

LETTING DATE
01-22-2020

REVETMENT
STPN-004-5(47)--2J-74

PALO ALTO CO.



Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

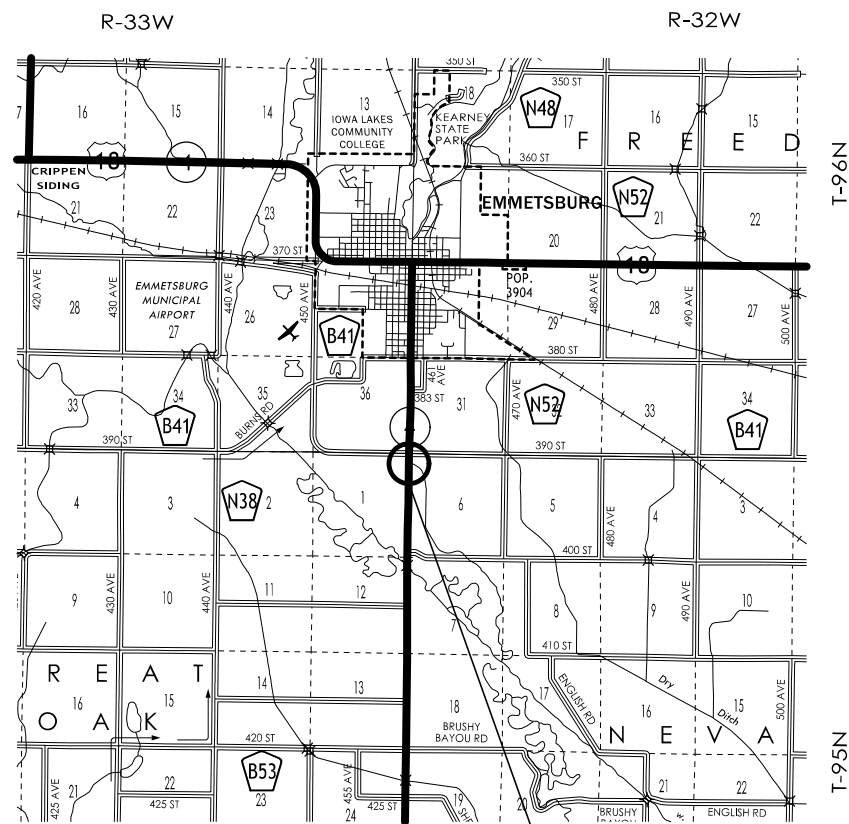
PRIMARY ROAD SYSTEM
PALO ALTO COUNTY
REVETMENT

0.1 mi S of 390th St

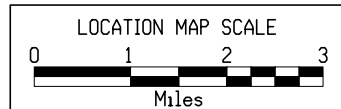
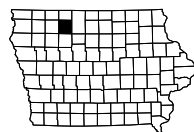
SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

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



Sta. 725+09.68
Project Location
REF LOC = 111.00



REVISIONS

TOTAL

PROJECT IDENTIFICATION NUMBER	19-74-004-010
PROJECT NUMBER	STPN-004-5(47)--2J-74
R.O.W. PROJECT NUMBER	STPN-004-5(48)--2J-74

INDEX OF SHEETS

No.	DESCRIPTION
A Sheets	Title Sheets
A.1	Title Sheet
A.1	Location Map Sheet
C Sheets	Quantities and General Information
C.1	Project Description
C.1	Estimated Project Quantities
C.1	Estimate Reference Information
C.1	Standard Road Plans
C.1	General Notes
G Sheets	Survey Sheets
G.1	Reference Ties and Bench Marks
G.2	Control Point Vicinity Map
G.3	Horizontal Control Tab. & Super for all Alignments
H Sheets	Right-of-Way Sheets
* H.1	IA 4
J Sheets	Traffic Control and Staging Sheets
J.1	Traffic Control Plan
J.1	511 Travel Restrictions
J.1	Coordinated Operations
R Sheets	Erosion Control Sheets
RC.1 - 2	Erosion Control Quantities and Tabulations
* RR.1 - 2	Erosion Control Plan Sheets
V Sheets	Bridge and Culvert Situation Plans
V.1 - 2	Bridge and Culvert Situation Plans

Subject to change by final design.

PRELIMINARY PLANS

D5 PLAN - Date: 6-28-19

DESIGN DATA RURAL

2017 AADT	2,750	V.P.D.
20-- AADT	--	V.P.D.
20-- DHV	--	V.P.H.
TRUCKS	16	%
Total Design ESALs	--	

INDEX OF SEALS

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

Survey Information

Palo Alto County
STPN-004-5(47)--2J-74
0.1 Mi. S. of 390th Street
PIN 19-74-004-010
Sap-792.1

Party Personnel

Jeffrey Duncan- Party Chief

Date(s) of Survey

Begin Date 04/15/2019
End Date 05/09/2019

General Information

Measurement units for this survey are US survey feet. This survey is for proposed scour work on 4'X4' RCB along US Iowa Highway 4. Project datum and control information is provided by Design Survey Office. This project is a Full DTM without Photo control.

Vertical Control

The vertical datum is NAVD88. Vertical Control was established on 2 monuments designated as points A19 and 455. These monuments are expected to hold vertical reasonably well. Datum was transferred from Iowa RTN reference stations to the projects monuments by using concurrent 4-hour static measurements and post processing connecting vectors. Geoid 12 B was used in processing. Additional control points were placed throughout the project using a GNSS Base-Rover setups.

This survey observed 1 County GPS control and 1 NGS Control Monument with published NAVD88 heights to compare to local ground control:

NGS 2nd. order class 0 mark designated A 19 has a published Elev. Of 1223.13
Survey Elev. = 1223.09

Palo Alto County GPS Monument designated 455 has a published Elev. Of 1196.03
Survey Elev. = 1195.99

Horizontal Control

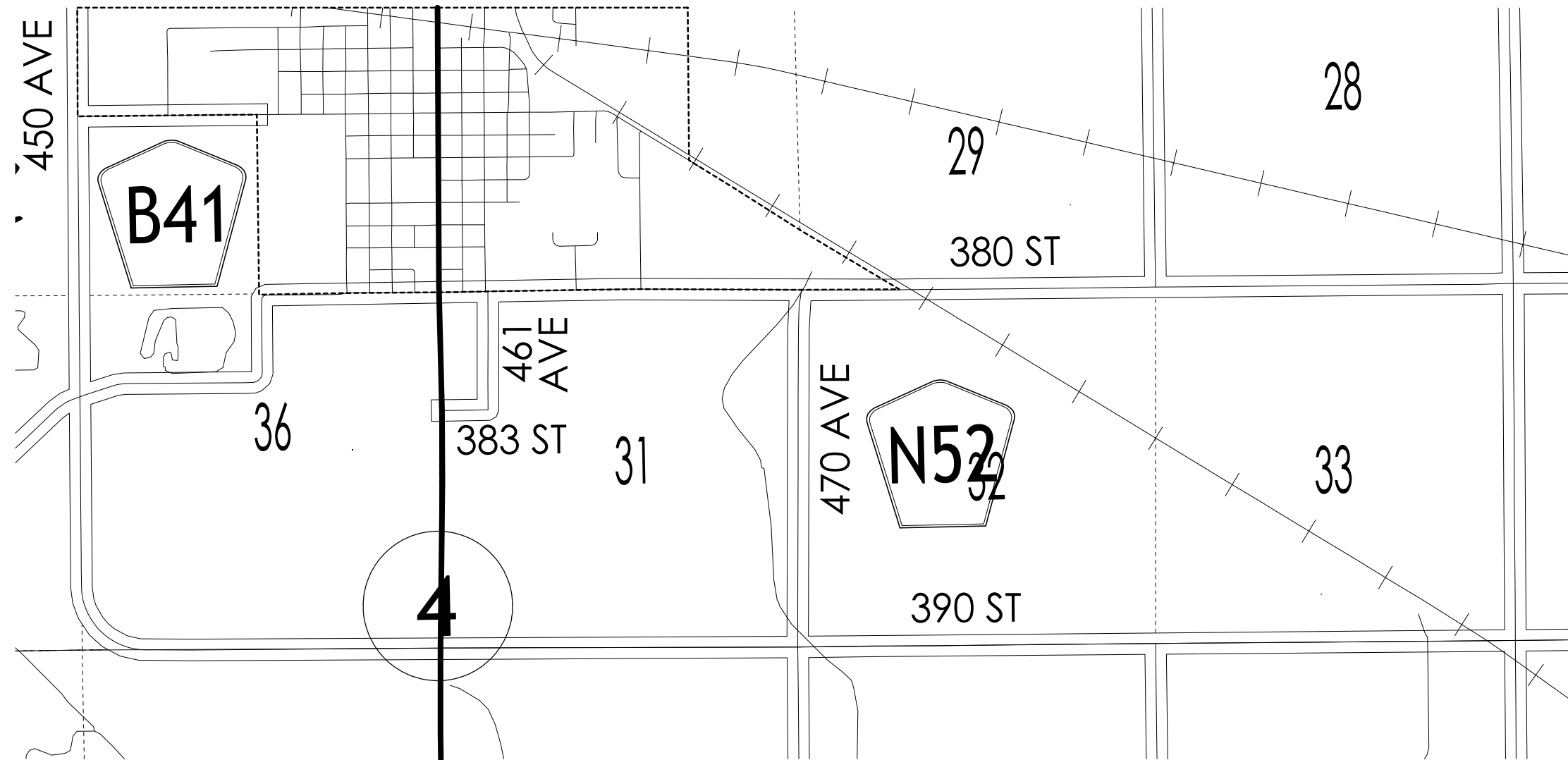
The project coordinate system for this survey is Iowa RCS Zone 1 (U.S. Survey Feet). This survey control is relative to laRTN reference stations. laRTN Reference Station coordinate are relative to the National Reference Station network datum NAD83 (2011) for Epoch 2010.00. Coordinates were determined by using concurrent 4-hour static measurements and post processing connecting vectors. Additional control points were placed throughout the project using a GNSS Base-Rover setups.

Alignment Information

The horizontal alignment for this survey is provided by District 3 ROW.

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 1

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

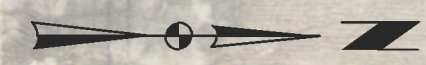
HORIZ. DATUM: NAD83(2011) EPOCH 2010.00

VERT. DATUM: NAVD88

Ia. Regional Coordinate System Zone 1

Point	North	East	Elevation	Feature Code-Description
Name	Coordinate	Coordinate		
A19	9565105.071	11663037.69	1223.09	CP NGS MON 46.5FT S OF THE S RAIL 46.0FT W CL 480TH ST 15.0FT N CL FIELD ENT
455	9558062.645	11667003.37	1195.99	CP COUNTY GPS MON 40.0FT N CL 390TH ST 17.0FT W CL FIELD ENT 9.2FT NW W END 15IN CMP
CP1	9560510.523	11652532.12	1212.99	CP CM 71.0FT W CL HWY 4 47.0FT S OF CEMENTARY ENT 40.0FT SSW OF S END RCP

NO ACCESS RIGHTS ARE TO BE ACQUIRED ON THIS PROJECT.



Great Oak TWP.
T-95N R-33W
SEC. 1

390th ST

IA 4

724+80
±60'±EX.R/W

724+85
±80'

725+45
±60'±EX.R/W

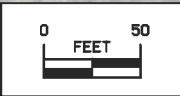
725+05
±95'

724+92±P
±85'

Nevada TWP.
T-95N R-32W
SEC. 6

①
DONALD P. & JANE M. BRUCH

②
LYLE D. FREDERICK LIFE ESTATE
JASON J. FREDERICK REM.



Right of Way Design Information	
THIS SHEET INCLUDED FOR INFORMATION ONLY	
ROW Team: LARSON/CUVA	
ROW #: STPN-004-5(48)--2J-74	
Plan Date: 7/18/2019	
Color Legend:	
	Property Lines
	Temporary Easement
	Permanent Acquisition

108-23A 08-01-08
TRAFFIC CONTROL PLAN
IA 4 traffic shall be maintained at all times.

111-01 04-17-12								
COORDINATED OPERATIONS								
Other work in progress during the same period of time will include the construction of the projects listed. Coordinate operations with those of other contractors working within the same area.								
<table border="1" style="width: 100%;"> <tr> <th style="width: 50%;">Project</th> <th style="width: 50%;">Type of Work</th> </tr> <tr> <td>None provided</td> <td></td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> </table>	Project	Type of Work	None provided					
Project	Type of Work							
None provided								

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
			No travel restrictions expected.									

ESTIMATED BRIDGE QUANTITIES

ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QUAN.
1	2507-3250005	ENGINEERING FABRIC	SY	85.0	
2	2507-6800061	REVTMENT, CLASS E	TON	75.0	
3	2599-9999003	('CUBIC YARDS' ITEM) GROUT FOR PARTIALLY GROUTED REVTMENT	CY	6.0	

ESTIMATE REFERENCE INFORMATION

ITEM NO.	ITEM CODE	DESCRIPTION
1	2507-3250005	ENGINEERING FABRIC ENGINEERING FABRIC SHALL BE MATERIAL AS SPECIFIED FOR EMBANKMENT EROSION CONTROL IN ACCORDANCE WITH ARTICLE 4196.01,B,3, OF THE STANDARD SPECIFICATIONS.
2	2507-6800061	REVTMENT, CLASS E ESTIMATED AT 1.6 TON/CY. INCLUDE SUBDRAIN REPAIR COSTS IN THIS BID ITEM.
3	2599-9999003	('CUBIC YARDS' ITEM) GROUT FOR PARTIALLY GROUTED REVTMENT REFER TO SPECIAL PROVISION FOR SPECIFICATIONS.

GENERAL NOTES:

THIS DESIGN IS FOR THE CONSTRUCTION OF STREAM STABILIZATION MEASURES AT THE OUTLET OF AN EXISTING 4' X 4' RCB CULVERT LOCATED AT STATION 725+09.68 ALONG IOWA HIGHWAY 4. PROJECT LOCATION IS APPROXIMATELY 0.1 MILES SOUTH OF 390TH STREET.

PROJECT SHALL CONSIST OF:

- I. INSTALLATION OF PARTIALLY GROUTED CLASS E REVTMENT OUTLET STABILIZATION.

ROADWAY QUANTITIES SHOWN ELSEWHERE IN THESE PLANS.

SPECIFICATIONS:

CONSTRUCTION: IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, SERIES OF 2015, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.

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.

David J. Mulholland 6/19/2019

Signature **David J. Mulholland** Date

Printed or Typed Name

My license renewal date is December 31, 2020

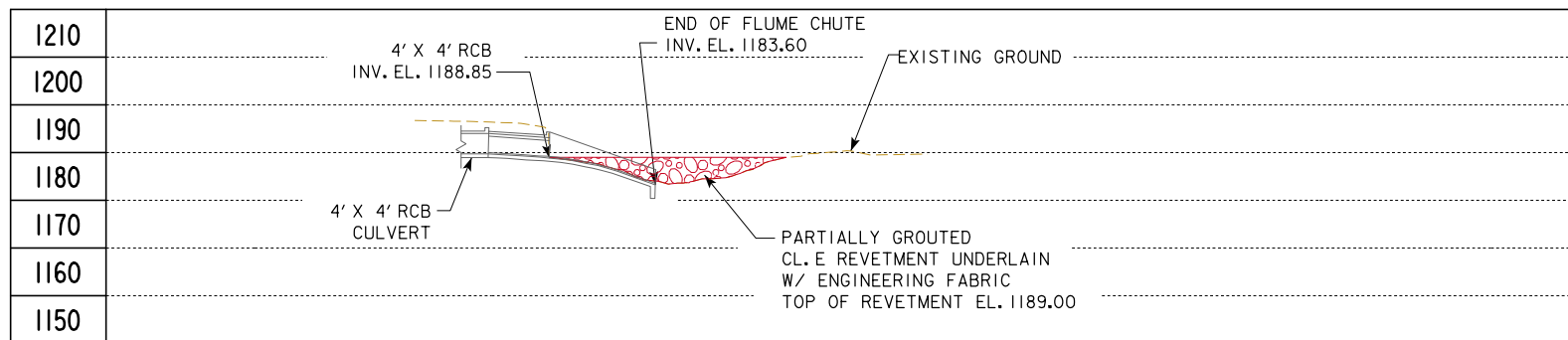
Pages or sheets covered by this seal: V.1 AND V.2

PRELIMINARY

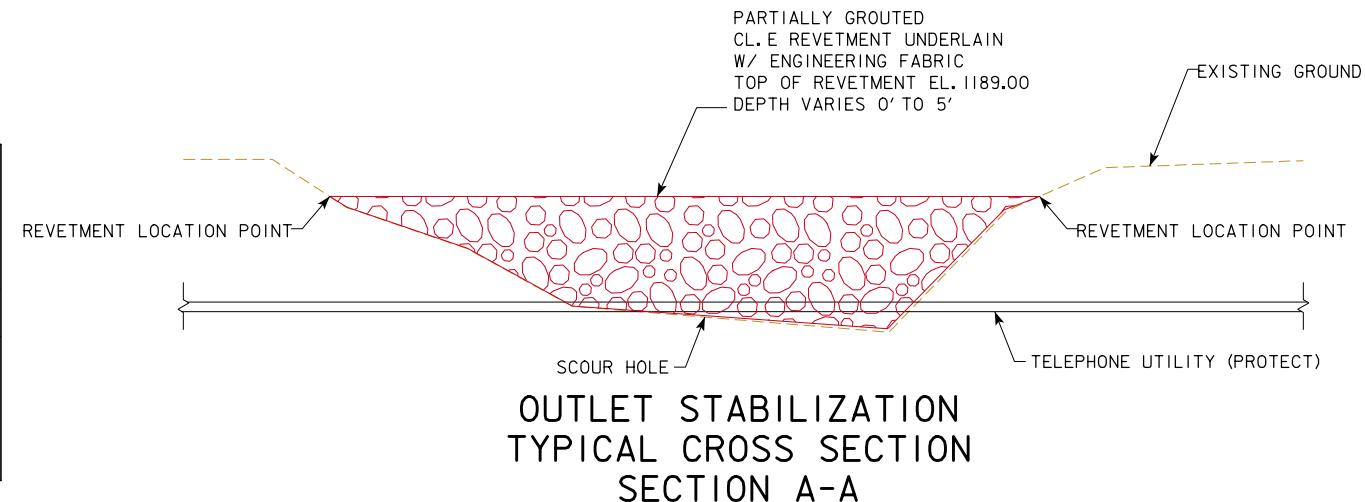
DESIGN FOR

**4' X 4' RCB CULVERT
OUTLET STABILIZATION
QUANTITIES AND GENERAL NOTES**
STATION 725+09.68 JUNE 2019
PALO ALTO COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 1 OF 2 FILE NO. 31725 DESIGN NO. 120

CPI N 9560510.523, E 11652532.12, CM 71.0' W OF CL HWY 4, 47.0' S OF CEMETERY ENT, 40.0' SSW OF S END RCP, EL. 1212.99
 CP455 N 9558062.645, E 11667003.37, COUNTY GPS MON 40.0' N CL 390TH ST, 17.0' W CL FIELD ENT, 9.2' NW W END 15 IN CMP, EL. 1195.99



LONGITUDINAL SECTION ALONG THALWEG OF CREEK

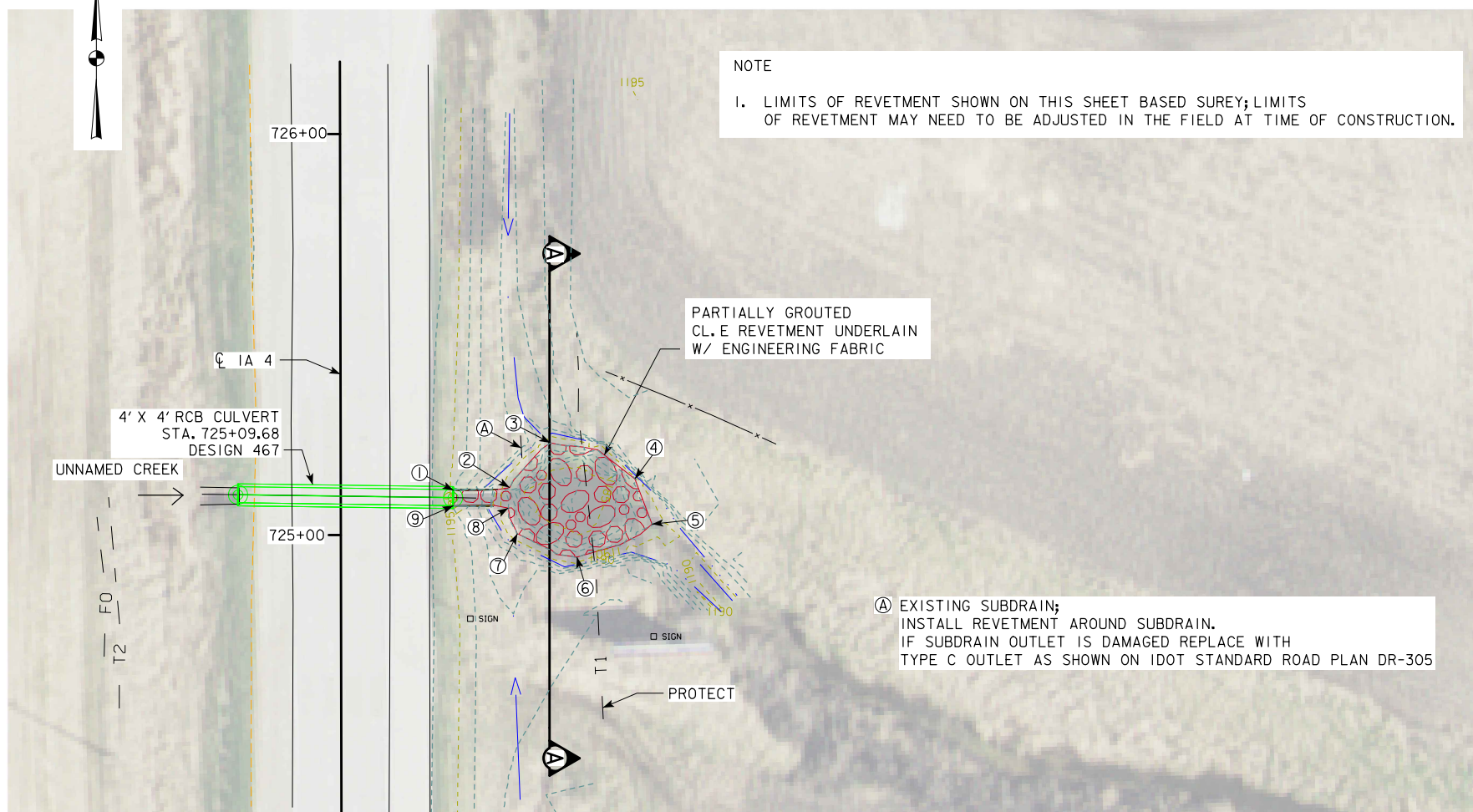


OUTLET STABILIZATION
 TYPICAL CROSS SECTION
 SECTION A-A

REVIEMENT QUANTITIES			
ELEMENT	REVIEMENT CL. E (TON)	ENGR. FABRIC (SY)	GROUT (CY)
OUTLET STABILIZATION	75	85	6

OUTLET STABILIZATION REVIEMENT LOCATIONS

- ① STA. 725+11.04, 28.17' RT, ELEV. 1189.00
N 9557446.21, E 11652600.62
- ② STA. 725+11.71, 42.10' RT, ELEV. 1189.00
N 9557446.90, E 11652614.54
- ③ STA. 725+22.88, 52.33' RT, ELEV. 1189.00
N 9557458.10, E 11652624.75
- ④ STA. 725+13.87, 73.34' RT, ELEV. 1189.00
N 9557449.12, E 11652645.77
- ⑤ STA. 725+02.57, 77.60' RT, ELEV. 1189.00
N 9557437.84, E 11652650.06
- ⑥ STA. 724+94.38, 58.85' RT, ELEV. 1189.00
N 9557429.61, E 11652631.32
- ⑦ STA. 725+00.25, 44.03' RT, ELEV. 1189.00
N 9557435.45, E 11652616.50
- ⑧ STA. 725+06.61, 41.79' RT, ELEV. 1189.00
N 9557441.80, E 11652614.24
- ⑨ STA. 725+07.26, 28.12' RT, ELEV. 1189.00
N 9557442.44, E 11652600.57



SITUATION PLAN

LOCATION

IA 4 OVER UNNAMED CREEK
 T-95N R-32W
 SECTION 6
 NEVADA TOWNSHIP
 PALO ALTO COUNTY
 LATITUDE 43.081823°
 LONGITUDE -94.678730°

HYDRAULIC DATA

DRAINAGE AREA = 12 ACRES
 $Q_{50} = 24$ CFS
 HW ELEV. = 1193.92
 STREAM SLOPE = 20 FT./MI

UTILITIES LEGEND:

- FO - FIBER OPTIC - WINDSTREAM COMMUNICATIONS
- T1 - TELEPHONE - IOWA COMMUNICATIONS NETWORK
- T2 - TELEPHONE - MEDIACOM

TRAFFIC ESTIMATE

2015 AADT	2,640	V.P.D.
202_ AADT	-	V.P.D.
202_ DHV	-	V.P.H.
TRUCKS	-	%
TOTAL DESIGN ESALS	-	



PRELIMINARY
 DESIGN FOR
**4' X 4' RCB CULVERT
 OUTLET STABILIZATION
 SITUATION PLAN**
 STATION 725+09.68 JUNE 2019
PALO ALTO COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. 2 OF 2 FILE NO. 31725 DESIGN NO. 120