PALO ALTO Co. BRIDGE REPLACEMENT - OTHER
BRFN-018-3(106)--39-74

LETTING DATE TBD

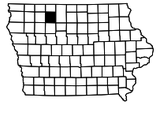
INDEX OF SHEETS	
No.	DESCRIPTION
A Sheets	**Title Sheets**
A.1	Title Sheet
A.2	Location Map Sheet
B Sheets	**Typical Cross Sections and Details**
B.1 - 2	Typical Cross Sections and Details
D Sheets	**Mainline Plan and Profile Sheets**
* D.1	Plan & Profile Legend & Symbol Information Sheet
* D.2	US Highway 18
G Sheets	**Survey Sheets**
G.1 - 3	Reference Ties and Bench Marks
G.4	Horizontal Control Tabulations
J Sheets	**Traffic Control and Staging Sheets**
J.1	Traffic Control Plan
* J.2	Traffic Control & Staging Legend & Symbol Info. Sheet
* J.3	US 18 Detour
V Sheets	**Culvert Situation Plans**
* V.1	Situation Plan
* V.2	Situation Plan - Site
W Sheets	**Mainline Cross Sections**
W.1	Cross Sections Legend & Symbol Information Sheet
W.2 - 6	Mainline Cross Sections
	* Color Plan Sheets

On-Site Field Exam Held 07/28/2021

Attendees
District 3:
Tony Lazarowicz
Shane Tymkowicz
Darwin Bishop
Laura Sievers
Jeff Holmes

Bridge:
Dave Claman

JEO Consulting Group
Dallas Schechinger
Tim Sheets
Travis Wallen



IOWA DOT

Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

PALO ALTO COUNTY

BRIDGE REPLACEMENT - OTHER

US 18 OVER PRAIRIE CREEK
2.8 MILES WEST OF WEST JCT. IA 15

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

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

IOWA ONE CALL
1-800-292-8989
www.iowaonecall.com
811 Know what's below. Call before you dig.

REVISIONS

TOTAL 21
PROJECT IDENTIFICATION NUMBER
19-74-018-010
PROJECT NUMBER
BRFN-018-3(106)--39-74
R.O.W. PROJECT NUMBER

MILEAGE SUMMARY			
Div.	Location	Lin. Ft.	Miles
	US Highway 18 Sta. 545+10.00 to Sta. 550+55.00	545.00	0.1032
	Total Length of Roadway	545.00	0.1032
	Total Length of Project	545.00	0.1032

For Project Location Map
Refer to Sheet No. A.2

PROJECT DATES (SUBJECT TO CHANGE):
D3 PLAN - AUGUST 2021
B1 PLAN - SEPTEMBER 2021
D5 PLAN - OCTOBER 15, 2021

EARTHWORK SUMMARY		
Cut	955	CY
Fill +30%	290	CY
Borrow	- -	CY

DESIGN DATA RURAL		
2019 AADT	2550	V.P.D.
2044 AADT	3100	V.P.D.
2044 DHV	320	V.P.H.
TRUCKS	27	%
Total Design ESALs	--	

INDEX OF SEALS		
SHEET NO.	NAME	TYPE
A.1	- -	Primary Signature Block
V.1	Dallas R. Schechinger	Hydraulic Engineer

ROADWAY DESIGN

IOWA PROFESSIONAL ENGINEER XXX D2 PLAN IOWA

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

– Date: 07-28-2021
Signature Date

Dallas R. Schechinger
Printed or Typed Name

My license renewal date is December 31, 2022

Pages or sheets covered by this seal: X
X

FILE NO.	ENGLISH	DESIGN TEAM SCHRODER \ JEO CONSULTING GROUP	PALO ALTO COUNTY	PROJECT NUMBER BRFN-018-3(106)--39-74	SHEET NUMBER A.1

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R-32W

R-31W

T-96N

T-95N

CYLINDER

POP. 88

FERN VALLEY

N60

B41

18

STA. 545+10.00
BEGIN CONSTRUCTION
BEGIN PAVING

STA. 550+55.00
END CONSTRUCTION
END PAVING

FHWA No. 39180

370 ST

380 ST

390 ST

400 ST

410 ST

500 AVE

510 AVE

520 AVE

530 AVE

540 AVE

550 AVE

560 AVE

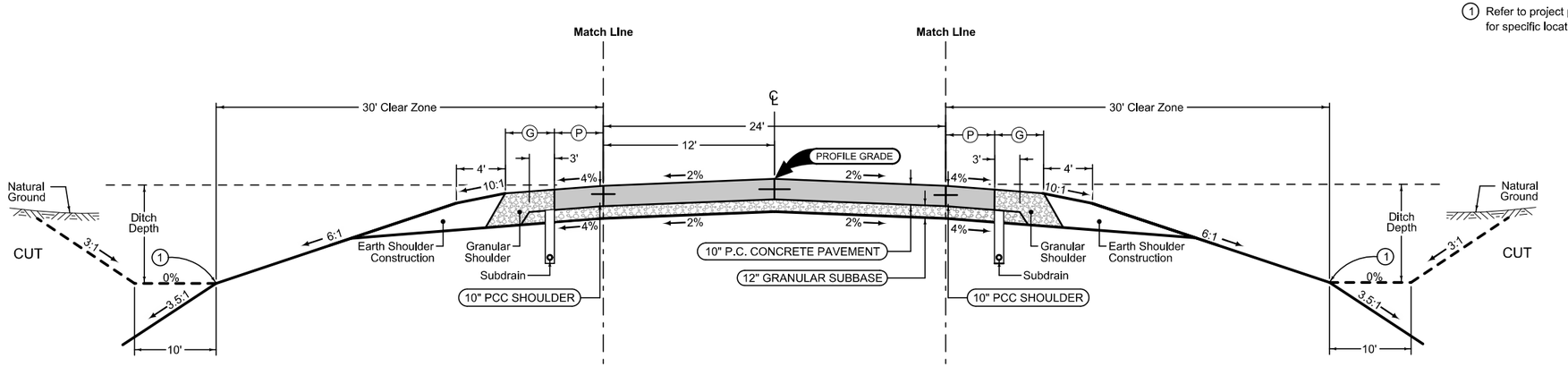
570 AVE

Cylinder Cr.

NOT TO SCALE

FILE NO.	ENGLISH	DESIGN TEAM SCHRODER \ JEO CONSULTING GROUP	PALO ALTO COUNTY	PROJECT NUMBER BRFN-018-3(106)--39-74	SHEET NUMBER A.2

9:59:57 AM 7/21/2021 tsheets pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7401801019\Design\SHT_74018106Z01_A01.dgn



(1) Refer to project plan and cross sections for specific location of foreslope change.

Normal section shown may be modified appropriately in areas of superelevated curves or other locations specifically designated by the Engineer.

See Plan & Profile sheets and cross sections for additional details of ditches and backslopes.

Full Depth PCC Combination Shoulder

Shoulder Jointing:
Longitudinal joint: BT-2, L-2 or KT-2
Transverse joints: C at 17' spacing

2_C_FullPCC_ 04-20-21			
STATION TO STATION		(P) Feet	(G) Feet
545+10.00	550+55.00	6.0	4.0

4' paved shoulders plus granular shoulders

Mainline Jointing:
Transverse joints: CD at 17' spacing
Longitudinal joint: L-2

2P_ 04-21-20	
STATION TO STATION	
545+10.00	550+55.00

Full Depth PCC Combination Shoulder

Shoulder Jointing:
Longitudinal joint: BT-2, L-2 or KT-2
Transverse joints: C at 17' spacing

2_C_FullPCC_ 04-20-21			
STATION TO STATION		(P) Feet	(G) Feet
545+10.00	550+55.00	6.0	4.0

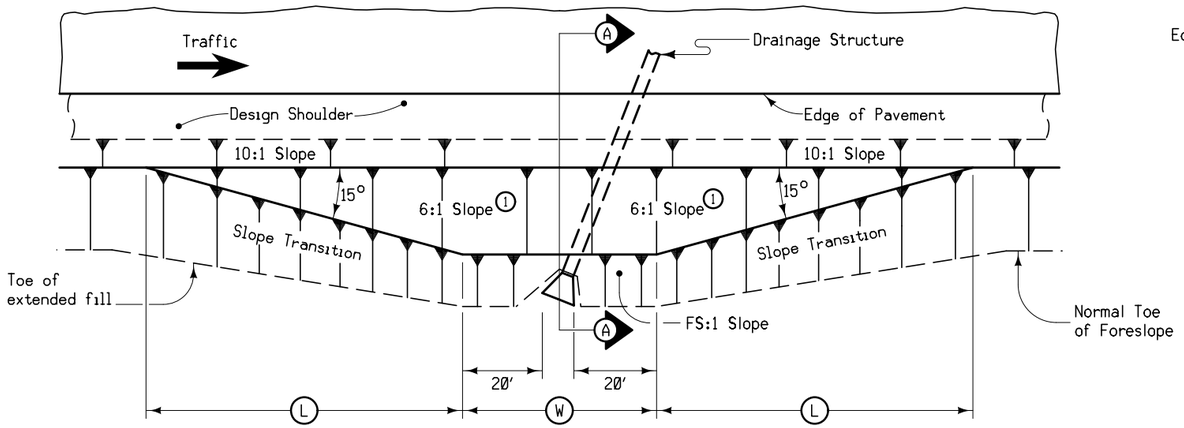
4' paved shoulders plus granular shoulders

Refer to Tab. 100-24 for Pavement Quantities
Refer to Tab. 112-9 for Shoulder Quantities

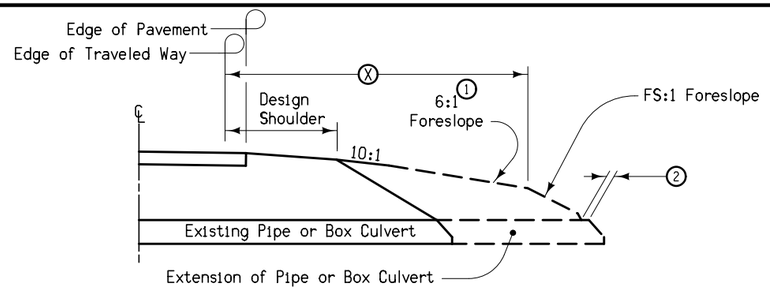
TYPICAL CROSS SECTION US HIGHWAY 18

FILE NO.	ENGLISH	DESIGN TEAM Design team 1\design team 2\design team 3	COUNTY COUNTY	PROJECT NUMBER PROJECT NUMBER	SHEET NUMBER B.1

10:00:12 AM 7/21/2021 tsheets pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7401801019\Design\SHT_74018106Z01_B01.dgn



PLAN VIEW



SECTION A-A

STRUCTURE LOCATION		(W)	(L)	(X)	(FS)
STATION (3)	SIDE	Feet	Feet	Feet	
547+83.00	RT	85	60	30	3.5:1
547+83.00	LT	85	60	30	3.5:1

At locations where an extended or newly constructed drainage structure extends beyond the normal foreslope cover, flatten as indicated so as to cover the structure. Minimum earth cover is 6 inches.

(1) Slope may be flatter than 6:1.

(2) 6 inch minimum for pipe installations or to top of headwall on RCB.

(3) At ℄ of roadway.

(W) = Pipe or RCB opening width plus 20 feet each side.

BARNROOF FORESLOPE AT SKEWED DRAINAGE STRUCTURE

4312
10-15-19

SURVEY SYMBOLS

- Interstate Highway Symbol
- U.S. Highway Symbol
- Iowa Highway Symbol
- County Road Highway Symbol
- Evergreen Tree
- Deciduous Tree
- Fruit Tree
- Shrub (Bushes)
- Timber
- Hedge
- Stump
- Swamp
- Rock Outcrop
- Broken Concrete
- Revetment (Rip Rap)
- Cemetery
- Grave
- Cave
- Sink Hole
- Board Fence
- Chain Link or Security Fence
- Wire Fence
- Terrace
- Earth Dam or Dike (Existing)
- Earth Dam or Dike (Proposed)
- Tile Outlet
- Edge of Water
- Existing Drainage
- Proposed Drainage
- Right of Way Rail or Lot Corner
- Concrete Monument
- Well
- Windmill
- Beehive Intake
- Existing Intake
- Proposed Intake
- Existing Utility Access (Manhole)
- Proposed Utility Access (Manhole)
- Fire Hydrant
- WH Water Hydrant (Rural)
- Cistern
- L.P. Gas Tank (No Footing)
- UST Underground Storage Tank
- Latrine
- Luminaire
- Traffic Signal
- Traffic Signal with Luminaire
- TP Telephone Pedestal
- TVP Television Pedestal
- Telephone Pole
- Telephone Pole (Second Company)
- Telephone Pole (Third Company)
- Telephone Pole (Fourth Company)
- Telephone Pole (Fifth Company)
- Power Pole
- Power Pole (Second Company)
- Power Pole (Third Company)
- Power Pole (Fourth Company)
- Power Pole (Fifth Company)
- Electrical Highline Tower (Metal or Concrete)
- Telephone Riser Pole
- Power Riser Pole
- Telegraph Pole
- Satellite TV Dish
- WHU Water Hook Up
- RT Radio Tower
- TA Tower Anchor
- Guardrail (Beam or Cable)
- GP Guard Post (one or two)
- Guard Post (over two)
- FP Filler Pipe
- GV Gas Valve
- WV Water Valve
- SL Speed Limit Sign
- MM Mile Marker Post
- SIGN Sign
- TCB Traffic Signal Control Box
- RRB Rail Road Signal Control Box
- TSB Telephone Switch Box
- EB Electric Box

UTILITY LEGEND

— E1 — Iowa Lakes Electric
Brian Scott
Phone #
brians@ilec.coop

— FO — Iowa Communications Network
Shannon Marlow
515-725-4402
shannon.marlow@iowa.gov

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
- C/A Access Control
- Property Line

PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

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

FILE NO.	ENGLISH	DESIGN TEAM SCHRODER \ JEO CONSULTING GROUP	PALO ALTO COUNTY	PROJECT NUMBER BRFN-018-3(106)--39-74	SHEET NUMBER D.1

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4' paved shoulders plus granular shoulders

DOT does not want guardrail salvaged (Typ. for all corners)

Eliminate pipe and use ditches

STA. 545+10.00
BEGIN CONSTRUCTION

STA. 550+55.00
END CONSTRUCTION

STA. 547+20.00
Begin Double Reinforced Pavement

STA. 548+40.00
End Double Reinforced Pavement

℄ Roadway and Profile Grade

APPROX. SEC. LINE

1180.00
1185.00

Install New 24"ø x55' CMP
Inlet FL Elev. 1179.3
Outlet FL Elev. 1179.0

STA 547+83.00
INSTALL TRIPLE 12'x8'x108'
REINFORCED CONCRETE
BOX CULVERT, 35° SKEW

(REMOVE)
STA 547+69.06
D.A. = 17.7 SQ. MI.
60'X30' CONTINUOUS
CONCRETE SLAB BRIDGE

0 FEET 20

1,186.94
Begin Construction
Sta. 545+10.00
Elev. 1186.94

+0.133%

VPI +00.000
Elv 1,187.06
Len 175.00 ft
K = 346

Existing Grade at PGL

+0.639%

VPI +83.000
Elv 1,188.23
Len 180.00 ft
K = 179
SSD = 750'

-0.368%

Proposed Grade Line

VPI +65.000
Elv 1,187.56
Len 175.00 ft
K = 475

End Construction
Sta. 550+55.00
Elev. 1187.56
+0.000%
1,187.56

FILE NO.	ENGLISH	DESIGN TEAM SCHRODER \ JEO CONSULTING GROUP	PALO ALTO COUNTY	PROJECT NUMBER BRFN-018-3(106)--39-74	SHEET NUMBER D.2

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Survey Information

PALO ALTO COUNTY
BRFN-018-3(106)--39-74
PRAIRIE CREEK 2.8 MI W OF W JCT IA 15
PIN 19-74-018-010
SAP-06112

Survey Personnel

Field personnel:
Dirk Janssen Survey Field Chief
Brandon Mount - Surveyor
William Riordan - Surveyor

Office personnel:
Jeremy Cswercko

Date(s) of Survey

Begin Date	July 8, 2020
End Date	July 14, 2020

General Information

Measurement units for this survey are US survey feet. This project involves a bridge over Prairie Creek 2.8 miles W of W Jct IA 15. This is a full field survey.
The survey request was made for the purpose of bridge reconstruction.

Vertical Control

Vertical datum for this survey was established with NAVD88 (Computed using Geoid 12B). Referencing the Iowa RTN, surveyors checked into NGS monuments with Trimble TSC3 collector using 15 second static observations. NGS PID DP4482 has a published elevation of 1258.67 ft. Survey observation of point was 1258.63. Surveyors accepted this vertical difference as tolerable for establishing control on site. NGS PID NL0924 has an approximate elevation of 1221 ft. Survey observation of point was 1221.17. This point was primarily used to confirm horizontal control but accepted vertical proximity. Benchmark was established on site using repeated 15 second observations. Elevations were transferred to additional control points and benchmark using level loop.

Horizontal Control

Horizontal control was established on 4 monuments for this project using the Iowa RTN with horizontal datum NAD83(2011) epoch 2010.00. Iowa Regional Coordinate System Zone 1 (Spencer) was used. Surveyors checked on NGS PID NL0924 for horizontal accuracy and were within .03' of North and East as noted on datasheet. Monuments set are considered stable and expected to hold horizontally and vertically reasonably well.

Survey Alignment Information

The horizontal alignment for this survey was provided by District 3 of the Iowa Department of Transportation.

Utility Information

Sub-Surface Utility Mapping Quality Level is in accordance with CI/ASCE 38-02 *Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data*.

Remark abbreviations
QLA Quality Level A Highest guideline quality level
QLD Quality Level D Lowest guideline quality level

One-call Design Information request:
Ticket # 552002873 submitted 4/17/20 at 2:16pm

One-call Design Information converted to Locate request:
Ticket # 552003302 submitted 5/09/20 at 11:40am

Iowa One-Call Does not allow joint meets for survey related requests.

The following Companies were listed:

Company (Quality)	Symbol	Remark
(ICN) Iowa Communications Network	-FO(C)-	QLC
Iowa Lakes Electric	- E -	QLA
Iowa Lakes Electric	-●-	QLD

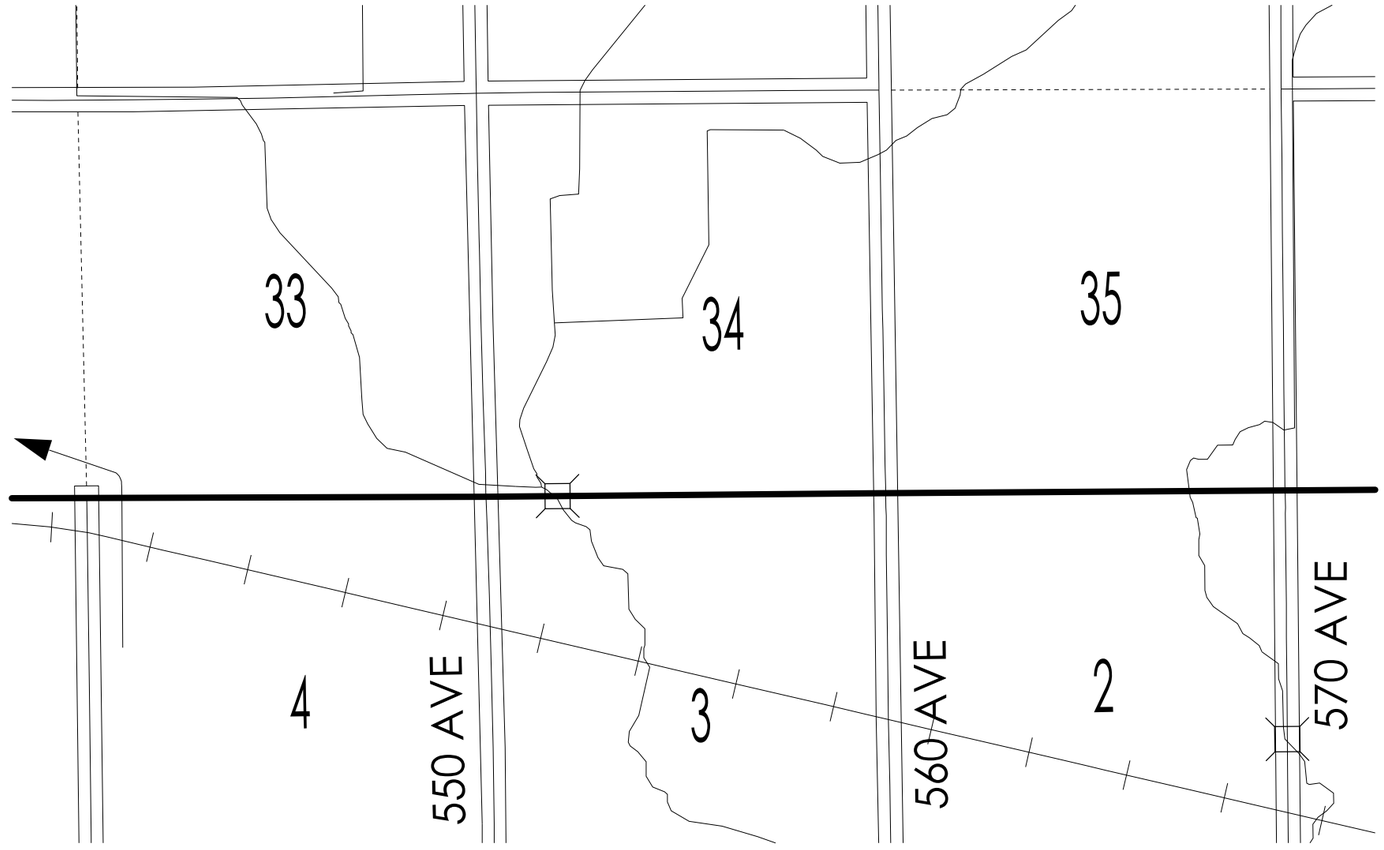
Companies responses to One-Call requests:

4/17/20 Received an E-mail from Shannon Marlow, Shannon.marlow@iowa.gov with Iowa Communications Network (ICN) in response to ticket #552002873, attaching a map of their utilities in the project area.

Code	Status
ICN	Marked
Iowa Lakes Electric	Clear

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.



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

Coordinate listing from next sheet will be used with IaRTN 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 1

Point Name	Northing	Easting	Elevation	Feature Definition	Description
100	9558261.583	11700316.67	1183.643	CP	SET ½"x 30"REBAR W/OPC STAMPED JEO CONTROL +/- 509.7' W OF W END OF BRIDGE DECK, +/- 34' N OF CL HWY 18
101	9558194.701	11700679.81	1183.800	CP	SET ½"x 30"REBAR W/OPC STAMPED JEO CONTROL +/- 147' W OF W END OF BRIDGE DECK, +/- 35' S OF CL HWY 18
102	9558292.870	11701387.65	1186.856	CP	SET ½"x 30"REBAR W/OPC STAMPED JEO CONTROL +/- 499.2' E OF E END OF BRIDGE DECK, +/- 56.2' N OF CL HWY 18
500	9558159.109	11700793.25	1184.651	BM	SET RR SPIKE ON N FACE OF 1ST P.P. W OF BRIDGE ON S. SIDE HWY 18
501	9558172.314	11701092.82	1185.429	BM	SET RR SPIKE ON N FACE OF 1ST P.P. E OF BRIDGE ON S. SIDE HWY 18

ALIGNMENT COORDINATES

Name	Location	Point on Tangent			Begin Spiral			Begin Curve			Simple Curve PI or Master PI of SCS			End Curve			End Spiral		
		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates	
			Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)
Point 5	US 18	538+48.90	9558224.51	11699937.12															
Point 6	US 18	564+79.58	9558246.75	11702567.71															

108-23A
08-01-08

TRAFFIC CONTROL PLAN

Traffic control on this project shall be in accordance with the standard road plans shown in Tabulation 105-4 and the specific layouts shown in the plans. For additional complementary information, refer to Part 6 of the Manual of Uniform Trafic Control Devices (MUTCD) and the current standard specifications and supplemental specifications.

The Contractor shall coordinate traffic control with projects listed in Tabulations 111-01 and other projects in the area.

The Contractor shall notify the Resident Construction Engineer and Palo Alto County two (2) weeks prior to temporary road closures and changes in traffic patterns during construction.

The Contractor shall be responsible for furnishing, installing, maintaining, and removing the signage for the temporary detours.

The Contractor shall remove existing signs and posts withing the project limits, as required for construction. The Contractor shall provide Iowa DOT and Palo Alto County two (2) weeks advance notice prior to removal of existing signs.

The Contractor shall maintain clean pavment in and out of the work area at all times.

All signs to be in place longer than three days must be mounted.

The Contractor will be responsible for securing a safe storage area for equipment and materials to be used on the project.

US 18 will be closed to thru traffic during construction.

US 18 traffic will be maintained via offsite detour. See Sheet J.3 for detour route.

108-26A
08-01-08

STAGING NOTES

General Notes:
1. Access to properties shall be maintained at all times.
2. The Contractor shall coordinate traffic control with project listed in Tabulation 111-01 and other projects in the area.

Stage 1 - Traffic Control
- Utilize Iowa DOT Standard Road Plan TC-211 for patching along the detour route.

Stage 1 - Construction
- Install temporary traffic control as required for construction.
- Install patches as outlined in the C-Sheets.

Stage 2 - Traffic Control
- Utilize Iowa DOT Standard Road Plan TC-233 for pavement marking operations along the detour route.

Stage 2 - Construction
- Install pavement markings as described in the C-Sheets along the detour route.

Stage 3 - Traffic Control
- Close US Highway 18 to traffic utilizing Iowa DOT Standard Road Plan TC-252, Situation 1 (Rural).
- Maintain access to properties at all times.

Stage 3 - Construction
- Install temporary traffic control and erosion control.
- Remove existing bridge and install new box culvert.
- Grade and pave proposed pavement. Install pavement markings.
- Install final erosion control.

Stage 4 - Traffic Control
- Open traffic to US Highway 18.
- Remove remaining traffic control.

CROSS SECTION VIEW COLOR LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

SHADING	Design Color No.	
Green, Light	(225)	Existing Pavement Shading
Gray, Light	(48)	Previously Constructed Pavement Shading
Gray, Med	(80)	Previously Constructed Granular Surface Shading
Blue, Light	(230)	Proposed Pavement Shading
Lavender	(9)	Temporary Pavement Shading
Brown, Med	(237)	Future Proposed Pavement Shading

CROSS SECTION VIEW PATTERN AND SYMBOL LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

	Pavement Removal		Proposed Granular Shoulder
	Proposed Granular Subbase		Temporary Shoulder
	Proposed Special Backfill		Existing Shoulder Strengthening
	Temporary Barrier Rail		Permanent Barrier Rail
			Channelizing Device

PLAN VIEW COLOR LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

LINEWORK	Design Color No.	
Green	(2)	Existing Topographic Features and Labels
Magenta	(5)	Pavement Marking Call Outs
Blue	(1)	Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
Yellow	(4)	Pavement Markings, Yellow
Off White	(254)	Pavement Markings, White
Violet	(15)	Temporary barrier rail, Unpinned
Flush Orange	(228)	Temporary barrier rail, Pinned

SHADING	Design Color No.	
Green, Light	(225)	Existing Pavement Shading
Gray, Light	(48)	Previously Constructed Pavement Shading
Gray, Med	(80)	Proposed Granular Surface Shading
Gray, Med	(80)	Previously Constructed Granular Surface Shading
Blue, Light	(230)	Proposed Pavement Shading
Lavender	(9)	Temporary Pavement Shading
Brown, Light	(236)	Proposed Grading Limits Shading
Pink, Dark	(13)	Proposed MSE or CIP Wall Shading
Red	(3)	Proposed Bridge Shading and Sign Trusses
Black w/Gray, Light Fill	(0,48)	Previously Constructed Structure

PLAN VIEW PATTERN AND SYMBOL LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

●	Channelizing Device		Crash Cushion (Temp or Perm)
✕	Drum		Traffic Signal
◘	Temporary Lane Separator		Flagger
◆	Tubular Marker		Temporary Floodlighting
♦	Channelizer Marker		Traffic Sign
△	Concrete Barrier Marker		Type III Barricade
ς	Delineator		Type A Warning Light
	Temporary Barrier Rail		Direction of Traffic
	Pavement Removal		Safety Closure
	Sand Barrel Layout	1	Lane Identification

NOTE: Device spacing according to Standard Road Plans unless specifically dimensioned.

TRAFFIC CONTROL AND STAGING LEGEND AND SYMBOL INFORMATION SHEET

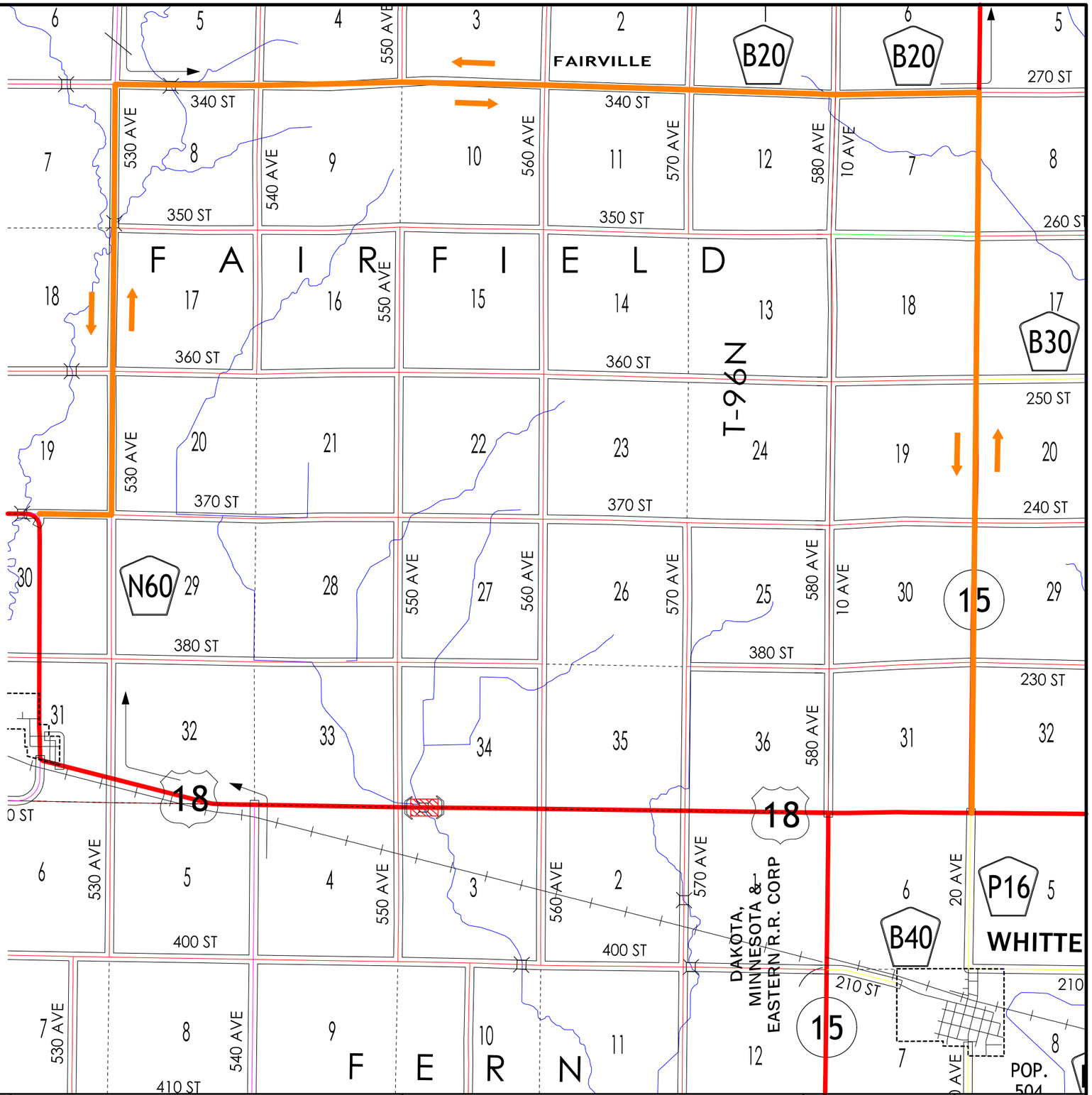
(COVERS SHEET SERIES J)

LEGEND

- Project Location
- Detour Route
- Traffic Sign
- (E) Traffic Sign Identification
- Road Closure

-DOT looked at an alternate detour route after field exam due to the condition of Highway B20. It was discovered B20 will undergo full pavement reconstruction in 2022. As a result, the plan is to proceed with the proposed detour route.

NOT TO SCALE



FILE NO.	ENGLISH	DESIGN TEAM SCHRODER \ JEO CONSULTING GROUP	PALO ALTO COUNTY	PROJECT NUMBER BRFN-018-3(106)--39-74	SHEET NUMBER J.3

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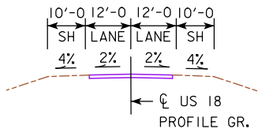
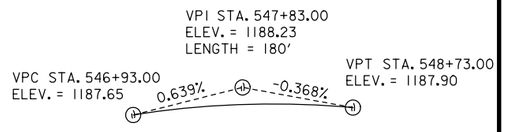
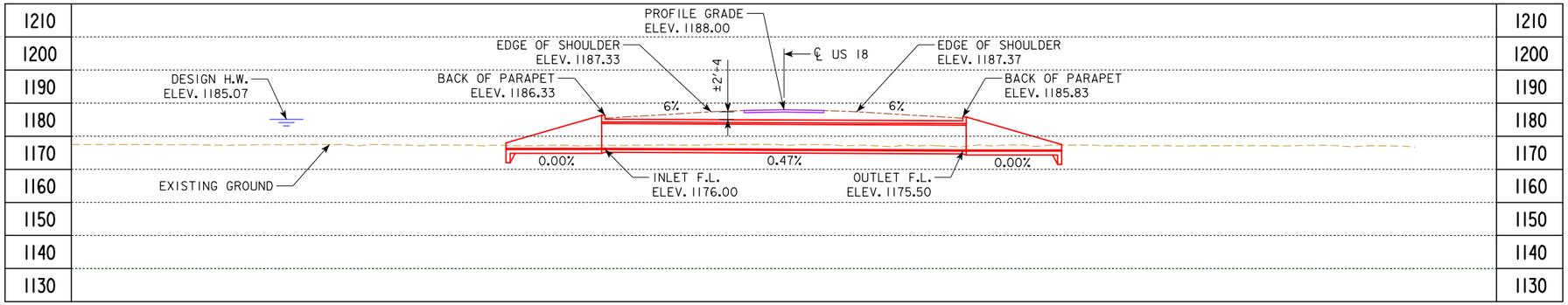


TYPICAL APPROACH SECTION

BENCH MARK NO. 500: SET RR SPIKE ON N. FACE OF 1ST PP W. OF BRIDGE ON S. SIDE OF US 18, ELEV. 1184.65



PROPOSED PROFILE GRADE



-Just use cast-in-place layout for prelim but also dimension the precast. Give precast option for final plans.

HYDRAULIC DESIGN

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

LICENSED PROFESSIONAL ENGINEER Dallas R. Schechinger 2021 IOWA

DRAFT COPY

Signature Dallas R. Schechinger Date

Printed or Typed Name

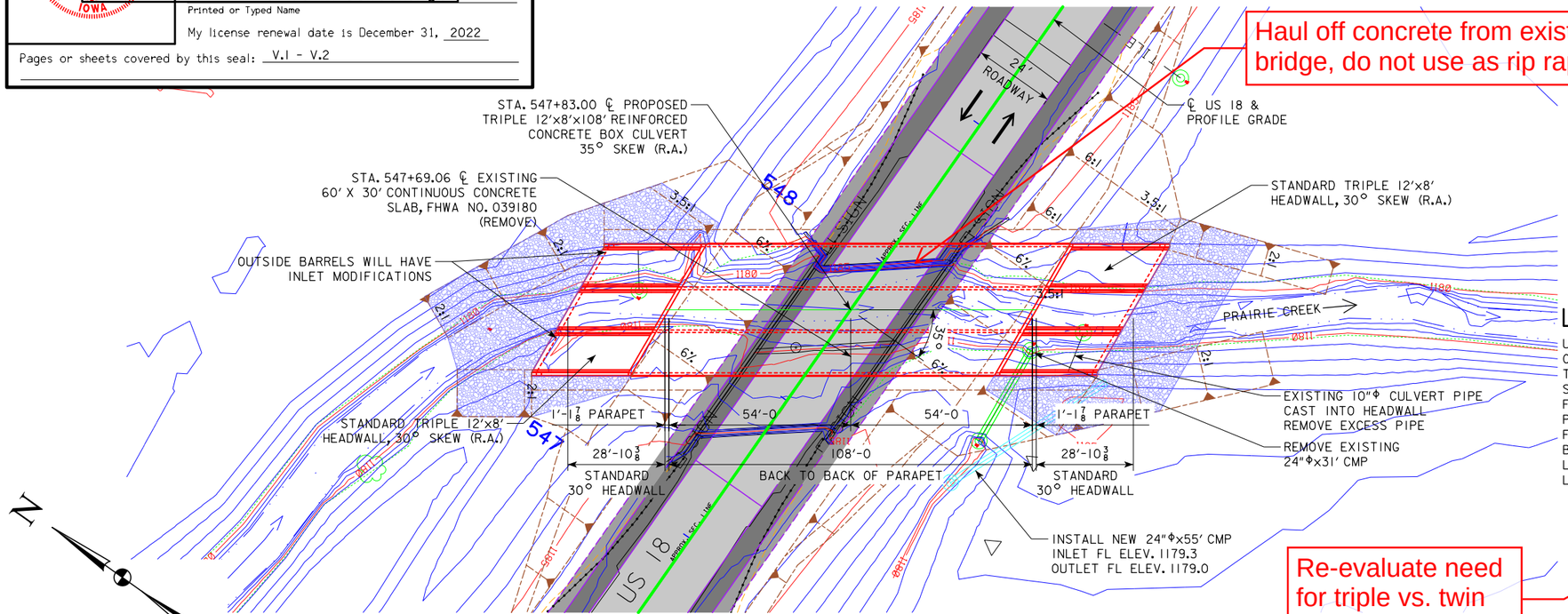
My license renewal date is December 31, 2022

Pages or sheets covered by this seal: V.1 - V.2

LONGITUDINAL SECTION ALONG ℄ CULVERT

ANTICIPATED SETTLEMENT = UNKNOWN

NOTE: FLOW LINE OF THE CULVERT HAS BEEN SET 1' BELOW STREAMBED



SITUATION PLAN

Re-evaluate need for triple vs. twin box.

-Will proceed with twin as outlined in Bridge Determination Development Report

EXISTING STRUCTURE

60' X 30' CONTINUOUS CONCRETE SLAB (REMOVE)

UTILITIES LEGEND:

—— E1 -- ELECTRIC - IOWA LAKES ELECTRIC
——FO(C)-- FIBER OBTIC - IOWA COMMUNICATIONS NETWORK

UTILITIES SHOWN ON THIS SHEET ARE FOR INFORMATION ONLY, SEE ROAD DESIGN SHEETS FOR FINAL UTILITY INFORMATION.

HYDRAULIC DATA

DRAINAGE AREA = 17.7 SQ. MI.
Q_{50} = 1,200 CFS
HW ELEV. = 1185.07
STREAM SLOPE = 4.67 FT./MI.

LOCATION

US 18
OVER PRAIRIE CREEK
T-95N R-31W
SECTION 3
FERN VALLEY TOWNSHIP
PALO ALTO COUNTY
FHWA NO. 039180
BRIDGE MAINT. NO. 7416.7S018
LATITUDE 43.082946°
LONGITUDE -94.498235°

TRAFFIC ESTIMATE

2019	AADT	2550	V.P.D.
2044	AADT	3100	V.P.D.
2044	DHV	320	V.P.H.
TRUCKS		27	%
TOTAL DESIGN ESALs		-	

DESIGN FOR 35° SKEW (R.A.)

TRIPLE 12'x8'x108' REINFORCED CONCRETE BOX CULVERT

SITUATION PLAN

STA. 547+83.00 (US 18) JULY 2021

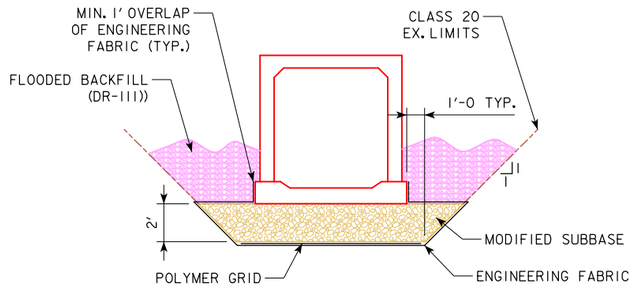
PALO ALTO COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY ADMINISTRATION

DESIGN SHEET NO. ___ OF 2 FILE NO. _____ DESIGN NO. _____

DESIGN TEAM	SCHRODER / JEO CONSULTING GROUP, INC.	PALO ALTO COUNTY	PROJECT NUMBER BRFN-018-3(106)--39-74	SHEET NUMBER V.1

BENCH MARK NO. 500: SET RR SPIKE ON N. FACE OF 1ST PP W. OF BRIDGE ON S. SIDE OF US 18, ELEV. 1184.65



GRANULAR BLANKET SECTION

GRANULAR MATERIAL BLANKET IS DEFINED AS THE MODIFIED SUBBASE AND THE CLEAN, COARSE, CRUSHED ROCK BEDDING UNDER THE ENTIRE PROPOSED REINFORCED CONCRETE BOX CULVERT AND HEADWALLS.

THE MODIFIED SUBBASE SHALL MEET THE GRADATION REQUIREMENTS OF SECTION 4123, GRADATION NO. 14 OF THE IOWA DOT STANDARD SPECIFICATIONS.

GRANULAR MATERIAL BLANKET SHALL BE COMPACTED TO A MINIMUM OF 98% OF THE MATERIAL'S STANDARD PROCTOR AT A WATER CONTENT FROM ZERO TO THREE PERCENT ABOVE OPTIMUM WATER CONTENT.

FLOODED BACKFILL SHALL BE PLACED ACCORDING TO STANDARD ROAD PLAN DR-111.

CLEAN COARSE CRUSHED ROCK BEDDING SHALL BE COMPACTED IN 12 INCH LIFTS.

REFER TO THE GEOTECHNICAL EXPLORATION REPORT PREPARED BY CERTIFIED TESTING SERVICES, REPORT PROJECT GXXXXX DATED XXXXXXXX, FOR ADDITIONAL INFORMATION. REPORT IS AVAILABLE UPON REQUEST FROM THE ENGINEER'S OFFICE.

UPDATE BASED ON GEOTECH REPORT

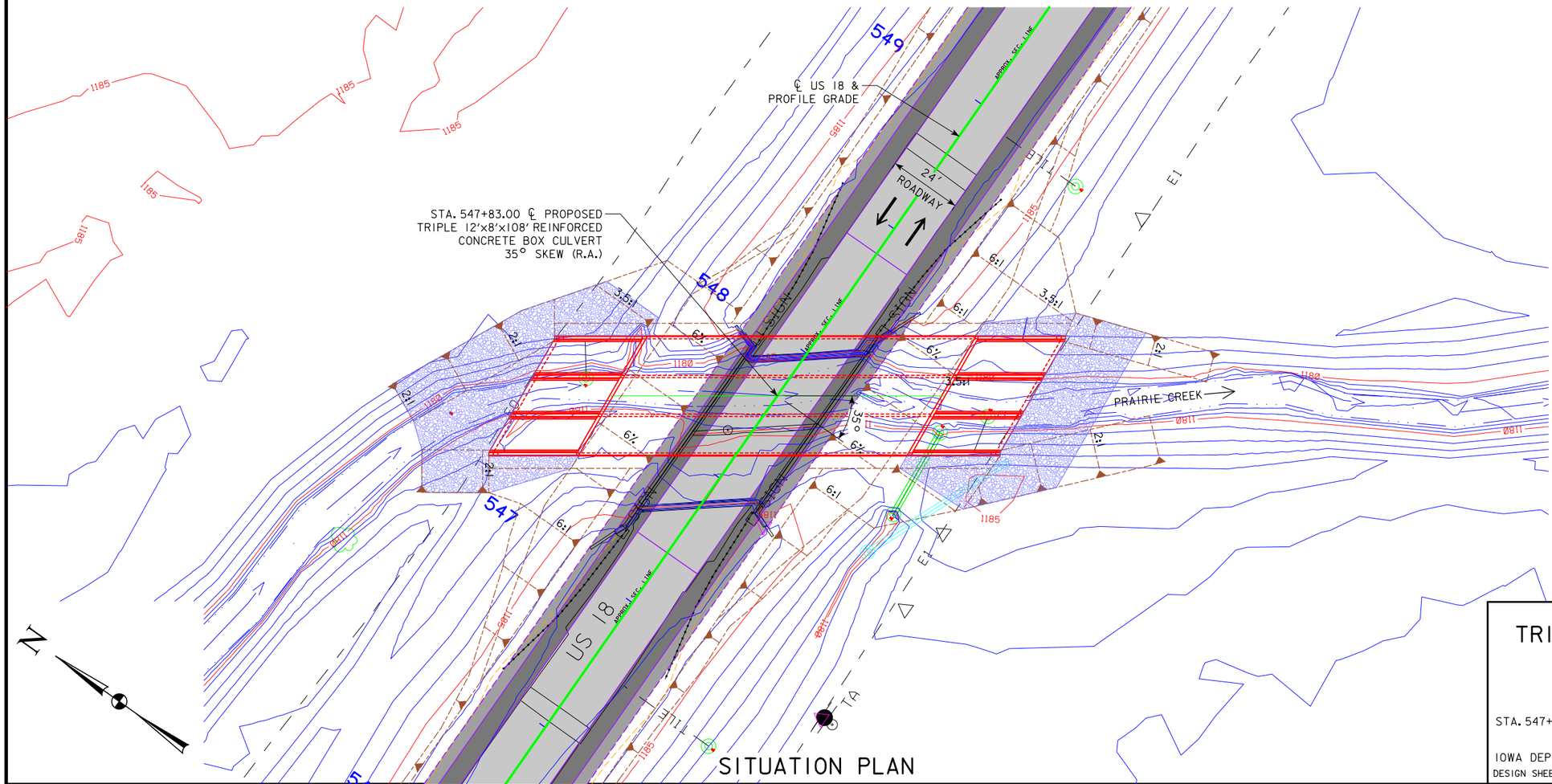
ESTIMATED BERM ARMORING QUANTITIES

LOCATION	REVETMENT CL. E (TON)	CONCRETE GROUT (CY)	ENGINEERING FABRIC (SY)	CLASS 10 EX. (CY)
INLET SIDE	290			180
OUTLET SIDE	230			145
TOTALS	520			325

EXCAVATION QUANTITY CALCULATED FROM GRADING SURFACE AND INCLUDES ONLY THE EXCAVATION REQUIRED TO EMBED THE REVETMENT. QUANTITY INCLUDED IN "EXCAVATION, CLASS 10, CHANNEL" TOTAL LISTED IN THE C SHEETS.

REVETMENT BASED ON DENSITY OF 1.6 TON/CY.

GROUT QUANTITY CALCULATED BY USING 5.4 C.Y. PER S.Y. OF REVETMENT.



SITUATION PLAN

REVETMENT LAYOUT:

(R1) STA. XXX+XX, XX' RT.

GRADING CONTROL:

(G1) STA. XXX+XX, XX.XX' RT., EDGE BENCH, ELEV. X,XXX.XX

DESIGN FOR 35° SKEW (R.A.)

TRIPLE 12'x8'x108' REINFORCED CONCRETE BOX CULVERT

SITUATION PLAN - SITE

STA. 547+83.00 (US 18) JULY 2021

PALO ALTO COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY ADMINISTRATION

DESIGN SHEET NO. ___ OF 2 FILE NO. _____ DESIGN NO. _____

DESIGN TEAM	SCHRODER / JEO CONSULTING GROUP, INC.	PALO ALTO COUNTY	PROJECT NUMBER BRFN-018-3(106)--39-74	SHEET NUMBER V.2

LINE STYLE LEGEND OF CROSS SECTION SHEETS (ROAD)

- Existing Ground Line
- Proposed Template
- Proposed Topsoil Placement
- Additional Topsoil Removal
- Subgrade Treatment
- Granular Shoulder
- Pavement
- Existing Pipe\RCB
- Proposed Pipe\RCB
- Proposed Dike
- All Elements Associated with Proposed Entrances

LINE STYLE LEGEND OF CROSS SECTION SHEETS (SOILS)

- Topsoil (Class 10)
- Slope Dressing Only
- Class 10 Materials
- Select Loams And Clay-Loams
- Select Sand
- Unsuitable Type A Disposal
- Unsuitable Type B Disposal
- Unsuitable Type C Disposal
- Shale
- Waste
- Broken and Weathered Rock
- Solid Rock
- Boulders

Note: All layer lines and descriptions identify layers above the line.

Note: Vertical or near vertical lines connecting soil layers at edges of cross sections are only for the purpose of calculating template quantities and do not depict soil stratification.

SYMBOL LEGEND OF CROSS SECTION SHEETS

Existing ROW — Existing Right-of-Way Limit

Proposed ROW — Proposed Right-of-Way Limit

Temporary ROW — Temporary Right-of-Way Limit

CROSS SECTION LEGEND AND SYMBOL INFORMATION SHEET

(COVERS SHEET SERIES W, X, Y, & Z)

FILE NO.	ENGLISH	DESIGN TEAM **SCHRODER \ JEO CONSULTING GROUP**	**PALO ALTO** COUNTY	PROJECT NUMBER **BRFN-018-3(106)--39-74**	SHEET NUMBER **W.1**

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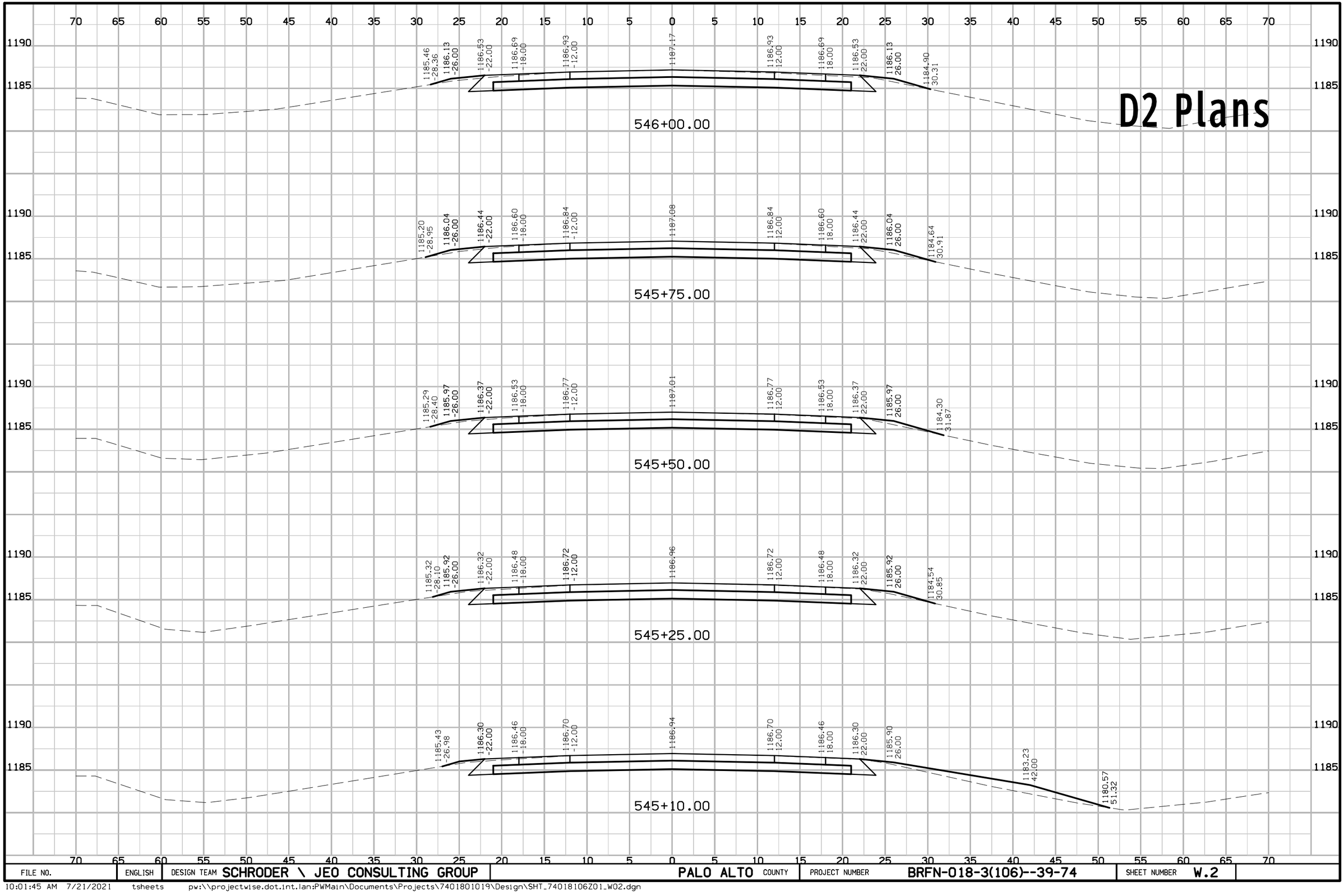
D2 Plans



FILE NO.	ENGLISH	DESIGN TEAM SCHRODER \ JEO CONSULTING GROUP	PALO ALTO COUNTY	PROJECT NUMBER BRFN-018-3(106)--39-74	SHEET NUMBER W.2

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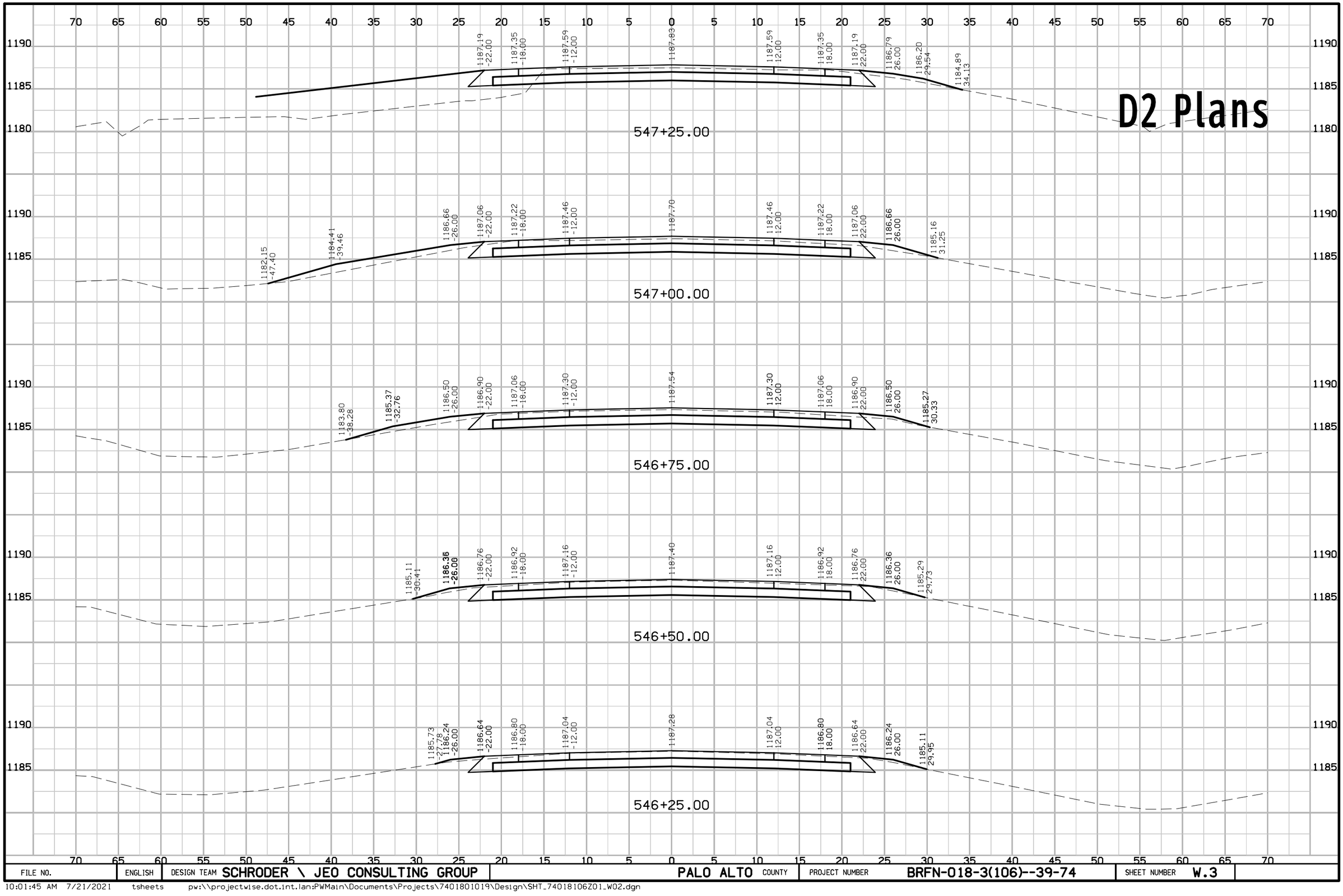
D2 Plans



FILE NO.	ENGLISH	DESIGN TEAM SCHRODER \ JEO CONSULTING GROUP	PALO ALTO COUNTY	PROJECT NUMBER BRFN-018-3(106)--39-74	SHEET NUMBER W.3

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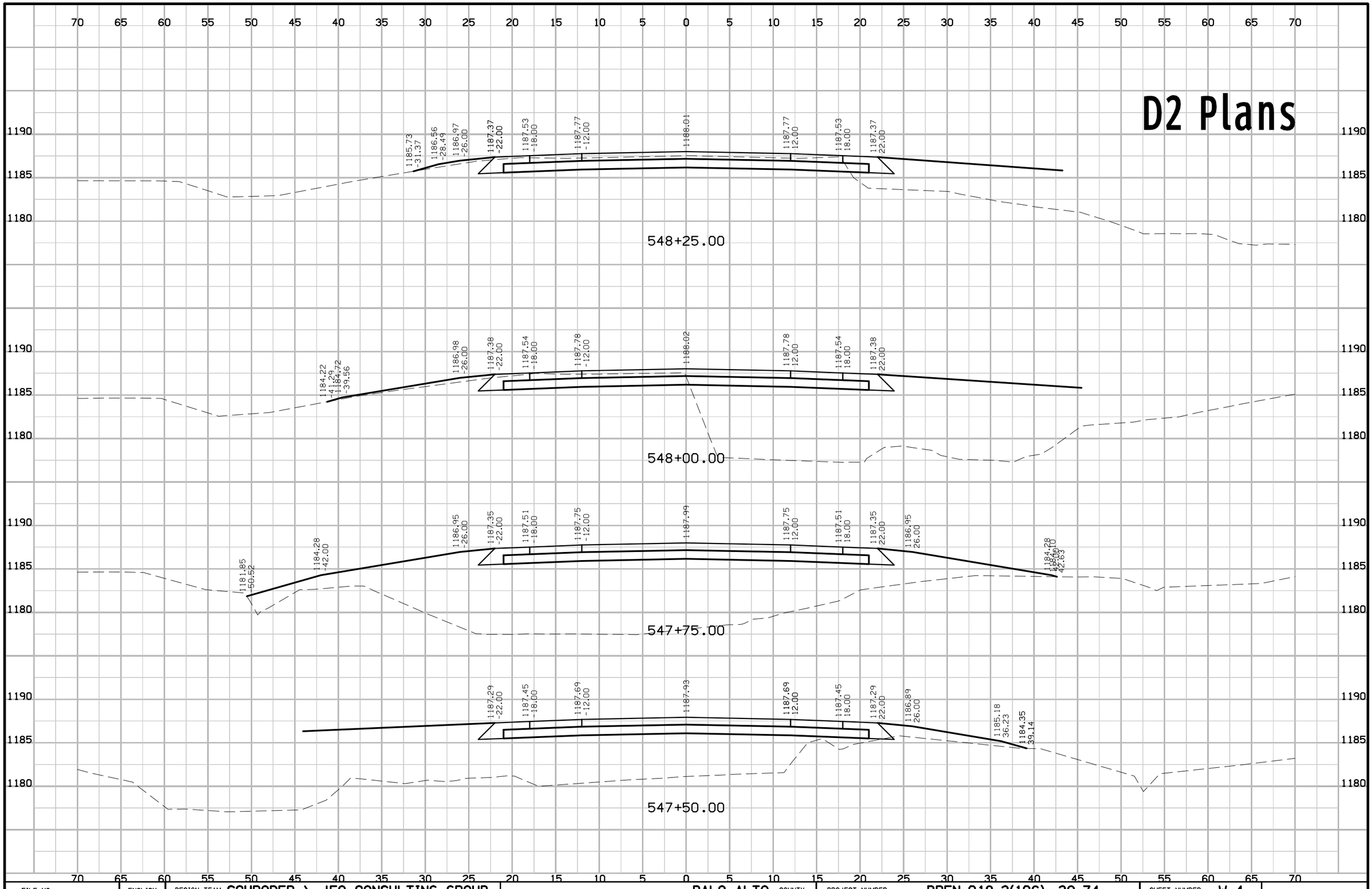
D2 Plans



FILE NO.	ENGLISH	DESIGN TEAM SCHRODER \ JEO CONSULTING GROUP	PALO ALTO COUNTY	PROJECT NUMBER BRFN-018-3(106)--39-74	SHEET NUMBER W.4

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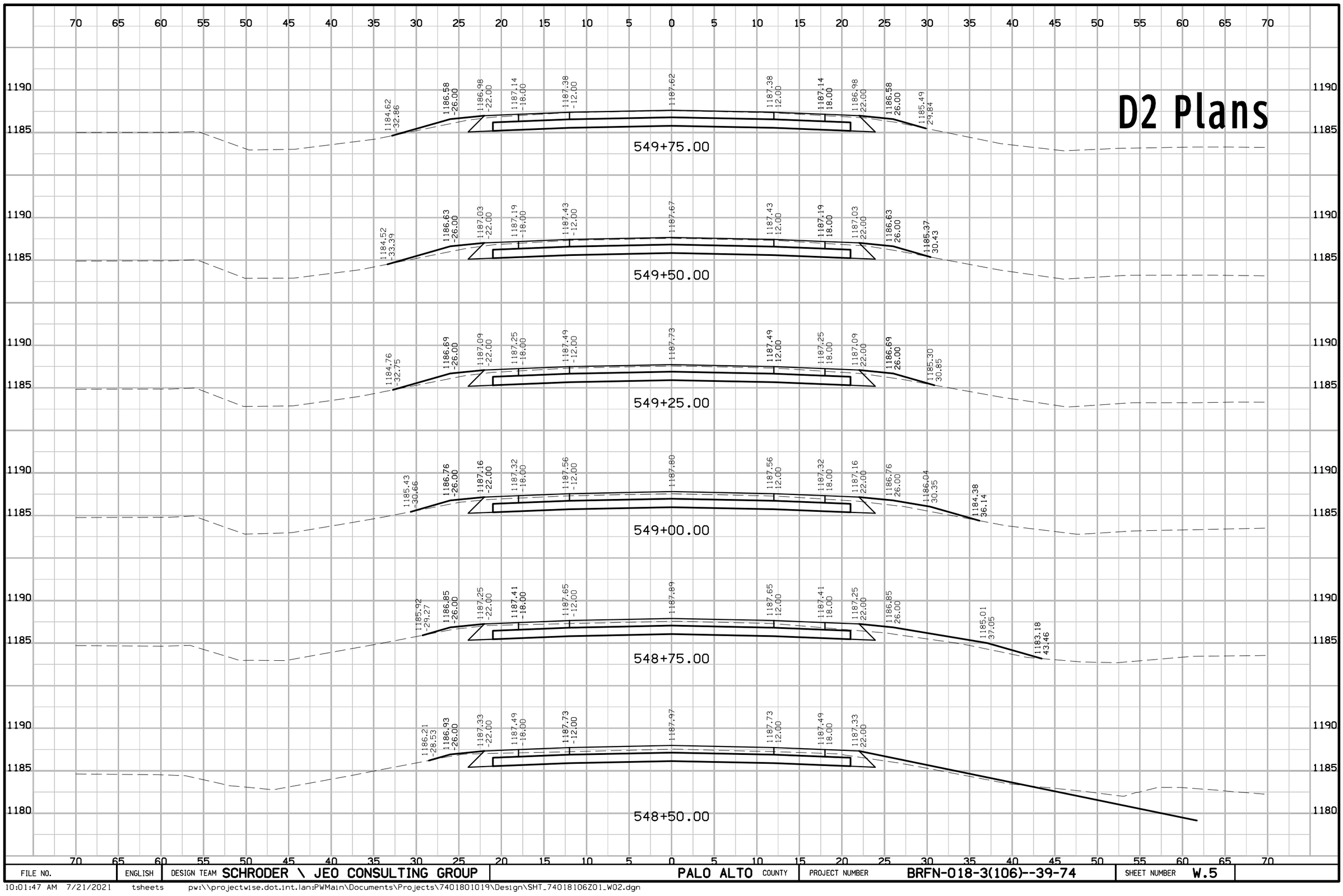
D2 Plans



FILE NO.	ENGLISH	DESIGN TEAM SCHRODER \ JEO CONSULTING GROUP	PALO ALTO COUNTY	PROJECT NUMBER BRFN-018-3(106)--39-74	SHEET NUMBER W.5

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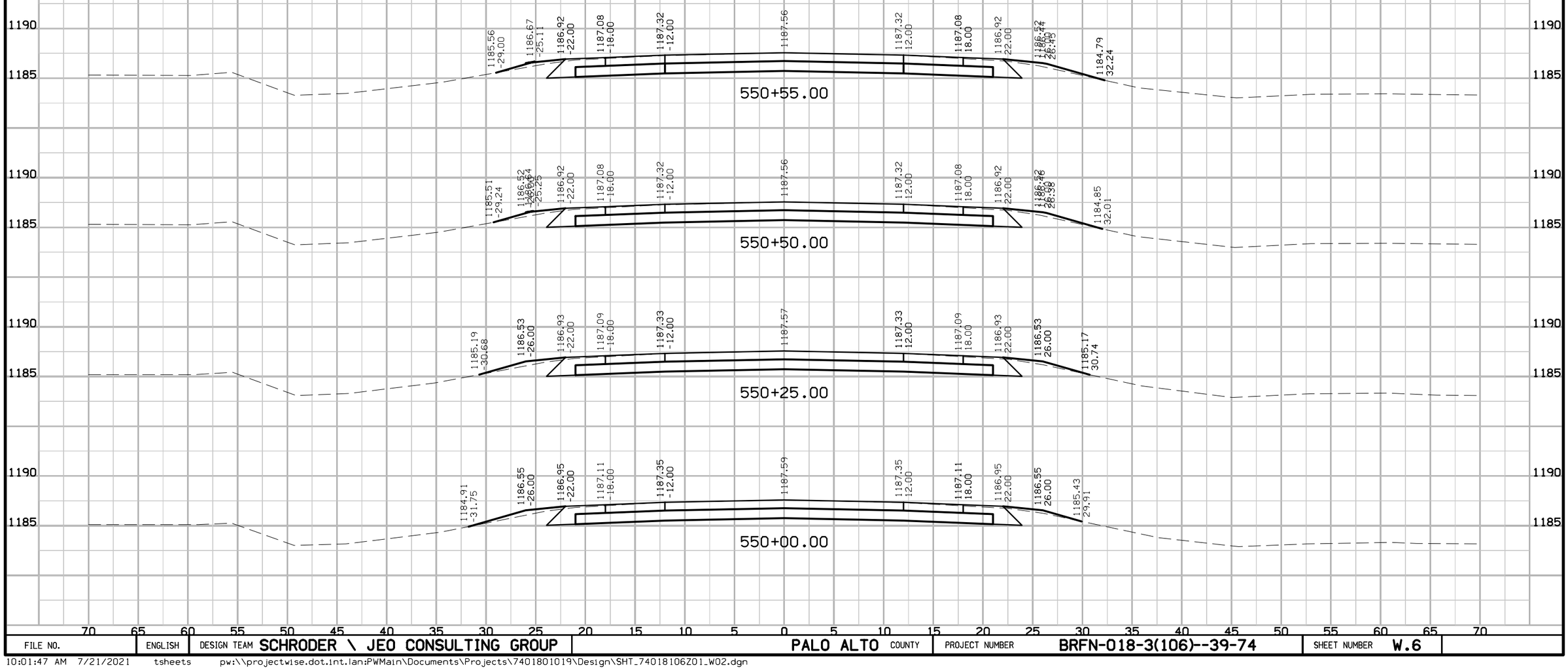
D2 Plans



FILE NO.	ENGLISH	DESIGN TEAM SCHRODER \ JEO CONSULTING GROUP	PALO ALTO COUNTY	PROJECT NUMBER BRFN-018-3(106)--39-74	SHEET NUMBER W.6

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