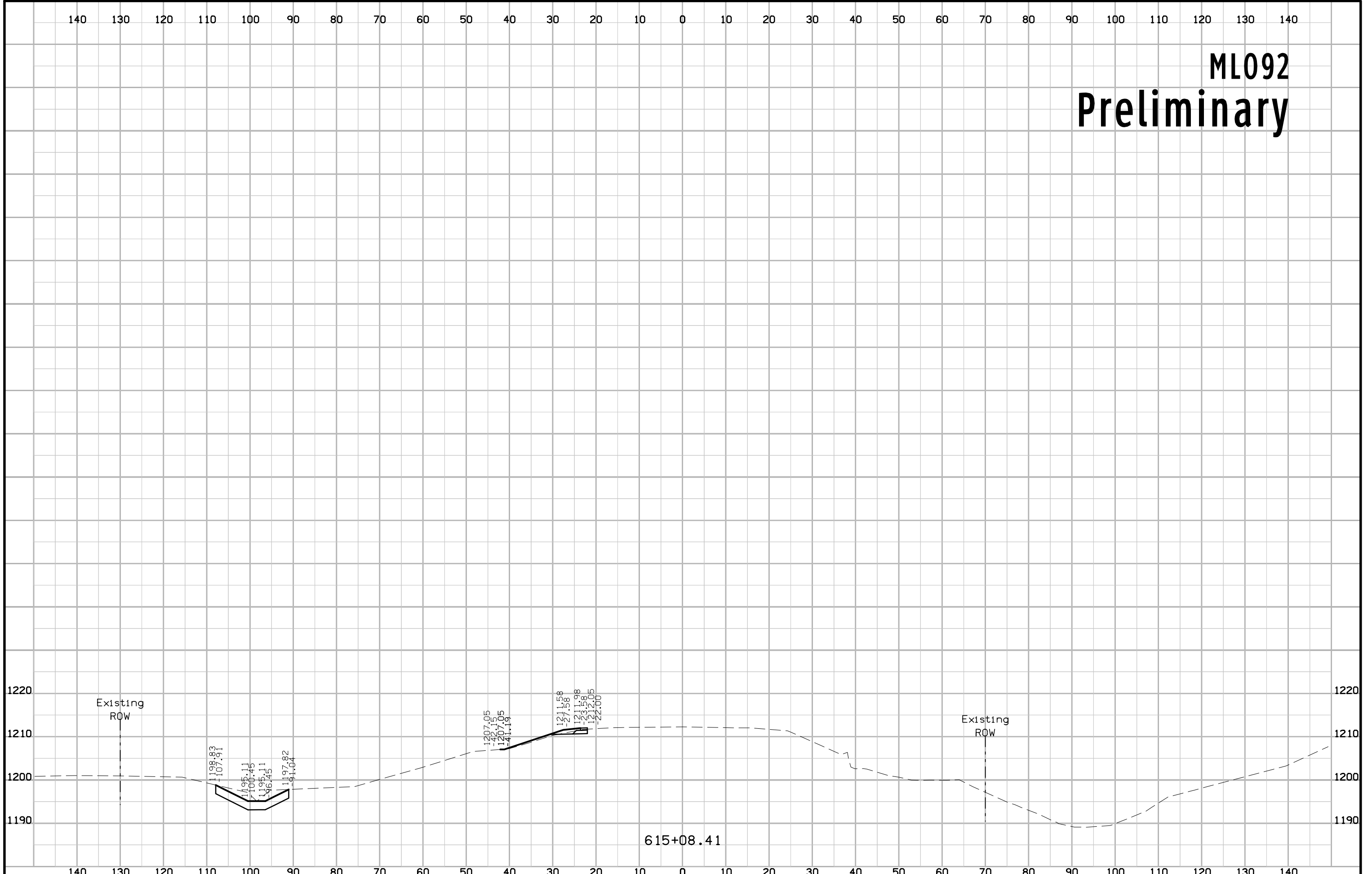
Preliminary



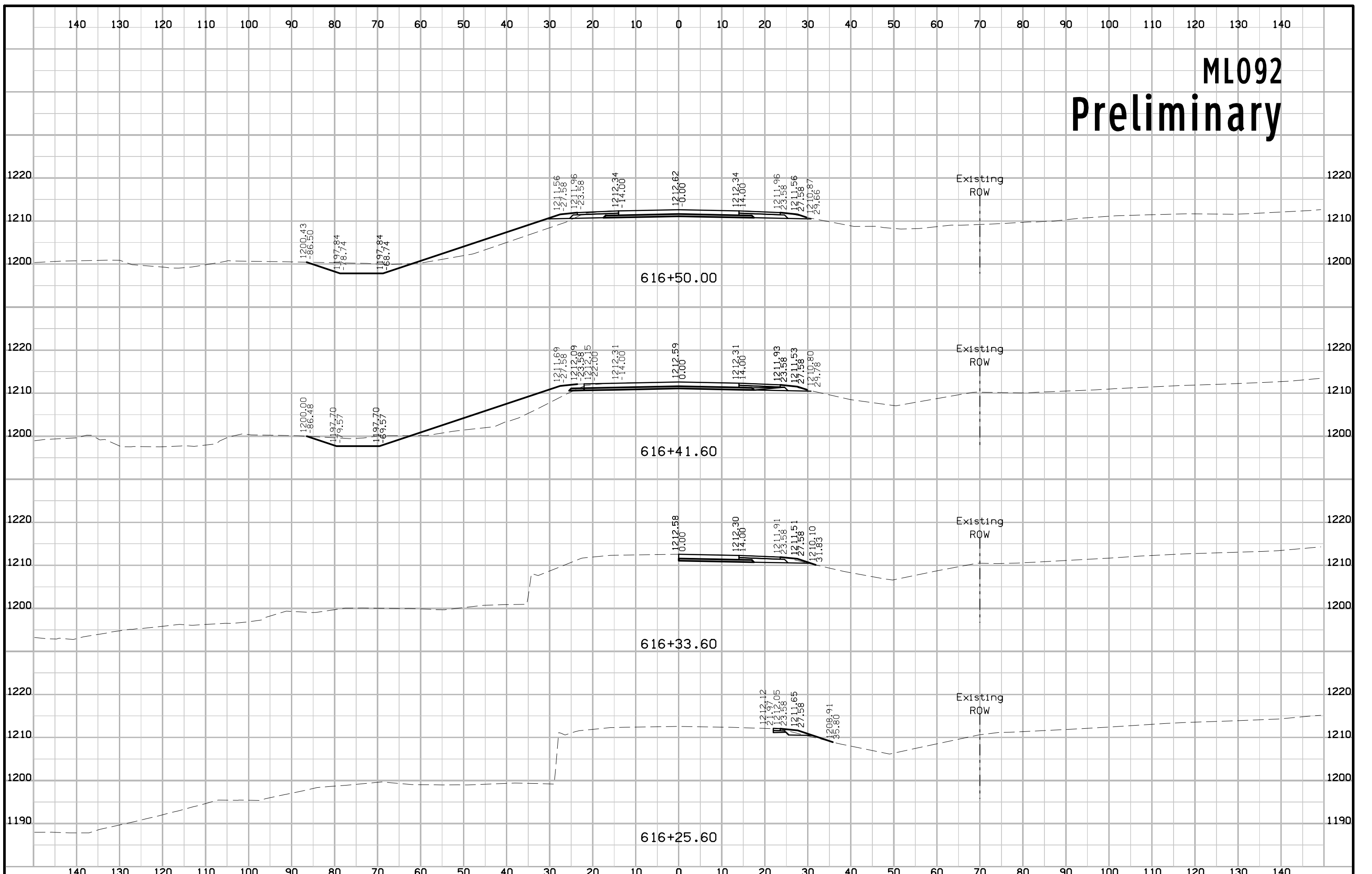
ML092 Preliminary



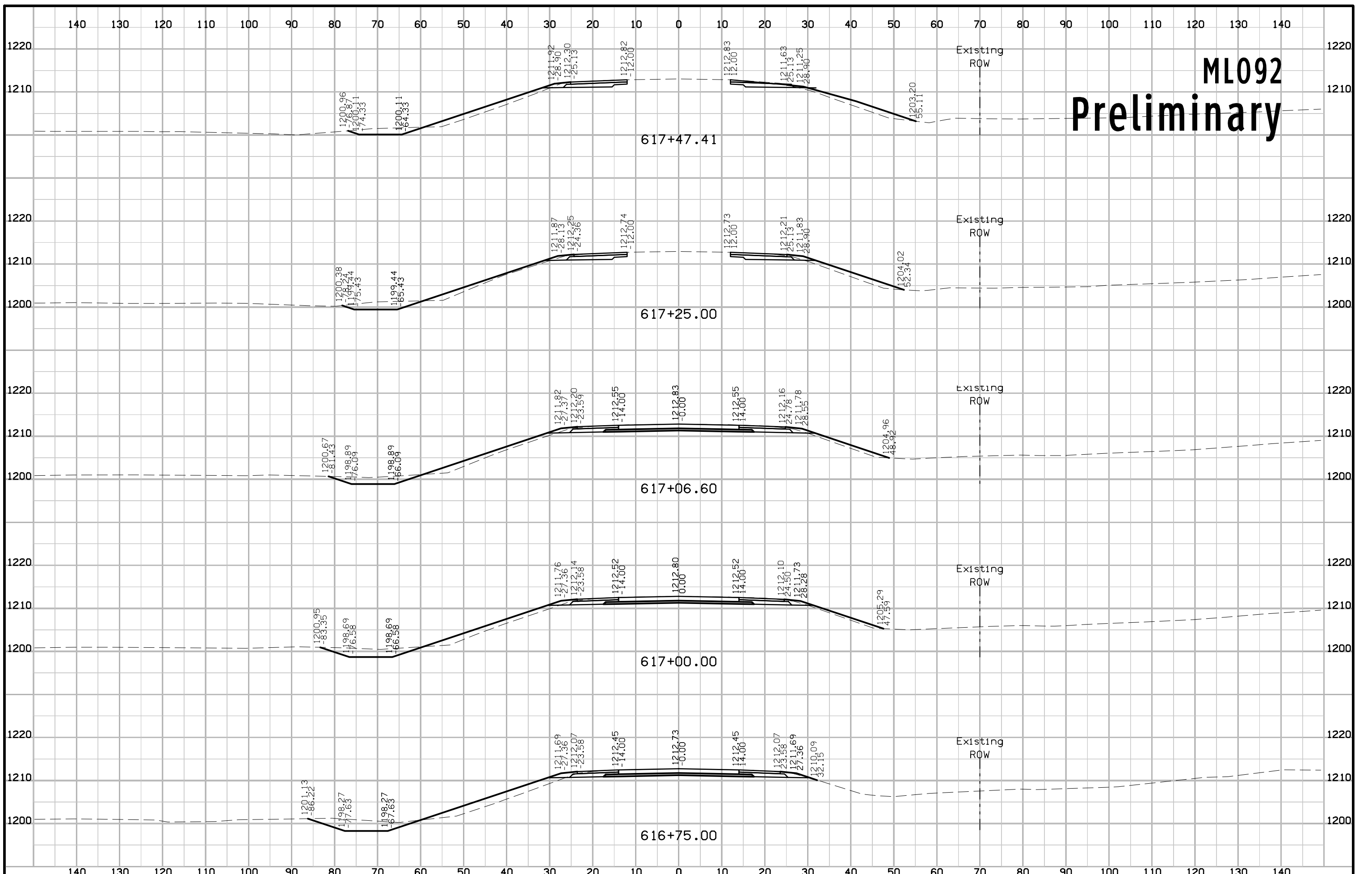
ML092 Preliminary



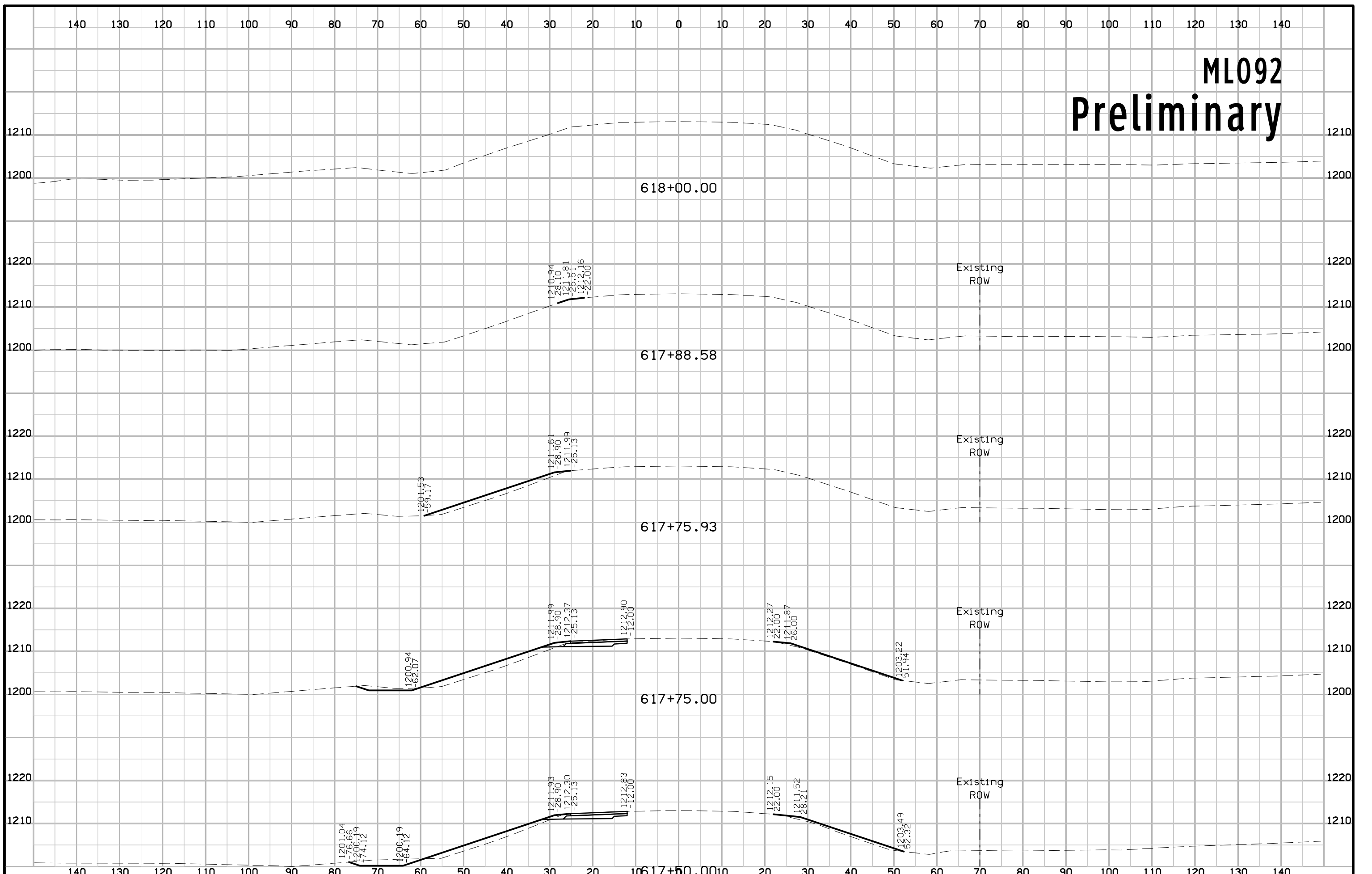
ML092 Preliminary



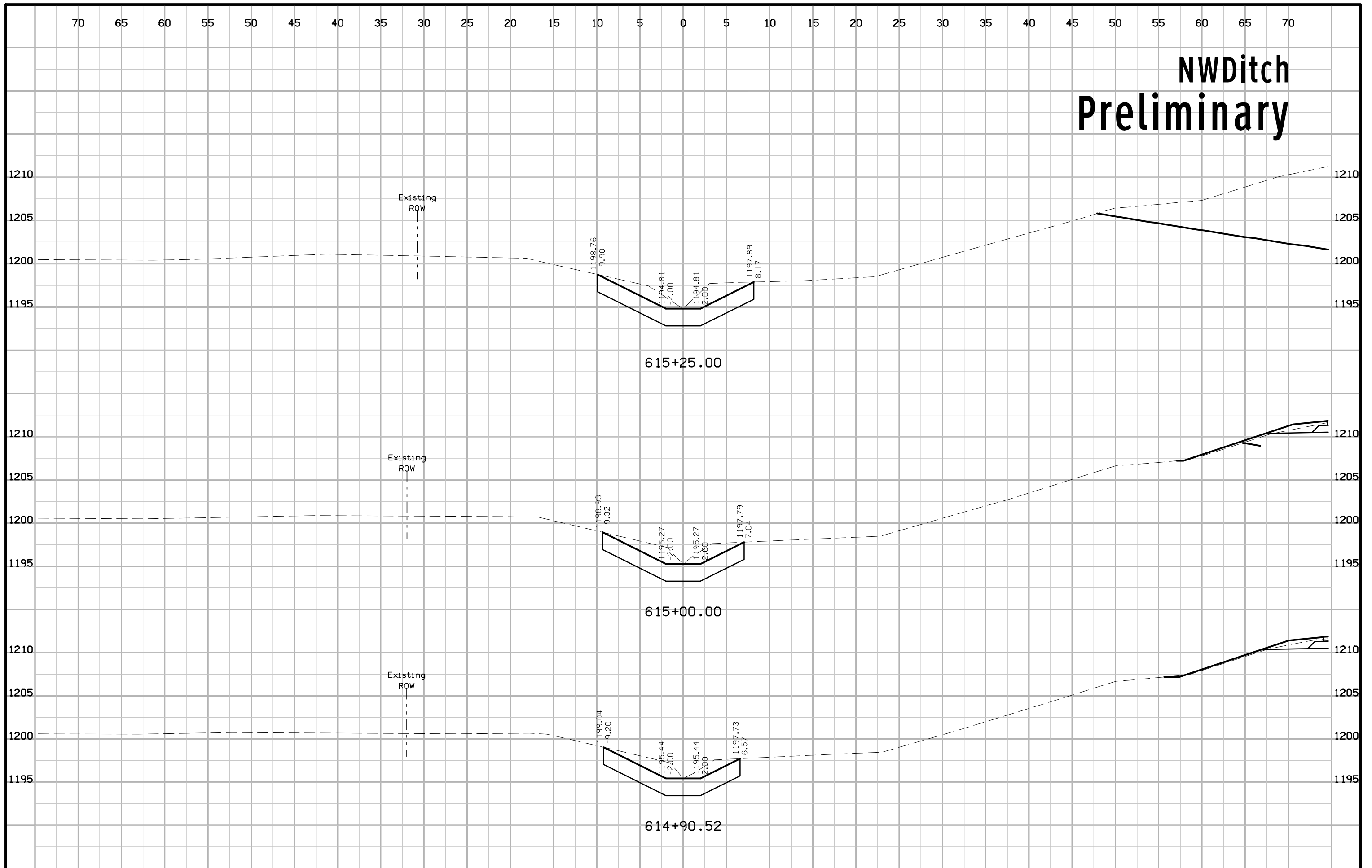
ML092 Preliminary



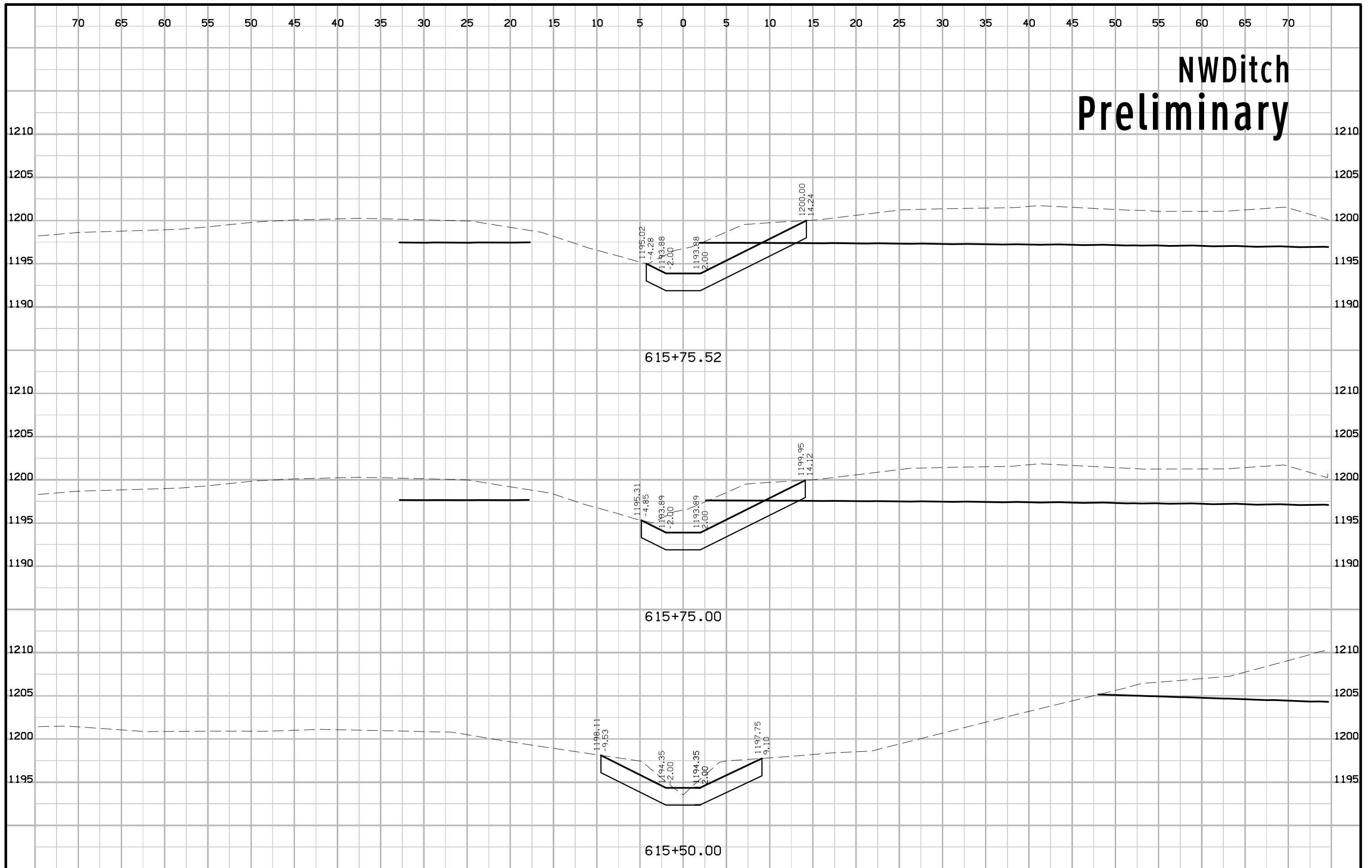
ML092 Preliminary



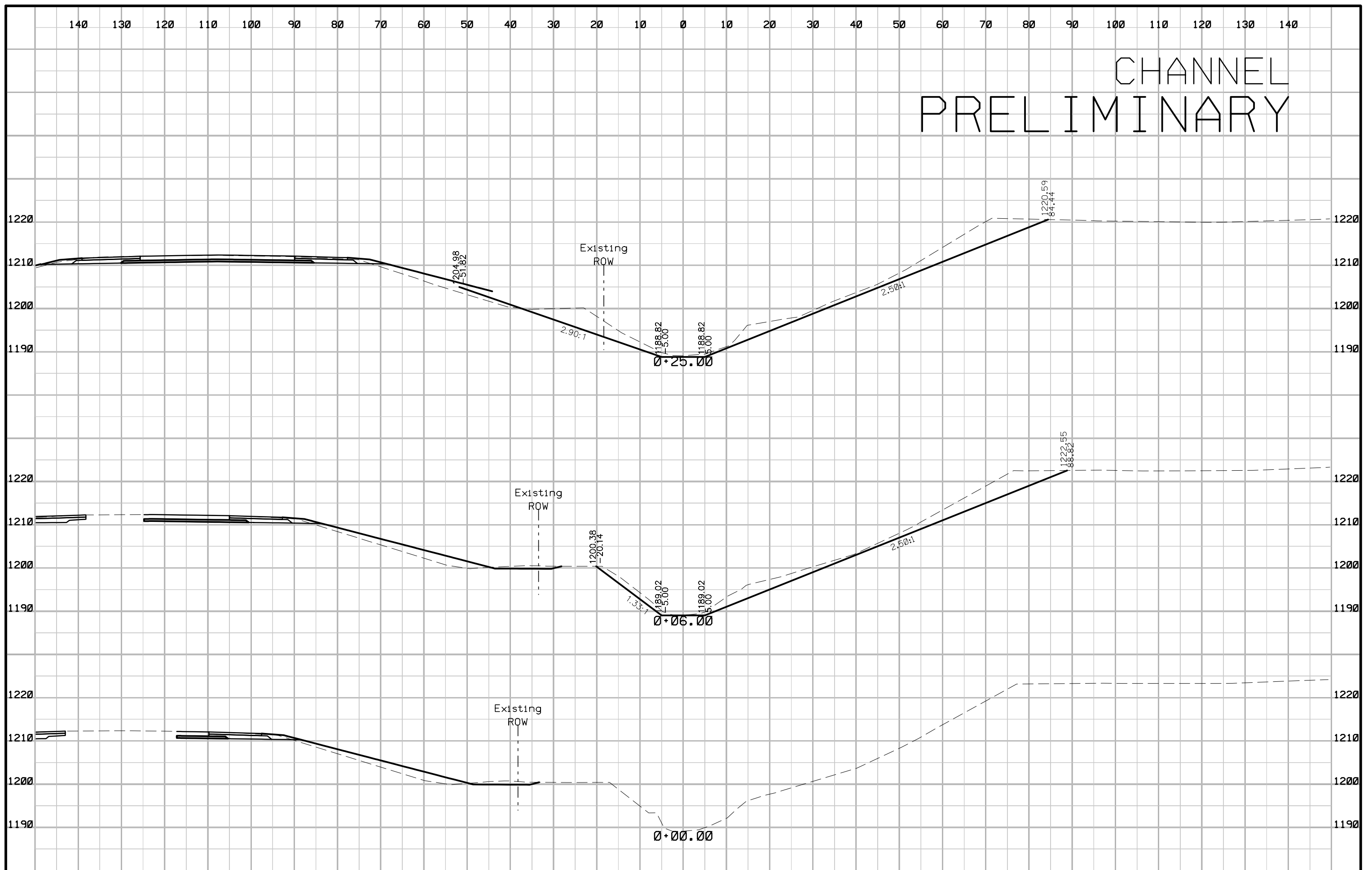
NWDitch Preliminary



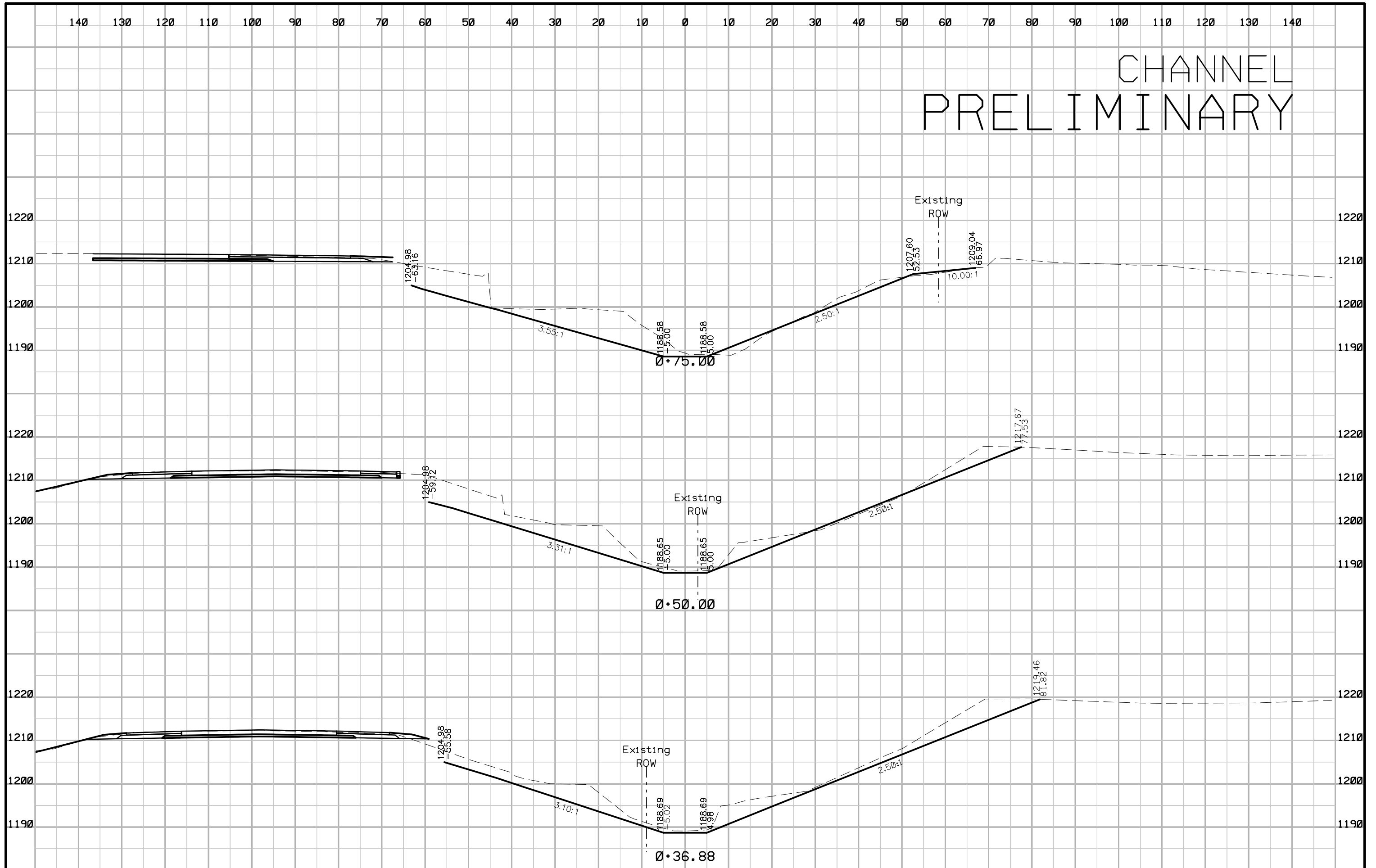
NWDitch Preliminary



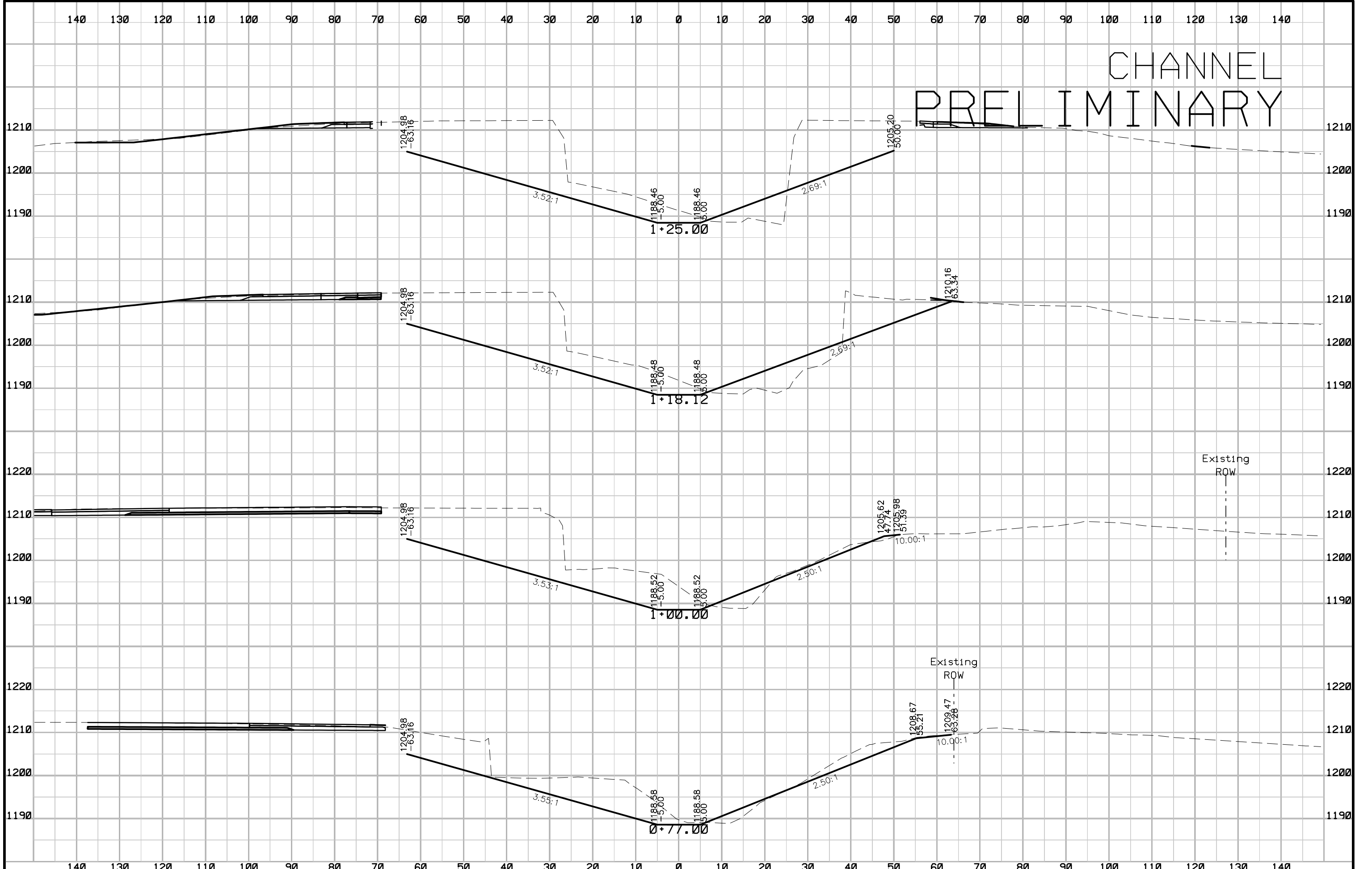
CHANNEL PRELIMINARY

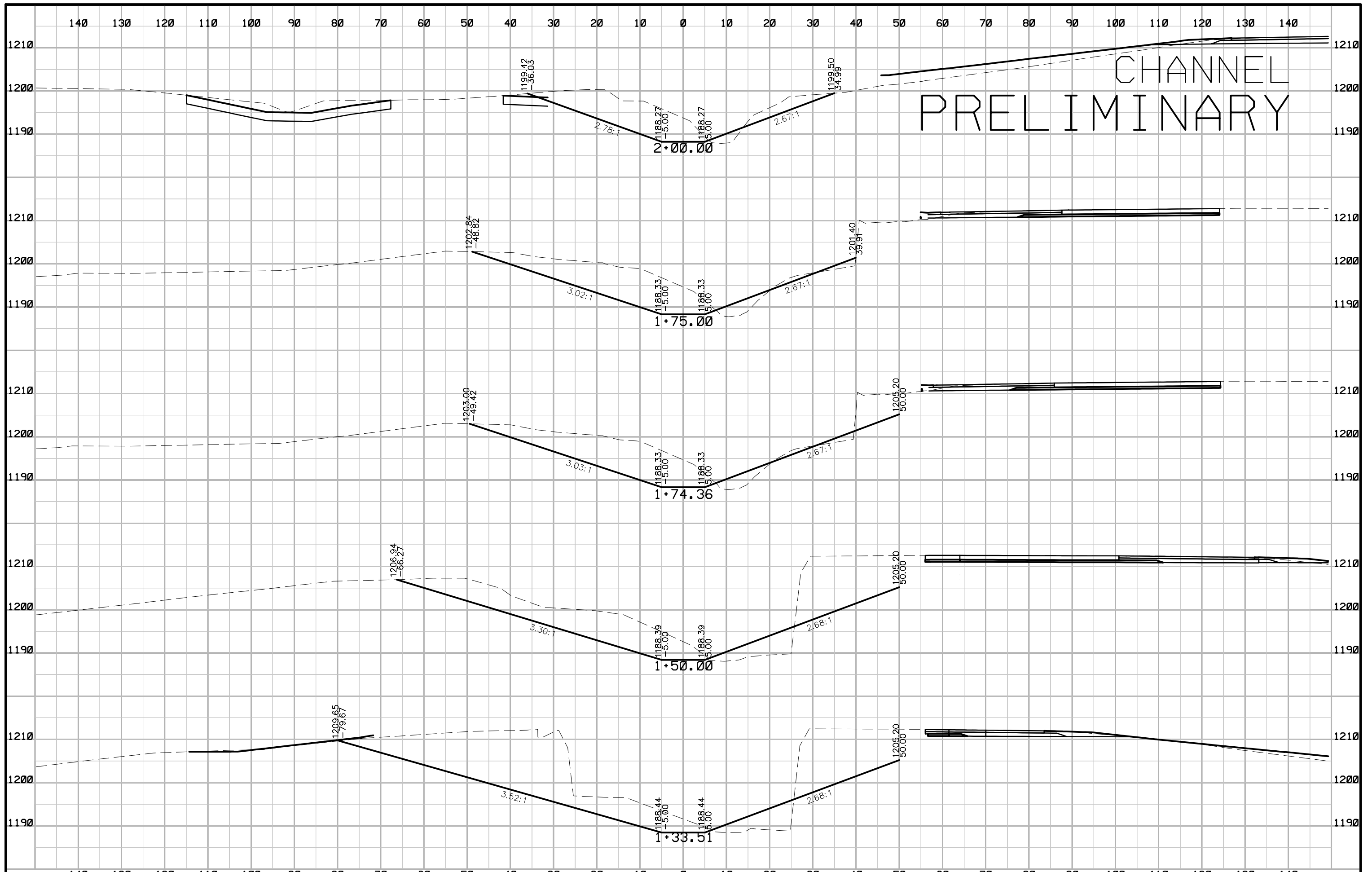


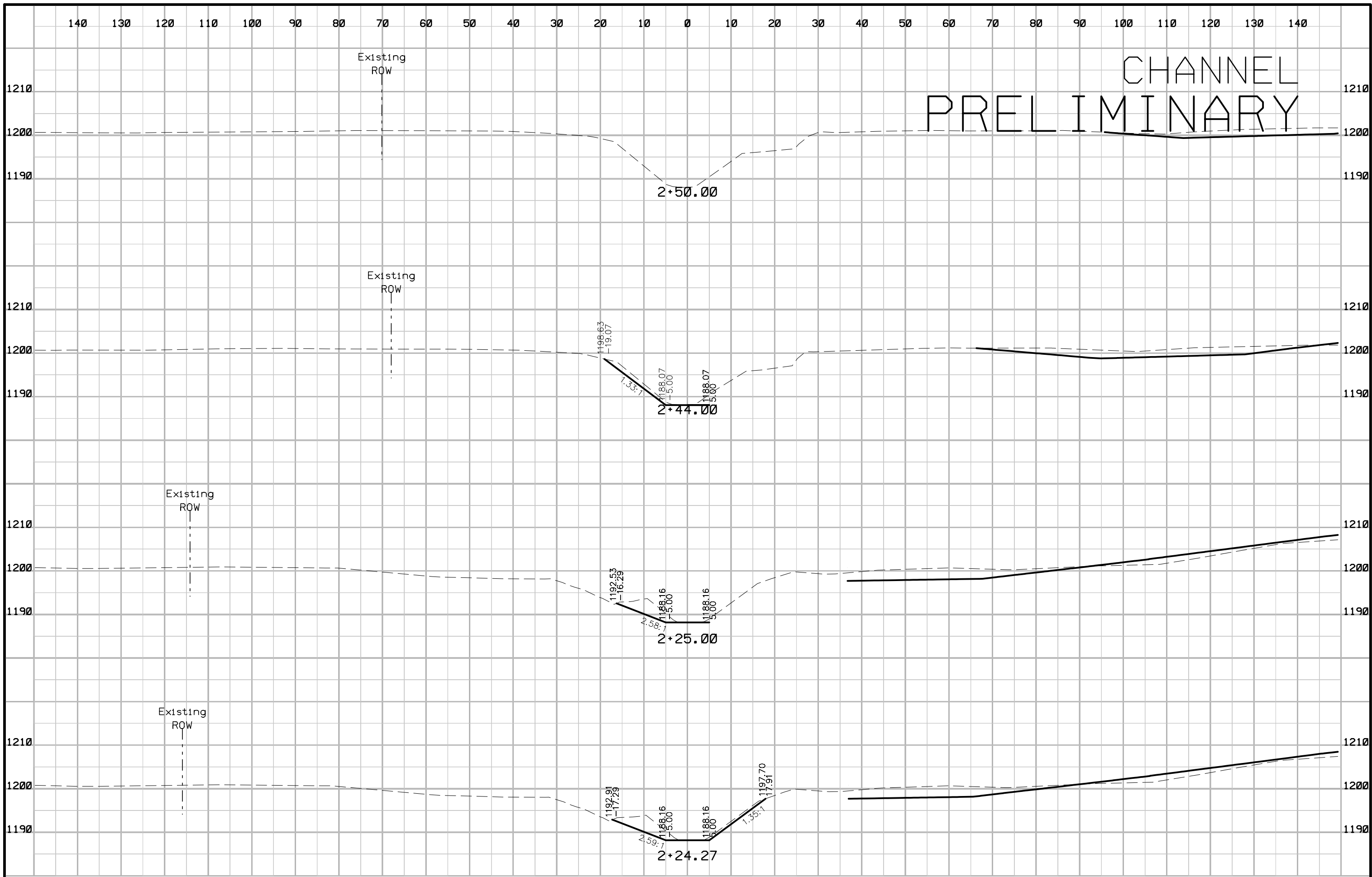
CHANNEL PRELIMINARY



CHANNEL PRELIMINARY







140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

CHANNEL PRELIMINARY

