CORRESPONDENCE/MEMORANDUM _____ **State of Wisconsin**
Southwest Region
Local Program Management

Date: June 20, 2018

To: John Bainter, P.E.
WisDOT SW Region Project Development Section
Local Program Project Manager

From: Bill Biesmann, P.E.
Local Program Management Consultant

Subject: DESIGN STUDY REPORT
ID 5496-00-04
STH 35 – STH 27
(STH 35 to Teter Lane)
CTH N
Crawford County

Having considered the economic and social effects of this project, its impact on the environment, and its consistency with the goals of community planning, we request your concurrence with the approval of the attached study report.

RECOMMEND APPROVAL:

Local Program Management Consultant — Date: 6/20/2018

APPROVED:

WisDOT Southwest Region Project Development Section
Local Program Project Manager — Date: 7/2/2018

DESIGN STUDY REPORT

Project ID 5496-00-04
STH 35 - STH 27
(STH 35 - Teter Lane)
CTH N
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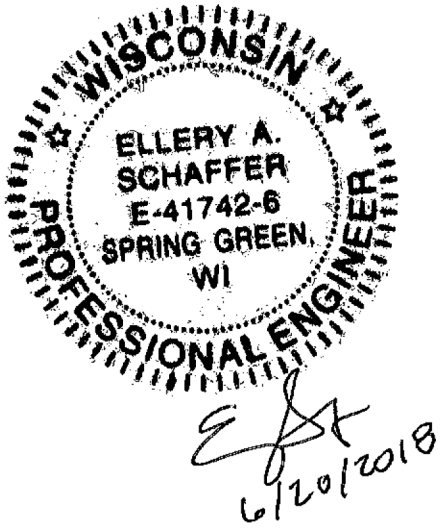

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Date: June 20, 2018

1.0 PROJECT DESCRIPTION AND NEED

1.1. Federal Oversight Project (Yes or No): No

1.2. Project Length & Termini

Project Length: The total project length is 7,853 feet (1.487 miles).

Termini/Limits:

The project is located in Sections 31 & 32, T-8-N, R-06-W and Section 36, T-8-N, R-07-W, Town of Eastman, Crawford County, Wisconsin. The proposed project on CTH N begins at Station 10+47.01 and ends at Station 89+00. The construction limits on STH 35 begins at Station 301+65 and ends at Station 307+31.

1.3. Functional Classification/Access Control

Roadway Name	Functional Class (Arterial, Collector or Local)	Rural, Urban or Transitional	Corridors 2020 or Backbone (No or State which)	NHS Route (Yes or No)	Long Truck Route(No or state Federal or State)	Access Control Tier	On Ped. Trans. Plan (Yes or No)	On Bike Trans. Plan (Yes or No)
CTH N	Major Collector	Rural	No	No	No	N/A	No	No

1.4. Need for the Project

The existing pavement is in poor condition and needs to be replaced. The pavement structure currently exhibits signs of pavement distress including longitudinal cracking, transverse cracking, and rutting.

The existing operational or design speed of the roadway is less than 20 mph and is substandard. This is due to a combination of substandard features including horizontal curves and steep grades of the existing vertical profile alignment of the roadway. These substandard geometric features contributed to all 5 of the crashes located throughout the project length resulting in a high crash rate of 876 million vehicle miles traveled (MVMT) compared to the statewide average of 99.22 MVMT in 2016. The horizontal curves on the alignment need to be realigned to meet current design standards. The profile grades need to be flattened to improve the design speed on the project corridor.

Existing conditions include insufficient area for parking for vehicles seeking Spring Lake Inn and Spring Lake Motel destinations located in the northeast and southeast quadrants of the CTH N/STH 35 intersection. Vehicles frequently park on the shoulder and encroach on the adjacent driving lanes within this section of the corridor resulting in safety concerns. Additional access concerns include the inadequate sight distance of both the Slama Lane and Demanes Lane intersections. A total of nine access points, including Slama Lane, Demanes Lane, and seven driveways are located within a section of approximately 1,300 feet on CTH N. These access points in combination with limited sight distance contribute to safety concerns.

Existing roadside hazards located adjacent to the roadway include steep unprotected sideslopes resulting in additional safety concerns. Steep sideslopes need to be flattened or shielded with guardrail.

Currently rainfall runoff is not contained in the roadside ditches along the north side of the CTH N corridor resulting in frequent flooding of the roadway. A large drainage swale is located along the southern edge of CTH N from STH 35 to Demanes Lane. The combination of steep longitudinal drainage grades and unprotected sideslopes contribute to the continual erosion of the large drainage swale resulting in a deeper swale and steeper sideslopes. The eroded material regularly collects in a box culvert structure (C-12-776) located at the bottom of the drainageway underneath STH 35 leading to routine maintenance for County forces.

2.0 PRESENT FACILITY

2.1. Posted Speed

Roadway or Roadway Segment	Posted Speed	Advisory Speed
CTH N	None. Statutory Speed = 55 mph	Multiple Advisory Speeds for geometry
Sta. 22+80 - 39+85	-	35 mph
Sta. 50+90 - 66+00	-	30 mph
Sta. 69+70 - 70+20	-	40 mph - EB 30 mph - WB

2.2. Geometrics

2.2.1. Horizontal Alignment Features Outside of Desirable or Minimum Design Standards.

Horizontal Feature (Curve, P.I. Deflection, etc.)	Location (Stationing)	Size (Radius, P.I. Deflection, etc.)	Super-Elevation (s.e.)	Speed Rating
Horizontal Curve	11+00.52	Radius = 735 ft	N.C.	<25 mph
Horizontal Curve	15+55.69	Radius = 800 ft	3.40%	25 mph
Horizontal Curve	25+21.35	Radius = 935 ft	4.20%	30 mph
Horizontal Curve	30+46.77	Radius = 355 ft	7.97%	35 mph
Horizontal Curve	33+09.73	Radius = 485 ft	3.48%	<25 mph
Horizontal Curve	34+87.02	Radius = 425 ft	3.44%	<25 mph
Horizontal Curve	37+42.54	Radius = 1075 ft	3.68%	30 mph
Horizontal Curve	42+34.91	Radius = 2000 ft	4.38%	50 mph
Horizontal Curve	49+26.55	Radius = 1070 ft	1.10%	<25 mph
Horizontal Curve	55+64.42	Radius =545 ft	3.14%	<25 mph
Horizontal Curve	60+70.81	Radius = 405 ft	6.40%	25 mph
Horizontal Curve	64+98.30	Radius = 1400 ft	N.C.	<25 mph
Horizontal Curve	75+09.88	Radius = 1550 ft	N.C.	<25 mph
Horizontal Curve	83+15.07	Radius = 870 ft	5.95%	50 mph

Comments: There are twelve existing horizontal alignment features outside of desirable or minimum design standards located within the project limits. Two existing horizontal curves (Sta. 42+34.91 and Sta. 83+15.07) have speed ratings greater than the desirable or minimum design standards, but less than the statutory speed limit of 55 mph. Speed ratings for super-elevation rates greater than 6.0% are based upon Exhibit 3-27 of AASHTO's "A Policy on Geometric Design of Highways and Streets", 2004 Edition to derive speed rating values.

2.2.2. Vertical Alignment Features/SSD Outside Desirable or Minimum Design Standards.

Vertical Feature (Curve, Vertical Grade Deflection, etc.)	Location (Stationing)	Sag or Crest	% Grades	K Value/ Grade Deflection	Speed Rating	SSD** Met (Yes or No/ Length)	DSD Met (Yes or No/ Length)
Vertical Curve	11+58.85	Sag	g_1=+1.21% g_2=+5.24%	49.6	35 mph	No/250'	No/275'
Vertical Curve	14+60.28	Sag	g_1=+5.24% g_2=+6.60%	88.5	40 mph	Yes/360'	No/330'
Vertical Curve	15+81.65	Crest	g_1=+6.60% g_2=+3.56%	39.6	30 mph	No/200'	No/220'
Vertical Curve	17+39.64	Sag	g_1=+3.56% g_2=+6.63%	48.8	35 mph	No/250'	No/275'
Vertical Curve	19+33.70	Crest	g_1=+6.63% g_2=+2.95%	32.6	30 mph	No/200'	No/220'
Vertical Curve	20+85.75	Sag	g_1=+2.95% g_2=+4.88%	62.4	35 mph	No/250'	No/275'
Vertical Curve	23+23.58	Sag	g_1=+4.88% g_2=+7.27%	50.1	35 mph	No/250'	No/275'
Vertical Curve	24+99.79	Crest	g_1=+7.27% g_2=+2.70%	49.3	35 mph	No/250'	No/275'
Vertical Curve	28+63.76	Sag	g_1=+2.70% g_2=+8.26%	47.7	30 mph	No/200'	No/220'
Vertical Curve	32+03.11	Sag	g_1=+8.26% g_2=+9.72%	82.1	40 mph	Yes/360'	No/330'
Vertical Curve	36+79.96	Crest	g_1=+9.72% g_2=+5.90%	31.4	30 mph	No/200'	No/220'
Vertical Curve	39+85.88	Sag	g_1=+5.90% g_2=+7.28%	86.7	40 mph	Yes/360'	No/330'
Vertical Curve	44+81.17	Crest	g_1=+7.28% g_2=+4.66%	45.8	30 mph	No/200'	No/220'
Vertical Curve	49+61.60	Sag	g_1=+4.66% g_2=+8.39%	32.2	25 mph	No/155'	No/<220'
Vertical Curve	51+40.05	Crest	g_1=+8.39% g_2=+6.79%	74.8	40 mph	Yes/305'	No/330'
Vertical Curve	54+50.00	Crest	g_1=+6.79% g_2=+4.03%	54.4	35 mph	No/250'	No/275'
Vertical Curve	56+04.50	Sag	g_1=+4.03% g_2=+10.84%	17.6	20 mph	No/115'	No/<220'
Vertical Curve	59+27.82	Sag	g_1=+10.84% g_2=+12.50%	72.3	40 mph	Yes/305'	No/330'
Vertical Curve	66+87.21	Crest	g_1=+4.03% g_2=+10.84%	67.4	35 mph	No/250'	No/275'
Vertical Curve	69+48.30	Crest	g_1=+4.03% g_2=+10.84%	44.2	30 mph	No/200'	No/220'
Vertical Curve	72+73.84	Sag	g_1=+8.00% g_2=+12.87%	51.4	35 mph	No/250'	No/275'
Vertical Curve	76+28.55	Crest	g_1=+12.87% g_2=+7.82%	23.8	25 mph	No/155'	No/<220'
Vertical Curve	77+50.29	Crest	g_1=+7.82% g_2=-0.37%	14.6	15 mph	No/155'	No/<220'
Vertical Curve	80+28.53	Crest	g_1=-0.37% g_2=-3.18%	46.3	30 mph	No/200'	No/220'
Vertical Curve	82+65.03	Sag	g_1=-3.18% g_2=-2.05%	106.6	40 mph	Yes/425'	No/330'
Vertical Curve	84+66.35	Sag	g_1=-2.05% g_2=+2.04%	45.2	30 mph	No/200'	No/220'

**SSD = Stopping Sight Distance

Comments: There are twenty existing vertical alignment features outside of desirable or minimum design standards located within the project limits. Six existing vertical curves have speed ratings greater than the desirable or minimum design standards, but less than the statutory speed limit of 55 mph. Speed ratings (K

Values / Grade Deflection) for vertical curves <25 mph are based upon Exhibit 3-72 of AASHTO's "A Policy on Geometric Design of Highways and Streets", 2004 Edition to derive speed rating values.

2.2.3 Grades and Vertical Clearance Outside Desirable or Minimum Design Standards.

Location (Stationing, Overpass Structures, etc.)	% Grade	Vertical Clearance
Sta. 28+64 - 32+03	8.26%	N/A
Sta. 32+03 - 36+80	9.72%	N/A
Sta. 49+62 - 51+40	8.39%	N/A
Sta. 56+05 - 59+28	10.84%	N/A
Sta. 59+28 - 66+87	12.50%	N/A
Sta. 66+87 - 69+48	10.72%	N/A
Sta. 72+74 - 76+28	12.87%	N/A

Comments: The existing grades on CTH N range from 0.37% to 12.87% within the project limits. Grades >8% exceeds standards for rural collectors within rolling terrain criteria with 40 mph design speed. The CTH N corridor meets a speed rating <20 mph.

2.3 Side-Roads/Intersections/Interchanges

2.3.1 Side-roads

Roadway Name	Functional Class	Posted Speed (MPH)	Existing Traffic*** (AADT)	Approach Grades	Pedestrian Facilities (Yes or No)	Bicycle Facilities (Yes or No)
STH 35	Principal Arterial	None, Statutory Speed = 55 mph	3,820	g_1=+1.21% g_2=+5.24%	No	Yes
Demanes Lane	Local	None, Statutory Speed = 55 mph	<100	g_1=-7.10% g_2=-9.30%	No	No
Slama Lane	Local	None, Statutory Speed = 55 mph	<100	g_1=+0.30% g_2=+1.80%	No	No

***If Existing Traffic volumes are not available, then state at a minimum whether AADT is assumed to be <100 or >100.

Comments: None

2.3.2 Intersections

Intersecting Roadway Names	Intersect. Type	Intersect. Angle	Traffic Control	SSD** Met [(Y/N) / Length]	ISD** Met [(Y/N) / Length]	DSD** Met [(Y/N) / Length]	Vision Triangle (Y/N)	Corner Clearance To Driveways Present (Y/N)
STH 35	Rural Type D (Modified)	97˚29'06"	1-way stop	N/250'	Y/1,150'	Y/990'	N	N
Demanes Lane	Rural Type C (Modified)	125˚28'58"	1-way stop	Y/200'	N/225'	N/200'	N	Y
Slama Lane	Rural Type C (Modified)	57˚18'55"	1-way stop	Y/200'	N/490'	N/200'	N	N

**SSD=Stopping Sight Distance, ISD=Intersection Sight Distance, and DSD=Decision Sight Distance (See FDM 11-25-1).

Comments: None

Has intersection control evaluation (ICE) worksheet been coordinated (Yes or No)? No

2.3.3 Interchanges

Intersecting Roadway Names	Interchange Type	Ramp Types	Ramp Design Speed	Horizontal Curve on Ramp	Vertical Curve on Ramp	Ramp Grades	SSD** [(Met (Y/N) / Length]	DSD** [Met (Y/N) / Length]
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**SSD = Stopping Sight Distance & DSD = Decision Sight Distance (See FDM 11-25-1).

Comments: None

2.4 Cross Section

Number of roadways: 1
Number of lanes: 2
Median width: N/A
Lane width: 10-12 feet
Shoulder width (Total and Paved or Curb & Gutter):

- Sta. 10+35 – Sta. 14+74, Lt.: Varies 0' – 1' (0' paved)
- Sta. 10+35 – Sta. 14+74, Rt.: Varies 2' – 4' (Varies 2' – 4' paved)
- Sta. 14+74 – Sta. 85+89: Varies 0' – 1' (0' paved)
- Sta. 85+89 – Sta. 89+00, Lt.: 3' (3' paved)
- Sta. 85+89 – Sta. 89+00, Rt.: 30-Inch Curb & Gutter

Parking Lane Width: Varies 8' – 22' (Sta. 10+35 – Sta. 14+74, Lt.)
Bicycle Facility Type: None
Sidewalk and curb ramps: None
Cross slope: Varies 0.2– 2.8%
Super-elevation: e_{max} = 7.97%
Horizontal clearance: 4 feet
Clear Zone: 4 feet
Vertical clearance: N/A
Side-slopes and Ditch sections: Varies 0.0 - 0.5:1

2.5 Pavement Structure/Condition

Roadway	Pavement Types & Thicknesses	Physical Description
CTH N	Asphaltic Surface (Depth Unknown) Base Aggregate Dense (Depth Unknown)	Poor

2.6 Right Of Way

Station – Station	Offset (Left / Right)
Sta. 10+35 – Sta. 85+90	33.0' Lt. & Rt.
Sta. 85+90 – Sta. 89+00	33.0' – 118.4' Lt.
Sta. 85+90 – Sta. 89+00	33.0' – 49.8' Rt.

Note: All stationing is referenced to the finished centerline.

2.6.1 Encroachments

Location (Station & Distance Left or Right)	Encroachment Type
Sta. 10+77 - 11+27, Varies 21.7'-33' Lt.	Asphalt Parking Lot
Sta. 11+29 - 11+35, Varies 29.9'-33' Lt.	Well House Building
Sta. 11+30 - 11+39, Varies 25.6'-'30.2' Lt.	LP Tank
Sta. 11+28 - 11+44, Varies 20.3'-33' Lt.	Stone Landscaping Edging
Sta. 11+44 - 11+54, Varies 20.3'-33' Lt.	Waste Disposal Containers
Sta. 12+02 - 12+30, Varies 30.1'-33' Lt.	Asphalt Parking Lot
Sta. 12+36 - 12+44, Varies 27.3'-33' Lt.	Aggregate Parking Stall
Sta. 11+42 - 13+89, Varies 19.9'-33' Lt.	Asphalt Parking Lot
Sta. 13+00, 23.1' Lt.	Metal pole with satellite dish
Sta. 13+20 - 22+82, Varies 18.1'-22.7' Lt. & Rt.	Fence
Sta. 13+89 - 14+36, Varies 31.7'-33' Lt.	Fence
Sta. 24+57 - 31+40, 31+85 - 33+26, 35+92 - 36+91, Varies 16'-33' Lt.	Fence
Sta. 23+94 - 31+36, Varies 15.4'-24.8' Rt.	Fence
Sta. 49+77 - 50+02, Varies 18.2'-23.5' Lt.	Concrete Retaining Wall
Sta. 53+63 - 53+69, Varies 14.5'-17.5' Lt.	Fence
Sta. 53+57, 20.5' Lt.	Private Street Sign (Packer Backer Blvd.)
Sta. 53+81 - 56+48, Varies 25.1'-33' Lt.	Fence
Sta. 53+91 - 58+03, 58+51 - 62+09, Varies 20.5'-33' Rt.	Fence
Sta. 63+73 - 68+48, Varies 20.2'-33' Lt.	Fence
Sta. 70+27, Varies 13.5'-16.5' Lt	Landscaping Timbers
Sta. 81+27 - 81+32, Varies 31.1'-33' Lt.	LP Tank
Sta. 82+38, 22.6' Rt.	Water Service Line
Sta. 83+13 - 85+23, Varies 4.4'-62.6' Lt. & Rt.	Fence
Sta. 83+28 - 85+20, Varies 15.9'-33' Lt.	Fence
Sta. 202+71 - 205+00, Varies 22.5'-33' Rt.	Fence
Sta. 306+25 - 306+38, Varies 45.2'-57' Rt.	Landscaping Edging

Note: All stationing is referenced to the finished centerline.

2.6.2 Unique Right of Way Issues:

None

2.7 Structures

Existing Structure I.D. #	Feature Crossed	Structure Type	Sufficiency Rating	Clear Roadway Width	Railing Type	Structurally Deficient or Functionally Obsolete	Inventory Load Rating
C-12-776	STH 35	10.5' x 6' x 44' Single Cell Concrete Box Culvert	N/A	34'	Type A Roadway - Steel	N/A	N/A

Comments: None

2.8 Utilities

Utility Name	Type of Utility	General Location	Underground/ Overhead/Both
Scenic River Energy Cooperative	Electric	Overhead electric parallels STH 35 within the construction limits. A second distribution line branches off to service adjacent parcels along the CTH N corridor. The overhead electric line travels from Sta. 10+35 – Sta. 83+90. An underground electric line continues east from Sta. 83+90 – Sta. 89+00. Service lines branch off and continue along Demanes Lane and Slama Lane traveling outside of construction limits. Multiple other service lines branch off the primary distribution line to service adjacent parcels throughout the length of the project.	Both
CenturyLink	Telephone	Underground telephone lines parallel both sides of STH 35 within the construction limits. Service lines branch off of the primary distribution line to service the motel and restaurant located adjacent to STH 35. An underground telephone line is located along CTH N from Sta. 51+55 to Sta. 89+00. Service lines branch off and continue along Demanes Lane and Slama Lane traveling outside of construction limits.	Underground

Comments: None

2.9 Railroad Crossings

Location (Sta.)	Railroad Name	No. of Tracks	Function	Crossing Type
None	N/A	N/A	N/A	N/A

Comments: The Burlington Northern Santa Fe Railroad (BNSF) operates two rail lines in a north-south direction generally parallel to STH 35, approximately 56' west of the construction limits on STH 35.

2.10 Special Soils Conditions

Braun Intertec Corporation drilled twelve borings on 2/9/2015, 2/11/2015 and 2/17/2015. The soil borings were strategically placed throughout the corridor to gather information for pavement design (6 soil borings), slope stability (4 soil borings), and foundation parameters for the box culvert and retaining wall (2 soil borings). The subgrade soils consist of silty sand, clayey sand, lean clays, organic clay, poorly graded sand or gravel, over apparent sandstone and limestone bedrock. The borings were terminated at depths of 4.5' – 31' after sufficient information had been obtained for pavement design, slope stability, and foundation parameters.

AASHTO Soil Classification= A-4/A-6
Design Group Index = 15
Frost Index = F-3
Soil Support Value = 3.8
Subgrade Modulus, k, pci = 125

2.11 Unique Project Features

A large drainage swale is located along the southern edge of CTH N from STH 35 to Demanes Lane. The drainage swale discharges runoff through existing structure C-12-776 crossing underneath STH 35. The runoff discharged through existing drainage structure C-12-776 continues south along the drainage ditch located between the BNSF railroad (west) and STH 35 (east) outside of the construction limits.

3.0 TRAFFIC

3.1 Traffic Volumes/Conditions

Construction year 2019 AADT = 225
Design year 2039 AADT = 265

Comments: The traffic forecast provides traffic counts for CTH N in 2016. A 2.0% growth rate was assumed to calculate the construction year (2019) and design year (2039) traffic count data.

3.1.1 See attached Traffic Forecast Report - Attachment E

3.1.2 Highway Capacity Analysis

Location (Roadway Segment or Intersection)	Existing Level of Service	Design Year Level of Service Under Existing Roadway	Design Year Level of Service Under Proposed Roadway
CTH N	A	A	A

Comments: None

3.2 Crash Analysis

3.2.1 Project Crash Information

Roadway	Crash Rate (1) (2013-2018)	Statewide Crash Rate (1) (2016)	Number & Severity of Crashes			
			Fatal	Injury	Property Damage	Total No. Crashes
CTH N	981	99.22	0	1	5	6

(1) Crash rate based on 100 million vehicles miles traveled (100 MVMT)

Comments: Information obtained from Wisconsin Traffic Operations & Safety Laboratory (UW-Madison). The Statewide Crash Rate is based upon the crash rate for rural county trunk highways.

3.2.2 Significant Crash Locations or Patterns

Location or Pattern	Year	Number & Severity of Crashes				Crash Rate(2)	Possible Factors Contributing to Crashes
		Fatal	Injury	Property Damage	Total		
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

(2) Crashes per million entering vehicles (MEV)

Comments: No crash locations or patterns have been identified at this location. Information obtained from Wisconsin Traffic Operations & Safety Laboratory (UW-Madison). The substandard geometric features located on the existing CTH N corridor were contributing factors to all five of the crashes.

4.0 PROPOSED DESIGN CRITERIA

4.1 Design Class

Roadway or Roadway Segment	Design Class
CTH N	C1 for County Trunk Highways

4.2 * Design Speed

Roadway or Roadway Segment	Design Speed	Posted Speed
CTH N	40 mph	None Statutory Speed = 55 mph

* Controlling Criteria

4.3 Design Criteria Outside Of Desirable Standards

The crest vertical curve at Sta. 76+00 will utilize the minimum k-value criteria to meet a 40 mph design speed which is an improvement over the existing 15 mph speed rating. Maximum sideslopes up to 1.5:1 are being used in areas behind beam guard.

4.4 Exceptions To Standards

The project will use a 12.00% maximum gradient. Per Facilities Development Manual 11-10 Attachment 5.3 the maximum allowable grade for rural collectors in rolling terrain is 8% for a 40 mph design speed. Per AASHTO's Geometric Design of Highways and Street Manual (2004 Edition), the use of a 12% grade meets the criteria of a 20 mph design speed for rural collectors in mountainous terrain. The 12.00% maximum is being planned as a cost-effective and reasonable solution for this site as it will minimize impacts to adjacent properties, be an improvement over existing conditions, and is similar to other county highway grades outside of the project limits.

An Exception to Standards Report was approved on January 6, 2016.

4.5 Typical Cross Section Elements Considered

The typical section meets design standards for rural county trunk highways functionally classified as collectors. There is an absence of need for pedestrian facilities on this project. Crawford County does not endorse the addition of pedestrian accommodations throughout the project limits since the project is rural in nature and there is a lack of future significant development. Crawford County does endorse the addition of a 3-foot paved shoulder to accommodate bicyclists. The inclusion of centerline rumble strips will be implemented along the CTH N centerline.

5.0 PROPOSED DESIGN IMPROVEMENT

5.1 Improvement Type

Program Budget Code 206 – Highway and Local Transportation Facility Improvement

5.2 Geometrics

5.2.1 Horizontal alignment

There are a total of 11 horizontal curves along the proposed alignment of CTH N. The proposed horizontal alignment meets standards for a design speed of 40 mph (see table below).

Proposed Centerline Horizontal Curve Data

Curve No.	PI Sta.	Δ	R (ft)	L (ft)	T (ft)	SE (%)	Design Speed (mph)
1	12+22.57	2°34'08"	1500	67.26	33.63	4.0%	40
2	16+80.58	6°00'28"	1500	157.28	78.71	4.0%	40
3	25+41.13	37°54'19"	1000	661.57	343.40	4.8%	40
4	30+74.11	43°52'28"	485	371.39	195.34	6.0%	40
5	40+97.22	2°43'39"	1000	47.60	23.81	4.8%	40
6	49+15.42	5°50'31"	2000	203.92	102.05	3.3%	40
7	56+82.91	12°48'18"	485	108.39	54.42	6.0%	40
8	60+86.59	55°05'05"	485	466.28	252.93	6.0%	40
9	64+73.62	17°09'43"	485	145.27	73.19	6.0%	40
10	72+41.18	23°18'30"	1000	406.81	206.26	4.8%	40
11	86+23.21	15°57'21"	1000	278.48	140.15	4.8%	40

5.2.2 Vertical alignment/Stopping sight distance

There are a total of 9 vertical curves along the proposed alignment of CTH N. The proposed vertical alignment meets the minimum criteria for a design speed of 40 mph (see table below).

Proposed Vertical Curve Data

Curve No.	VPI Sta.	Crest/Sag	Grade In (%)	Grade Out (%)	Length (ft)	k	Design Speed (mph)
1	12+25	Sag	+1.91	+6.01	265	64.73	40
2	19+00	Crest	+6.01	+4.80	200	166.02	50
3	30+00	Sag	+4.80	+8.80	300	74.99	40
4	38+40	Crest	+8.80	+6.07	200	73.21	40
5	48+50	Sag	+6.07	+6.90	200	240.92	>70
6	57+10	Sag	+6.90	+12.00	400	78.40	40
7	69+00	Crest	+12.00	+9.77	200	89.47	40
8	76+00	Crest	+9.77	+1.15	400	46.45	40
9	82+00	Crest	+1.15	-0.15	120	92.13	40

5.2.3 Grades

The maximum allowable grade for rural rolling collectors is 8.00%. The proposed grades for CTH N range from 0.15% to 12.00%. This meets a 20 mph design speed. See vertical curve table (above) for more grades throughout the CTH N corridor.

5.3 Sideroads/Intersections/Interchanges

5.3.1 Side-roads

Roadway Name	Functional Class	Design Speed (MPH)	Design Year Traffic (AADT)	Design Class	Approach Grades	Ped. Facilities (Y / N)	Bike Facilities (Y / N)
STH 35	Principal Arterial	60	5,680	A2	g_1=+1.91% g_2= +6.01%	N	Y
Demanes Lane	Local	25	<100	RT1	g_1= +1.22%	N	N
Slama Lane	Local	25	<100	RT1	g_1= +2.20% g_2=+7.96%	N	N
Old CTH N (West)	Local	25	<100	TR1	g_1= +10.00% g_2=-0.09%	N	N
Old CTH N (East)	Local	<25	<100	TR1	g_1= -4.11% g_2=+0.49%	N	N

Comments: The existing CTH N roadbed from Sta. 77+00 to Sta. 83+00, Lt. will be converted into a town road (Old CTH N (West) and Old CTH N (East)).

5.3.2 Intersections

Intersecting Roadway Names	Intersect. Type	Intersect. Angle	Traffic Control	SSD** Met [(Y/N) / Length]	ISD** Met [(Y/N) / Length]	DSD** Met [(Y/N)/ Length]	Vision Triangles Proposed (Y / N)	Corner Clearance To Driveways Met (Y / N)
STH 35	Rural - Type B2 (Mod)	90˚04'48"	1-way stop	Y/>305'	Y/1,212'	Y/990'	Y	N
Demanes Lane	Rural - Type C	90˚00'37"	2-way stop	Y/>155'	Y/710'	N/300'	Y	Y
Slama Lane	Rural - Type C	90˚00'00"	2-way stop	Y/>155'	Y/710'	N/300'	Y	N
Old CTH N (West)	Rural – Type C (Mod.)	90˚00'00"	1-way stop	Y/155'	Y/345'	N/315'	N	N
Old CTH N (East)	Rural	89˚50'36"	1-way stop	N/<155'	Y/590'	Y/600'	N	N

**SSD = Stopping Sight Distance, ISD = Intersection Sight Distance & DSD = Decision Sight Distance (See FDM 11-25-1).

Comments: The Region has been consulted on the intersection improvements on the STH 35 intersection.

Has intersection control evaluation (ICE) worksheet been coordinated (Yes or No)? No

5.3.3 Interchanges

Name of Intersecting Roadways	Interchange Type	Ramp Type	Ramp Design Speed	Ramp Grades	SSD** Met [(Y/N) / Length]	DSD** Met [(Y/N) / Length]	Vision Triangle (Yes or No)
None	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**SSD = Stopping Sight Distance & DSD = Decision Sight Distance (See FDM 11—25-1).

Comments: None

5.4 Roundabouts

N/A

5.5 Cross Section/Pavement Structure

Number of roadways: 1
Number of lanes: 2
Median width/Type: N/A
Lane width/Type (Driving, Parking, Bike Lane, etc.): 12 feet / Driving lane
Shoulder width (Total & Paved or Curb & Gutter):

- 30-Inch Curb & Gutter
  - 4.83 feet (3 foot paved + 1.83 foot to face of curb and gutter)
    - Sta. 10+47.01 – Sta. 13+06, Rt.
    - Sta. 10+47.01 – Sta. 15+75, Lt.
  - 5.83 feet (4 foot paved + 1.83 foot to face of curb and gutter)
    - Sta. 29+00 – Sta. 70+00, Lt.
    - Sta. 86+00 – Sta. 89+00, Rt.
- 4 foot shoulder
  - Without roadside barrier: (3 foot paved)
    - Sta. 15+31 – Sta. 28+50, Rt.
    - Sta. 15+75 – Sta. 29+00, Lt.
    - Sta. 37+56 – Sta. 53+00, Rt.
    - Sta. 70+00 – Sta. 89+00, Lt.
    - Sta. 73+06 – Sta. 86+00, Rt.
  - With roadside barrier: (4 foot paved)
    - Sta. 13+06 – Sta. 15+31, Rt.
    - Sta. 28+50 – Sta. 37+56, Rt.
    - Sta. 53+00 – Sta. 73+06, Rt.

Bike facilities proposed: Yes
Pedestrian facilities / sidewalk proposed: No
Cross slope: 2.0%
Super-elevation: e_{max}=6.0%
Horizontal clearance:

- 30-Inch Curb & Gutter
  - 4.83 feet (with roadside barrier)
    - Sta. 10+92 – Sta. 13+06, Rt.
  - 6.83 feet (without roadside barrier)
    - Sta. 10+47.01 – Sta. 10+92, Rt.
    - Sta. 10+47.01 – Sta. 15+75, Lt.
  - 7.83 feet (without roadside barrier)
    - Sta. 29+00 – Sta. 70+00, Lt.
    - Sta. 86+00 – Sta. 89+00, Rt.
- 4 foot shoulder
  - 6 feet (without roadside barrier)
  - 4 feet (with roadside barrier)

Vertical clearance: N/A
Pavement Structure (*descending order*):

- 3.5” HMA Pavement 4LT 58-28 S
- 8” Base Aggregate Dense 1 ¼-inch
- 9" Breaker Run
- Geogrid Reinforcement

Clear Zone: 10 feet
Side-slope / Ditch Sections: Varies 4.0% - 0.5:1

Comments: The pavement structure is based upon the local preference and experience of previous projects with similar characteristics near the subject project. The design was verified by WisPave. Maximum sideslopes of 4:1 are used inside of the clear zone and 3:1 are used outside of the clear zone. A maximum of 0.5:1 is being used on backslopes located within rock cut areas and 1.5:1 sideslopes is being used behind the beam guard. Half post spacing and longer posts will be utilized in areas where less than desirable slopes are being used behind beam guard.

5.6 Street Lighting

Location	Type	Break-away Requirements
None	N/A	N/A

5.7 Structures

5.7.1 Bridge Structures

Structure I.D. #	Location	Structure Type	Length	Clear Width	No. of Spans	Vertical Clearance	Horizontal Clearance
None	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Proposed Improvement:		N/A				

Comments: None

5.7.2 Box Culverts and Multiple Pipe Structures

Structure I.D. #	Location	Type	Length	No. Pipes
C-12-062	Sta. 304+58.79	7'x10' Single Cell Concrete Box Culvert	144 ft.	1
	Proposed Improvement:	Remove existing single cell concrete box culvert and replace with proposed.		

Comments: The upstream end of C-12-062 will be sloped to provide access for maintenance purposes. The floor of the box culvert will include a tined surface to provide added friction to decrease flood flow velocities as well as for ease of box culvert maintenance.

5.7.3 Retaining Walls and Noise Barrier Structures

Structure I.D. #	Location	Type	Length	Height
R-12-051	Sta. 10+91.90 – Sta. 13+03.03, Rt.	Soldier Pile Wall	216'	Varies 6.25' – 23.00'
	Proposed Improvement:	Construct retaining wall to retain adjacent side slopes for highway and stream realignment.		

Comments: None

5.7.4 Sign Bridge Structures

Structure I.D. #	Location	Type	Length	Clear Roadway Width	Vertical Clearance	Horizontal Clearance	Clear Zone Under
None	N/A	N/A	N/A	N/A	None	N/A	N/A
	Proposed Improvement: N/A						

Comments: None

5.7.5 Tunnel Structures

Structure I.D. #	Location	Type (Veh.,Ped., Bicycle, etc.)	Length	Lighting Type	Vertical Clearance	Horizontal Clearance
None	N/A	N/A	N/A	N/A	N/A	N/A
	Safety Features			Coordination with Local Emergency Responders		

Comments: None

5.8 Permanent Traffic Control

Will permanent signs be installed (Yes or No)? Yes

Are non-standard sign layout details needed (Yes or no)? No

Comments: None

5.9 Transportation Management Plan

The Transportation Management Plan Type for this project is a Type 2 and was approved on June, 5, 2018.

CTH N will be closed to through traffic during construction operations. No detour will be provided. Alternate routes are available for CTH N. No alternate routes are available for Slama Lane and Demanes Lane. Access will be provided to Slama Lane and Demanes Lane during roadway and intersection construction.

STH 35 will remain open to traffic throughout construction of structure C-12-062 and roadway work on STH 35 using temporary traffic signals. Traffic will be limited to one lane within the work zone to allow for staged construction of structure C-12-062, removal of existing structure and roadway reconstruction work on STH 35. Upon completion of these construction activities, the temporary traffic signals will be removed and STH 35 will resume normal operations. All work on STH 35 is to be complete by July 2, 2019.

Paving, shouldering and pavement marking activities on STH 35 will be conducted using flagging operations.

5.10 Safety Enhancements/Mitigation Measures

The horizontal alignment and vertical profile of CTH N will be realigned to meet a 40 mph design standard. Steep grades will be reduced to a 12% maximum. Permanent advisory signs and pavement markings will be added to warn vehicular traffic of the steep grades on CTH N. A newly paved asphaltic surface will provide a smooth riding surface with added skid resistance. The traveled roadway width will be improved from a variable 20 to 24 feet to a consistent 24 foot width. Shoulder widths will be increased from a variable 0 to 4 foot shoulder to a consistent 4 foot. The shoulder will be paved 3 feet to accommodate bicyclists. Unprotected steep side slopes will be addressed by flattening sideslopes and/or placing guardrail where necessary. Approximately 600 feet of CTH N will be realigned near the beginning of the project to improve access onto CTH N and provide a straighter section of roadway. The existing roadbed in this area will be converted to a shared use driveway to access an adjacent restaurant, motel and residence to CTH N. The realignment of CTH N in this area eliminates the safety concerns over vehicles frequently parking on the roadway shoulders and encroaching on the adjacent driving lanes. Another section of roadway realignment includes approximately 1,300 feet of CTH N near the end of project. The realignment will shift the mainline alignment approximately 90 feet south of the current alignment limiting access onto CTH N and providing a straighter section of roadway. The existing roadbed in this area will be converted to a town road (Old CTH N) that will serve as a connection to the county highway for the cluster of residential dwellings and farmstead present in this area. Existing conditions consist of Slama Lane and Demanes Lane intersecting CTH N at different locations and both intersect at skewed angles. Slama Lane and Demanes Lane will be realigned perpendicularly to intersect CTH N at a single access point. The number of access points will be reduced from nine (9) to two (2) within this section of roadway. The intersection sight distance will be improved to meet current design standards. Sign replacement and pavement markings will be installed throughout the project length to help aid the traveling public and enhance safety. See Attachment F – RHA.

5.11 Real Estate

5.11.1 Real Estate Acquisition

Plat I.D.: 5496-00-04

Relocations Type	Number	Land (Acres)	Permanent Easements	Temporary Easements	Construction Permits
Home	1	18.05	0.00	0.39	0.00

Comments: The relocation includes a mobile home trailer. The mobile home trailer is on wheels and the owner leases the land where the trailer is located to live on. The existing CTH N roadbed will be converted to a shared use driveway from Sta. 10+35 to Sta. 15+22, Lt. The existing right-of-way will be vacated and converted into a shared use entrance from Sta. 10+35 to Sta. 12+19. The existing right-of-way from Sta. 12+19 to Sta. 15+22, Lt. will remain county owned right-of-way and encompass the shared use driveway. Maintenance responsibility of the driveway located within the existing right-of-way will be shared between those landowners who access their

property from the driveway. Existing CTH N right-of-way from Sta. 76+00 to Sta. 83+14 Lt. will be vacated and converted into a town road.

5.11.2 Encroachment Actions

Encroachment Location	Encroachment Type	What is to be Done? (Removed, Revocable Permit, etc.)
Sta. 10+77 - 11+27, Varies 21.7'-33' Lt.	Asphalt Parking Lot	Revocable Permit
Sta. 11+29 - 11+35, Varies 29.9'-33' Lt.	Well House Building	Revocable Permit
Sta. 11+30 - 11+39, Varies 25.6'-'30.2' Lt.	LP Tank	Revocable Permit
Sta. 11+28 - 11+44, Varies 20.3'-33' Lt.	Stone Landscaping Edging	Revocable Permit
Sta. 11+44 - 11+54, Varies 20.3'-33' Lt.	Waste Disposal Containers	Revocable Permit
Sta. 12+02 - 12+30, Varies 30.1'-33' Lt.	Asphalt Parking Lot	Revocable Permit
Sta. 12+36 - 12+44, Varies 27.3'-33' Lt.	Aggregate Parking Stall	Revocable Permit
Sta. 11+42 - 13+89, Varies 19.9'-33' Lt.	Asphalt Parking Lot	Revocable Permit
Sta. 13+00, 23.1' Lt.	Metal pole with satellite dish	Revocable Permit
Sta. 13+20 - 22+82, Varies 18.1'-22.7' Lt. & Rt.	Fence	Fence to be removed by landowner prior to construction.
Sta. 13+89 - 14+36, Varies 31.7'-33' Lt.	Fence	Fence to be removed by landowner prior to construction.
Sta. 24+57 - 31+40, 31+85 - 33+26, 35+92 - 36+91, Varies 16'-33' Lt.	Fence	Fence to be removed by landowner prior to construction.
Sta. 23+94 - 31+36, Varies 15.4'-24.8' Rt.	Fence	Fence to be removed by landowner prior to construction.
Sta. 49+77 - 50+02, Varies 18.2'-23.5' Lt.	Concrete Retaining Wall	Concrete retaining wall to be removed by contractor during construction
Sta. 53+63 - 53+69, Varies 14.5'-17.5' Lt.	Fence	Fence to be removed by landowner prior to construction.
Sta. 53+57, 20.5' Lt.	Private Street Sign (Packer Backer Blvd.)	Private street sign to be removed by landowner prior to construction
Sta. 53+81 - 56+48, Varies 25.1'-33' Lt.	Fence	Fence to be removed by landowner prior to construction.
Sta. 53+91 - 58+03, 58+51 - 62+09, Varies 20.5'-33' Rt.	Fence	Fence to be removed by landowner prior to construction.
Sta. 63+73 - 68+48, Varies 20.2'-33' Lt.	Fence	Fence to be removed by landowner prior to construction.
Sta. 70+27, Varies 13.5'-16.5' Lt	Landscaping Timbers	Landscaping timbers to be removed by landowner prior to construction
Sta. 81+27 - 81+32, Varies 31.1'-33' Lt.	LP Tank	LP tank will be relocated by owner prior to construction

Sta. 82+38, 22.6' Rt.	Water Service Line	Revocable Permit
Sta. 83+13 - 85+23, Varies 4.4'-62.6' Lt. 19.1'-33' Lt. & Rt.	Fence	Fence to be removed by landowner prior to construction.
Sta. 83+28 – Sta. 85+20, Varies 15.9'-33' Lt.	Fence	Fence to be removed by landowner prior to construction.
Sta. 202+71 - 205+00, Varies 22.5'-33' Rt.	Fence	Fence to be removed by landowner prior to construction.
Sta. 306+25 - 306+38, Varies 45.2'-57' Rt.	Landscaping Edging	Landscaping edging to be removed by landowner prior to construction

Comments: The encroachment report was approved by Crawford County on June 20, 2018.

5.12 Utilities

Is Project Trans 220 Utility Project (Yes or No)? No

Describe any special design features to accommodate utilities:

None

Major Utility Agreements:

None

Comments: Relocation work is anticipated for Scenic Rivers Energy Cooperative (electric) and CenturyLink (telephone). Relocation work will be completed prior to construction. Coordination remains on-going with these utility companies located within the project limits.

5.13 Railroads

Describe improvements to Railroad Facilities:

No improvements are planned to Railroad Facilities.

Railroad Agreements:

None

Comments: Railroad insurance and coordination will be included for construction located within 50 feet of BNSF facilities.

5.14 Financing And Scheduling

Construction I.D.	Cost Estimate	Type of Funding			Proposed Timeframe For Construction	Ties to Other Work or Projects	Incentive/ Disincentive Clauses (Yes or No)
		% Fed.	% State	% Local			
5496-00-74	$3,820,000 (w/15%E&C)	80%	-	20%	2019	N/A	No
5496-00-40	$40,000	80%	-	20%	2019	N/A	No

Programmed Amount (Project ID: 5496-00-74): $4,077,385
Programmed Amount (Project ID: 5496-00-40): $40,000
PS&E Date = November 1, 2018
Letting Date = March 12, 2019
Note: Federal funds are being provided through a federal FLAP grant. The funds provide a maximum amount of $2,893,280 (Project ID: 5496-00-74) and $32,000 (Project ID: 5496-00-40).

Describe Incentive/Disincentive Clauses:

None

Non-participating Work:

Maintenance and Repair of Haul Roads is a non-participating item.

Deferred Construction Work (Preventative Maintenance projects)

None

5.15 Unique Or Non-standard Features

5.15.1 Hazardous Waste

There are no known or potential hazardous waste areas on this project as documented in the Phase 1 Hazardous Materials Site Summary dated June 24, 2015. No hazardous materials were visible during the field survey performed on January 21, 2014. Discussions with state and local officials did not identify a potential for hazardous materials within the project limits. Based on this knowledge, hazardous materials are not anticipated.

5.15.2 Environmental Commitments

See attached environmental commitments – Attachment D.

5.15.3 Community Sensitive Design/Public Involvement

A Public Involvement Meeting (PIM) was held on March 12, 2014, 13 people were in attendance.

- The owners of the Spring Lake Inn and Restaurant inquired about the proposed CTH N realignment behind the motel. Crawford County stated that they routinely receive complaints of vehicles partially parked in the driving lanes of the county highway. Spring Lake Inn and Restaurant customers are frequently forced to park along CTH N instead of in a parking lot due to the limited parking available at the restaurant. Crawford County feels that the combination of the restaurant and motel with insufficient parking, inadequate sight distance, and poor roadway geometry along this section of county highway warrants the need for improvements. The county stated if the project matched the existing horizontal alignment they would be required to enforce "no parking" along this section of county highway which would reduce the number of available parking spaces for motel and restaurant patrons. The business owners stated that they did not like the realignment behind their motel, but preferred it more than losing parking spaces for their customers.
- An adjacent landowner expressed concerns about the existing drainage ditch located along the south side of CTH N from STH 35 to Demanes Lane. It was explained that the project is addressing the erosion issues/maintenance issues on the project by installing stone gabions, armoring sideslopes with riprap and replacing the existing box culvert that routinely fills with debris.
- An adjacent landowner stated that he has access to a shared well at approximate Sta. 82+20, Lt. (north side of CTH N). He continued by stating that he plans on constructing a cabin on his property on the south side of CTH N, crossing underneath. The county stated they prefer the water line to be installed prior to construction if possible.
- An attendee placed concerns about the numerous steep drop offs located off of the existing county highway. The designer stated that the project will install beam guard adjacent to steep drop offs. He also inquired about the access during construction. It was explained that access will be maintained to properties during construction, but minor inconveniences should be expected.
- Another landowner inquired about the rock cuts and any timber cleared from construction activities. It was explained that the project will include benching in hillside rock cuts. For land acquired from the landowner, it was explained that a special provision could be written requiring the contractor to give the timber back to the landowner by cutting the timber into pre-determined lengths and stockpile outside of the slope intercepts inside of the right-of-way and coordinate with the landowner for pick-up.
- A landowner stated they were unhappy about the realignment of CTH N and the Slama Lane/Demanes Lane intersection and the right-of-way impacts as a result. It was explained to the landowner that the intersection was being realigned in combination with the vertical profile of CTH N to improve the sight distance at the intersection. CTH N is being realigned south of the existing CTH N horizontal alignment to improve safety by straightening out the corridor and minimize the number of accesses onto CTH N. The county stated that in September of 2013, Crawford County recorded a corridor preservation plan for the CTH N corridor and sent adjacent landowners a notice of the preservation. On September 24, 2013 a meeting was held to acquaint the landowners with the project and provide an opportunity to comment on the proposal. This landowner was not present at the meeting nor did they contact the county or designer to inquire about the corridor preservation. The landowner said that he had plans on building a house in the area of realignment. The landowner requested an on-site meeting with the designer. The designer met the landowner on-site on April 24, 2014. The design was discussed again in the field and the landowner disagreed with the proposed realignment or intersection improvements and prefers to match existing conditions. The landowner was invited to the PIM held on January 8th, 2018, but did not attend.
- An adjacent landowner located at approximate Sta. 84+00, Lt. stated that they have plans on building a frac sand quarry off his property with an access at Sta. 83+10, Lt. No timeframe was provided of when or if this will ever happen. In a later phone conversation with Crawford County on December

17, 2015, the county stated that they discussed this with the property owner. The property owner clarified that they were no longer planning to develop the quarry or mine frac sand on their property.

- The general consensus of those in attendance was in favor of the proposed project.

A second Public Involvement Meeting (PIM) was held on January 8th, 2018, 10 people were in attendance.

- An adjacent landowner requested an on-site meeting to review the proposed retaining wall including location, impacts and aesthetics. The designer met the landowner in the field and discussed their concerns with the retaining wall. The landowner stated that they were pleased that the project was addressing the erosion issues of the drainageway located along the south side of CTH N from STH 35 to Demanes Lane.
- The owner of the Spring Lake Inn and Spring Lake Restaurant stated that they now prefer that CTH N remain on alignment near the begin of project (Sta. 10+35 – Sta. 16+50) and closely match existing conditions as they do not prefer the realignment behind their motel. The designer explained that the county still has serious concerns regarding the numerous vehicles partially parked inside the driving lane on CTH N. It was explained that the realignment of CTH N south of the Spring Lake Motel is likely a benefit to the restaurant and motel as the old CTH N roadbed will be converted to a shared use driveway and its patrons will be able to maintain similar parking to existing conditions. Crawford County was contacted on February 15, 2018 and asked if the county was interested in buying the motel. The county stated that the purpose of the realignment of CTH N behind the motel is to eliminate a highway safety issue including straightening out the highway alignment and addressing the poor sight distance (ie. Crawford County is NOT interested in buying the motel). The county restated that if the project proposed matching the existing horizontal alignment the county would be forced to enforce no parking along the CTH N shoulder to address their safety concerns.
- The general consensus of those in attendance was in favor of the proposed project.

5.15.4 Value Engineering

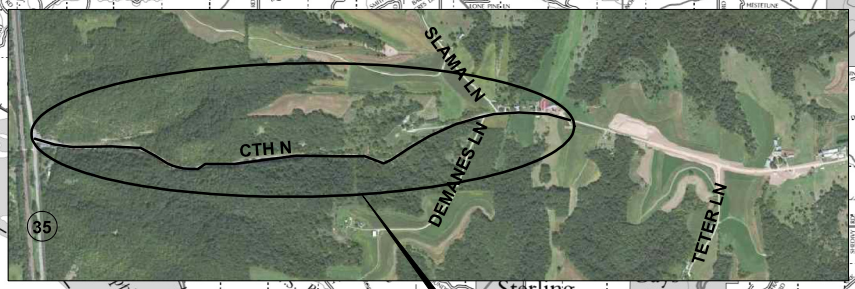
N/A

6.0 SYNOPSIS

	Completion/Approval Dates	Status of Coordination or Other Information as Needed
Concept Definition Report	August 7, 2012	
Scoping Document	N/A	
Public Involvement Plan	January 21, 2014	
Final Aesthetic & Visual Level of Impact Worksheet	N/A	
Speed Limit Change Declaration	N/A	
Environmental Document (Type: 2a-CEC)	June 4, 2018	
Public Hearing/Public Information Meetings	March 12, 2014 January 8, 2018	Public Information Meeting 1 Public Information Meeting 2
SHPO Involvement	March 4, 2015	Section 106 Approved
DNR Involvement	March 11, 2014	Initial Review
Agricultural Impact Statement	N/A	
Abbreviated Pavement Design Report	September 22, 2016	Approved
Roundabout Review	N/A	
Transportation Management Plan (Type: 2)	June 5, 2018	
Permits Required (Types: Section 404 Permit)	March 21, 2018	
Local Project Agreements	November 30, 2017	
Value Engineering Study	N/A	
Status of Statutory Actions	N/A	
Exceptions to Standards	January 6, 2016	Approved
Preliminary Structure Plans	March 19, 2018 May 21, 2018	Approved (C-12-062) Approved (R-12-051)

7.0 ATTACHMENTS

Attachment A – Project Location Map/Project Overview
Attachment B – Existing/Finished Typical Cross Sections
Attachment C – Preliminary Roadway Plan Sheet
Attachment D – Environmental Commitments Basic Sheet
Attachment E – Traffic Forecast Report
Attachment F – RHA



PROJECT LOCATION
STATE I.D. 5496-00-04
STH 35 - STH 27
(STH 35 - TETER LANE)
CTH N
CRAWFORD COUNTY

CRAWFORD CO.

DEPARTMENT OF TRANSPORTATION
STATE OFFICE BUILDING
Madison, Wisconsin

SCALE 0 1 2 MILES

Corrected for
JAN. 2013

Base compiled from U.S.G.S. Quadrangles
1:100,000 Series

MILES OF HIGHWAY
as of Dec. 31, 2011

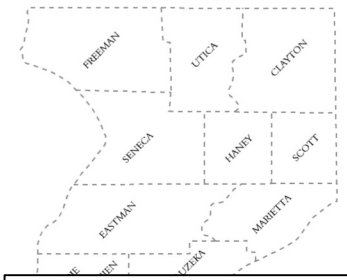
STATE	183
COUNTY	133
LOCAL ROADS	766
OTHER ROADS	5
TOTAL FOR COUNTY	1,087

Land Area (2000 Census) ..... 573 sq mi
Population (2000 Census) 17,243
County Seat ..... Prairie du Chien

SECTION NUMBERING OF A TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

CIVIL TOWNS



REGIONS

LEGEND

Freeway		Dam	
Multilane Divided		Hospital	
U.S. or State Hwy		Schools	
County Trunk Hwy		Airport	
Town Road		County Seat	
Firelane		Unincorporated Village	
Railroad		Fish Hatchery	
State Trail		Game Farm	
Interchange		Public Hunt. or Fish. Grds.	
Highway Separation		Public Camp & Picnic Grds.	
Interstate Highway No.	94	Ranger Station	
U.S. Highway No.	18	State Park	
State Highway No.	59	County Park ... With Facilities	
County Highway Letter	T	Without Facilities	
Great River Road		Rest Area ... Modern Facilities	
State Boundary		Wayside ... Rustic Facilities	
County Boundary		*Prairie du Chien Correctional Inst.*	
Civil Town Boundary			

For boundaries of public hunting and fishing grounds please contact the Department of Natural Resources

Grid based on the state plane coordinate system south zone and the NAD 27

ATTACHMENT A ...TION MAP

2

2

① SPRING LAKE INN
② SPRING LAKE MOTEL

END CONSTRUCTION
STA. 307+31

FINISHED ℄ STH 35

REMOVING OLD STRUCTURE (STA. 305+18)

STRUCTURE C-12-062 REQ'D

STRUCTURE R-12-051 REQ'D

EXISTING DRAINAGE SWALE

BEGIN PROJECT
STA. 10+47.01

BEGIN CONSTRUCTION
STA. 301+65

BNSF RR

STH 35

305

R/W

15

20

25

30

35

40

45

50

FINISHED ℄ CTH N

MATCHLINE STA. 50+00

N

END CONSTRUCTION
STA. 205+00

FINISHED ℄ SLAMA LN

205

600

605

BEGIN CONSTRUCTION
STA. 200+17

BEGIN CONSTRUCTION
STA. 400+11.56

FINISHED ℄ OLD CTH N

END CONSTRUCTION
STA. 402+75

400

401

402

570

571

580

585

END PROJECT
STA. 89+00

CTH N

END CONSTRUCTION
STA. 105+39.14

FINISHED ℄ DEMANES LN

BEGIN CONSTRUCTION
STA. 570+16

END CONSTRUCTION
STA. 571+25

SLOPE INTERCEPTS

BEGIN CONSTRUCTION
STA. 100+00

DEMANES LANE

BEGIN CONSTRUCTION
STA. 570+16

Scale 1" = 300'

MATCHLINE STA. 50+00

55

60

65

70

75

80

85

105

110

EXISTING DRAINAGE SWALE

PROJECT NO: 5496-00-74	HWY: CTH N	COUNTY: CRAWFORD	PROJECT OVERVIEW ATTACHMENT A	SHEET	E

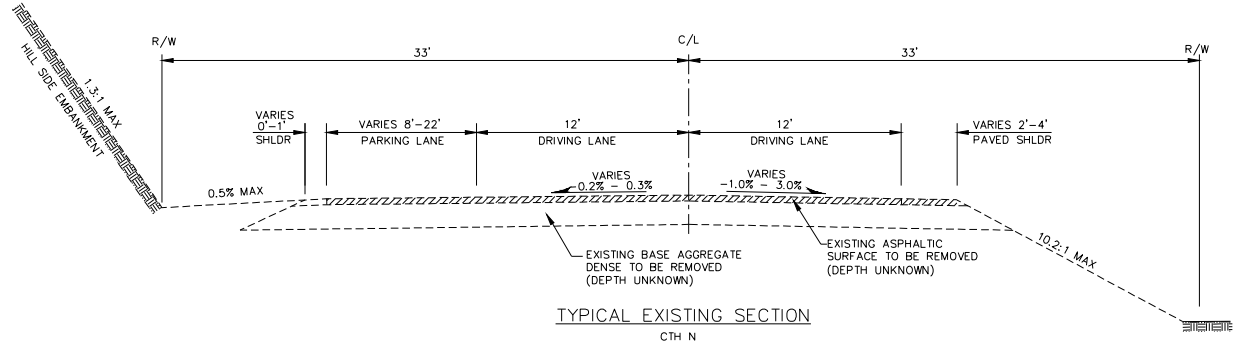
FILE NAME : S:±PROJECTS±C54320 CRAWFORD CO. CTH N RECONSTRUCT±SHEETS\PLAN±C54320_AERIAL PHOTO AND NEPA LIMITS OVERVIEW.DWG
LAYOUT : OVERVIEW

PLOT DATE : 5/1/2018
PLOT TIME : 4:29:39 PM

PLOT BY : JULIA ZEHNER

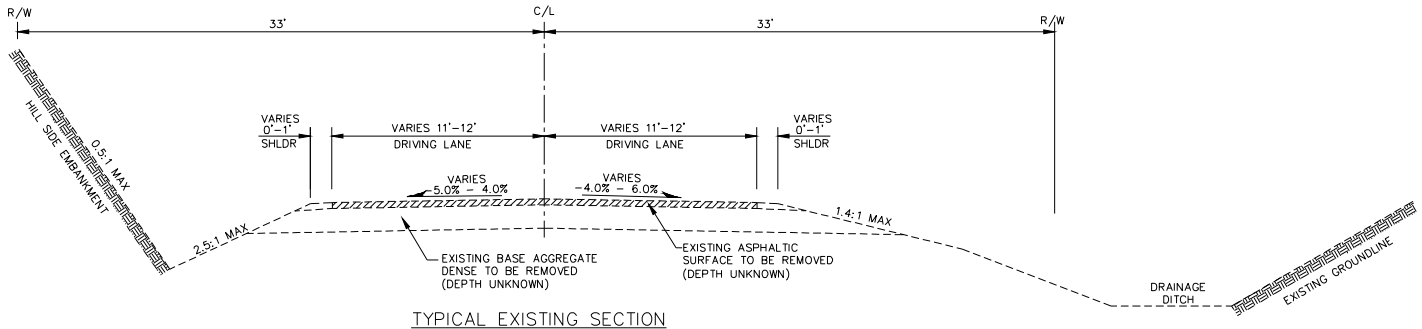
PLOT SCALE : 1 IN:2 FT_XREF

ATTACHMENT B



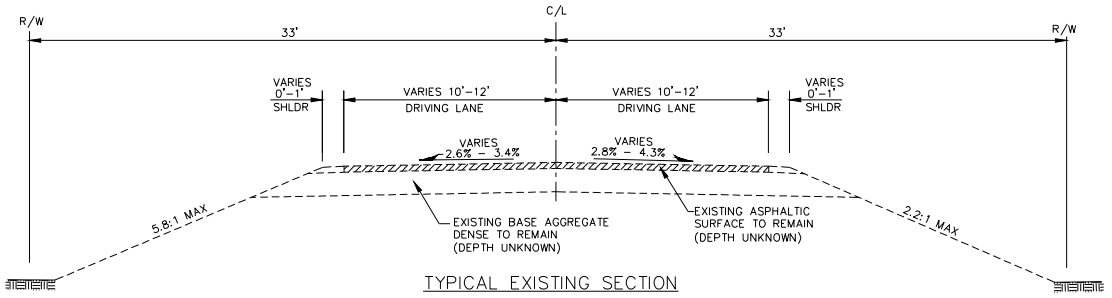
TYPICAL EXISTING SECTION

CTH N
STA. 10+35 - STA. 14+74



TYPICAL EXISTING SECTION

CTH N
STA. 14+74 - STA. 72+55



TYPICAL EXISTING SECTION

CTH N
STA. 72+55 - STA. 85+89

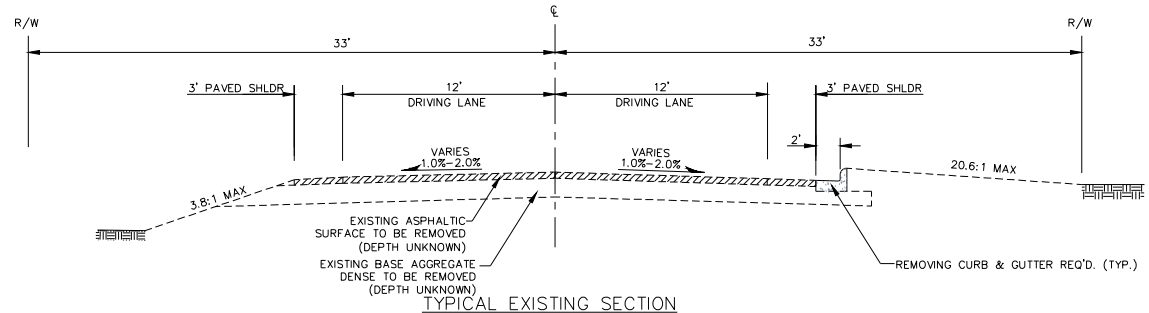
PROJECT NO: 5496-00-74	HWY: CTH N	COUNTY: CRAWFORD	TYPICAL EXISTING SECTIONS	SHEET	E

FILE NAME: S:\PROJECTS\C54320 CRAWFORD CO. CTH N RECONSTRUCT\SHEETSPLAN\TYPICALS\C54320_EXISTING TYPICALS.DWG PLOT DATE : 5/1/2018 4:29 PM PLOT BY : JULIA ZEHNER

2

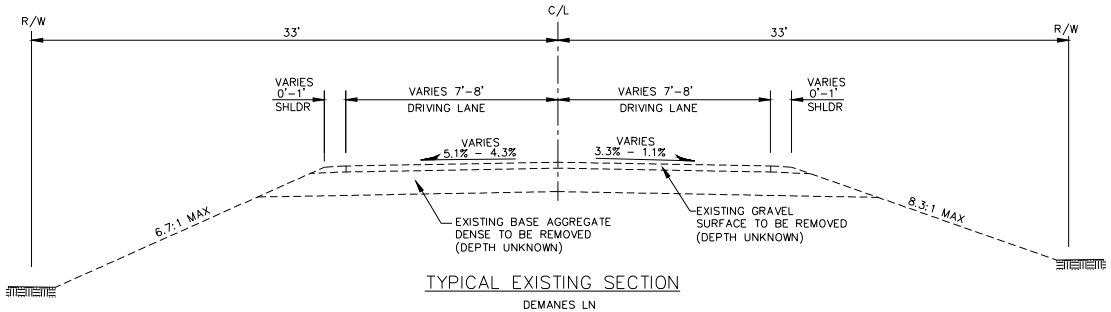
2

ATTACHMENT B



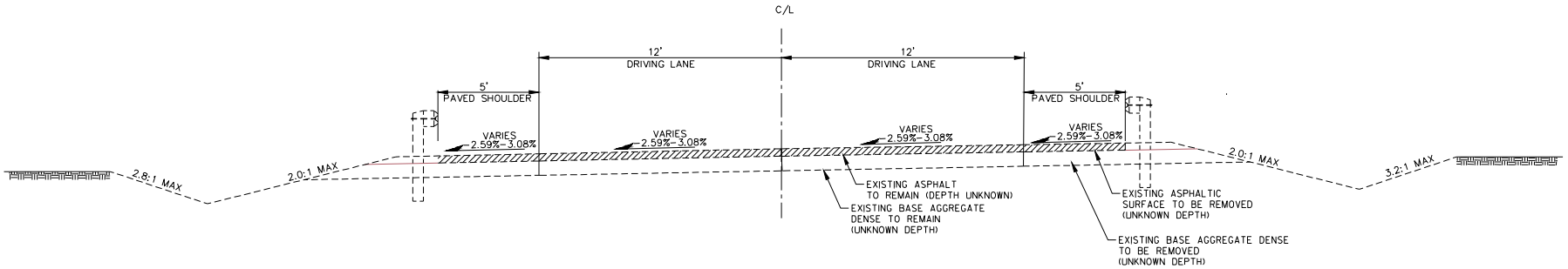
TYPICAL EXISTING SECTION

CTH N
STA. 85+89 – STA. 89+00



TYPICAL EXISTING SECTION

DEMANES LN
SLAMA LN

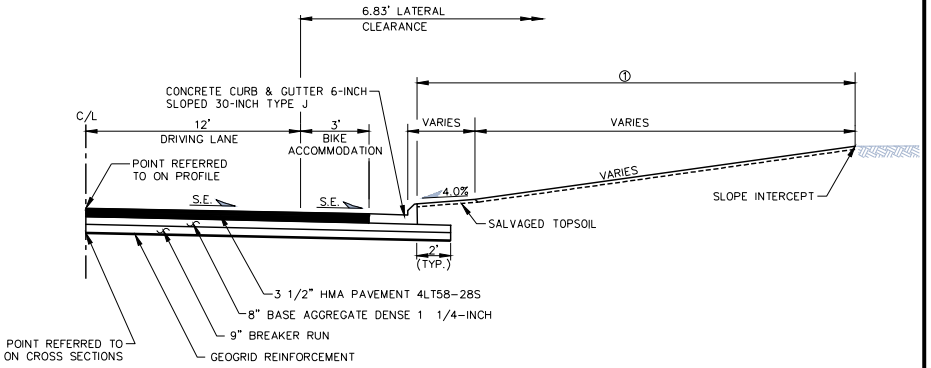


TYPICAL EXISTING SECTION

STH 35
STA. 301+65 – STA. 307+31, RT.
STA. 303+90 – STA. 305+45, LT.

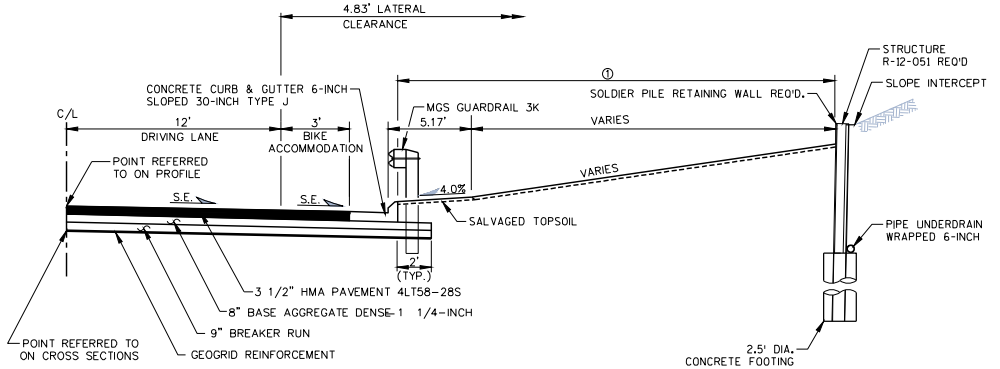
PROJECT NO: 5496-00-74	HWY: CTH N	COUNTY: CRAWFORD	TYPICAL EXISTING SECTIONS	SHEET	E

2



TYPICAL FINISHED HALF SECTION
CTH N
STA. 10+47.01 – STA. 10+92, RT.

① LIMITS OF FERTILIZER TYPE B, SEEDING MIXTURE NO. 70, SEEDING TEMPORARY & EROSION MAT (AS DIRECTED BY ENGINEER)

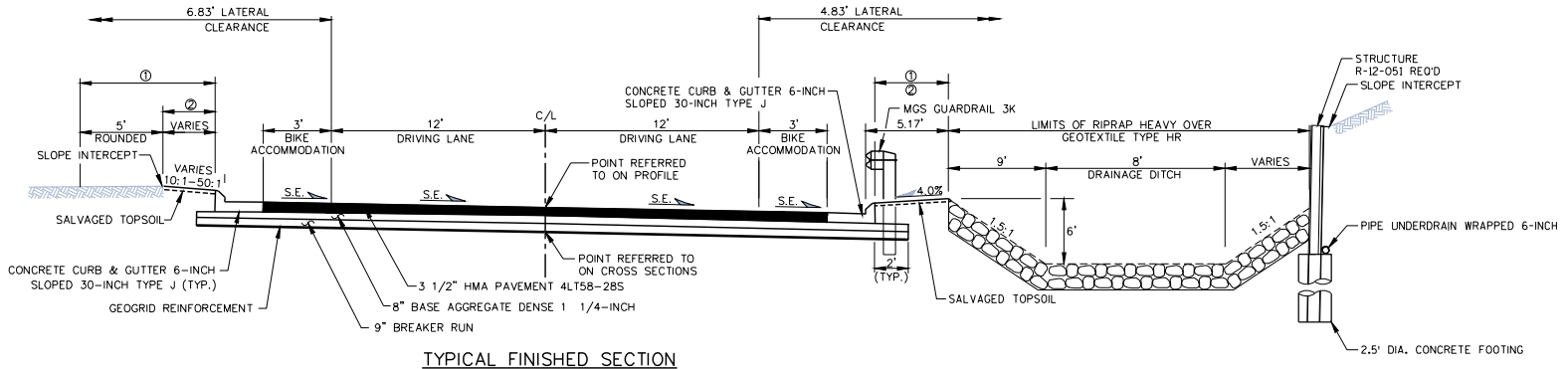


TYPICAL FINISHED HALF SECTION
CTH N
STA. 10+92 – STA. 11+41, RT.

① LIMITS OF FERTILIZER TYPE B, SEEDING MIXTURE NO. 70, SEEDING TEMPORARY & EROSION MAT (AS DIRECTED BY ENGINEER)

2

ATTACHMENT B



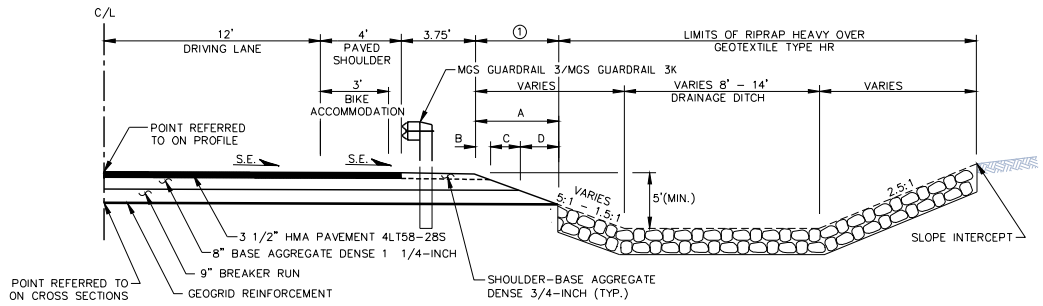
TYPICAL FINISHED SECTION
CTH N
STA. 11+41 – STA. 13+06, RT.
STA. 10+47.01 – STA. 15+75, LT.

① LIMITS OF FERTILIZER TYPE B, SEEDING MIXTURE NO. 70, SEEDING TEMPORARY & EROSION MAT (AS DIRECTED BY ENGINEER)

② LIMITS OF SALVAGED TOPSOIL (AS DIRECTED BY ENGINEER)

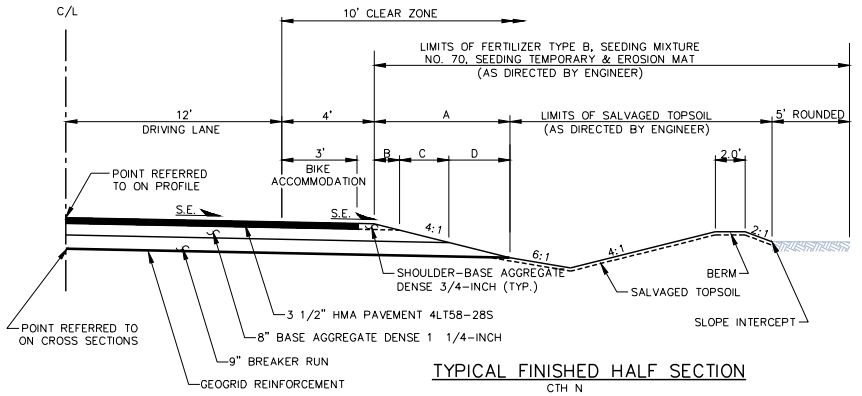
PROJECT NO: 5496-00-74	HWY: CTH N	COUNTY: CRAWFORD	TYPICAL FINISHED SECTIONS	SHEET	E

2



TYPICAL FINISHED HALF SECTION
GUARDRAIL PLACEMENT & DRAINAGE DITCH
STA. 13+06 – STA. 15+31, RT.

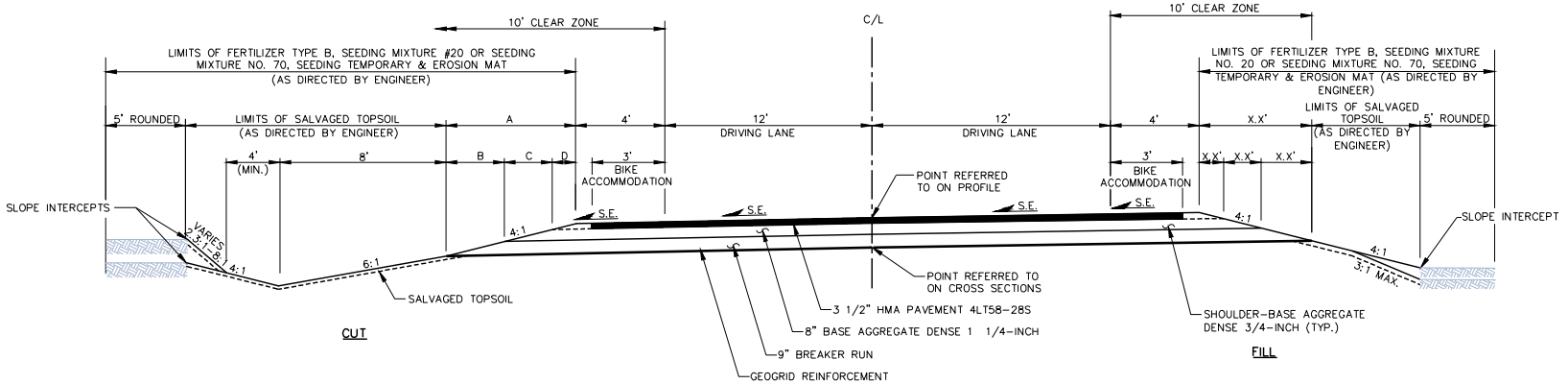
① LIMITS OF FERTILIZER TYPE B, SEEDING MIXTURE NO. 70, SEEDING TEMPORARY, & EROSION MAT (AS DIRECTED BY ENGINEER)



TYPICAL FINISHED HALF SECTION
CTH N
STA. 15+50 – STA. 17+50, RT.

2

ATTACHMENT B

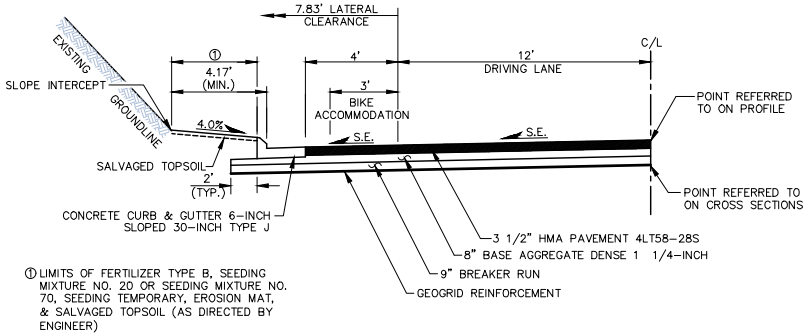


TYPICAL FINISHED SECTION
CTH N
STA. 15+75 – STA. 29+00, LT. STA. 70+00 – STA. 89+00, LT.
STA. 15+31 – STA. 15+50, RT. STA. 37+56 – STA. 53+00, RT.
STA. 17+50 – STA. 28+50, RT. STA. 73+06 – STA. 86+00, RT.

PROJECT NO: 5496-00-74	HWY: CTH N	COUNTY: CRAWFORD	TYPICAL FINISHED SECTIONS	SHEET	E

2

2

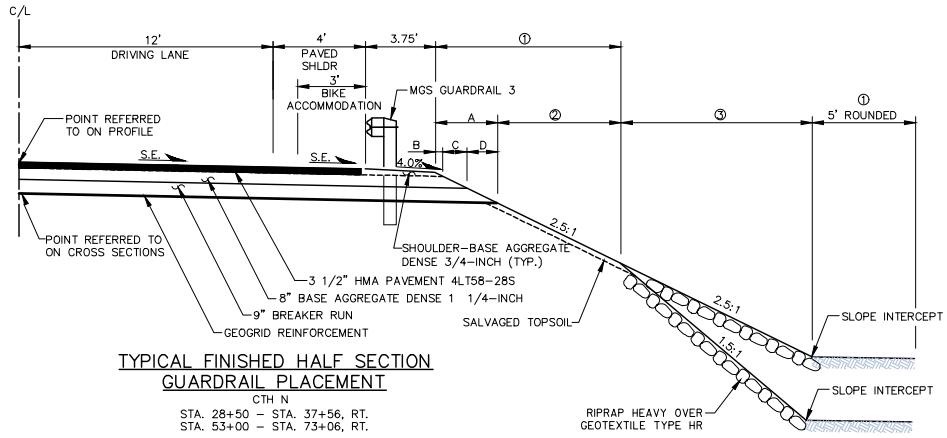


TYPICAL FINISHED HALF SECTION
CURB & GUTTER PLACEMENT

CTH N

STA. 29+00 – STA. 29+50, LT. STA. 47+50 – STA. 50+50, LT.
STA. 34+50 – STA. 35+50, LT. STA. 54+50 – STA. 55+50, LT.
STA. 39+50 – STA. 43+50, LT. STA. 68+50 – STA. 70+00, LT.

ATTACHMENT B



TYPICAL FINISHED HALF SECTION
GUARDRAIL PLACEMENT

CTH N

STA. 28+50 – STA. 37+56, RT.
STA. 53+00 – STA. 73+06, RT.

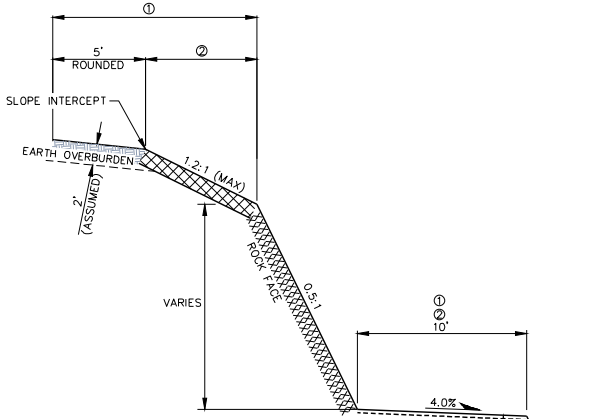
① LIMITS OF SEEDING MIXTURE NO. 20 OR SEEDING MIXTURE NO. 70, SEEDING TEMPORARY FERTILIZER TYPE B & EROSION MAT (AS DIRECTED BY ENGINEER)

② LIMITS OF SALVAGED TOPSOIL (AS DIRECTED BY ENGINEER)

③ LIMITS OF RIPRAP HEAVY OVER GEOTEXTILE TYPE HR

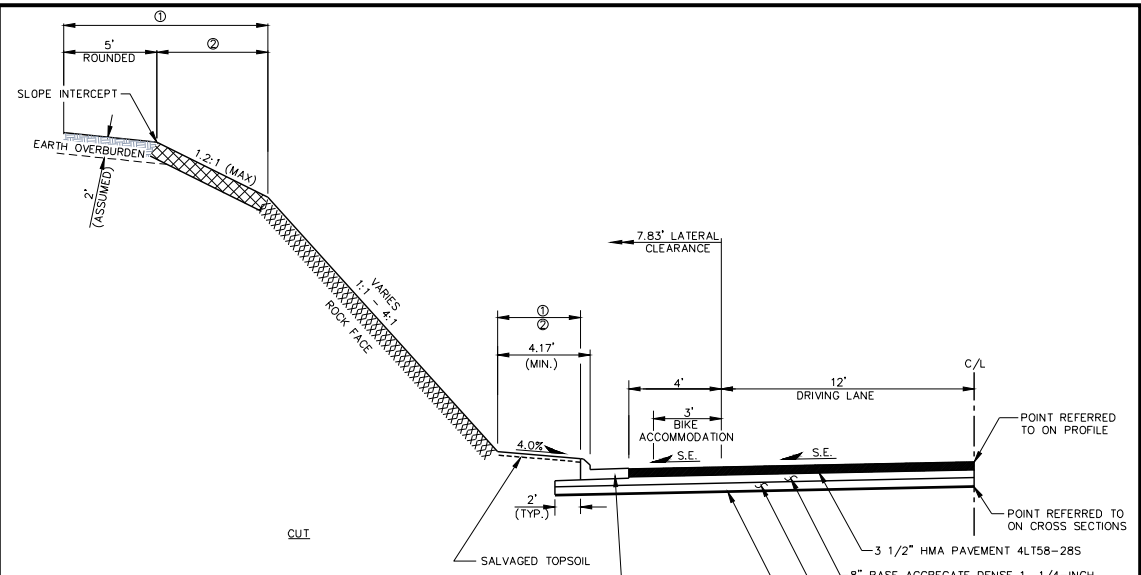
PROJECT NO: 5496-00-74	HWY: CTH N	COUNTY: CRAWFORD	TYPICAL FINISHED SECTIONS	SHEET	E

ATTACHMENT B



TYPICAL FINISHED HALF SECTION
EMBANKMENT BENCH CUT

CTH N
STA. 35+50 – STA. 39+50, LT.



TYPICAL FINISHED HALF SECTION
EMBANKMENT CUT/FILL

CTH N
STA. 29+50 – STA. 34+50, LT.
STA. 43+50 – STA. 47+50, LT.
STA. 50+50 – STA. 55+25, LT.
STA. 66+75 – STA. 68+50, LT.

① LIMITS OF SEEDING MIXTURE NO. 20 OR SEEDING MIXTURE NO. 70, SEEDING TEMPORARY FERTILIZER TYPE B & EROSION MAT (AS DIRECTED BY ENGINEER)

② LIMITS OF SALVAGED TOPSOIL (AS DIRECTED BY ENGINEER)

NOTE: ELIMINATE OVERBURDEN GRADING AREAS WHERE PROPOSED ROCK CUT SLOPE CLOSELY MATCHES THE EXISTING SLOPE AT SLOPE INTERCEPT AS SHOWN ON THE CROSS SECTIONS.

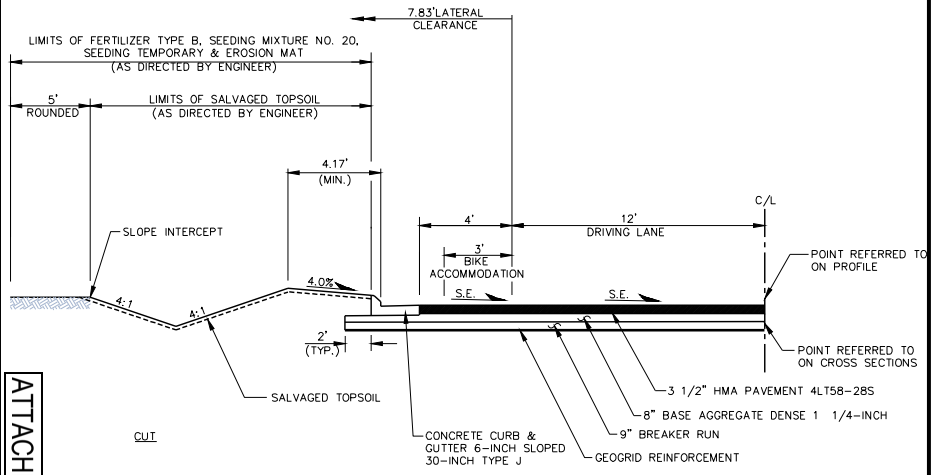
① LIMITS OF SEEDING MIXTURE NO. 70, SEEDING TEMPORARY FERTILIZER TYPE B & EROSION MAT (AS DIRECTED BY ENGINEER)

② LIMITS OF SALVAGED TOPSOIL (AS DIRECTED BY ENGINEER)

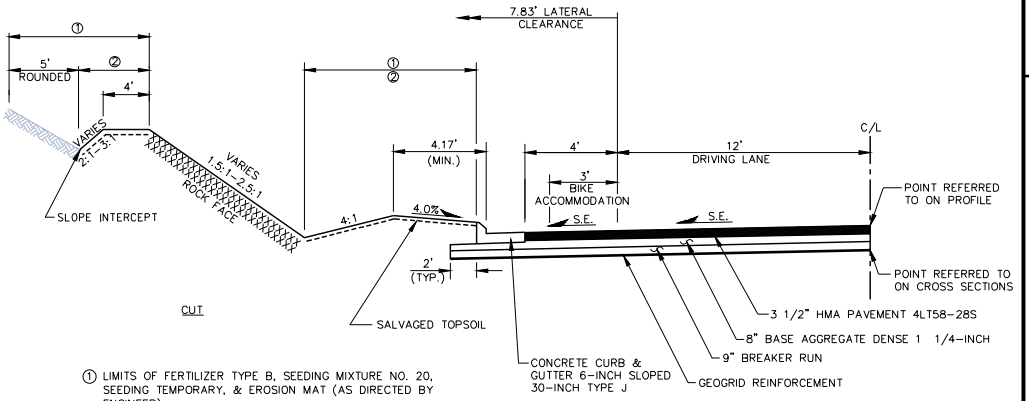
NOTE: ELIMINATE OVERBURDEN GRADING AREAS WHERE PROPOSED ROCK CUT SLOPE CLOSELY MATCHES THE EXISTING SLOPE AT SLOPE INTERCEPT AS SHOWN ON THE CROSS SECTIONS.

PROJECT NO: 5496-00-74	HWY: CTH N	COUNTY: CRAWFORD	TYPICAL FINISHED SECTIONS	SHEET	E

ATTACHMENT B



TYPICAL FINISHED HALF SECTION
CURB & GUTTER DITCH PLACEMENT
CTH N
STA. 55+25 – STA. 57+50, LT.

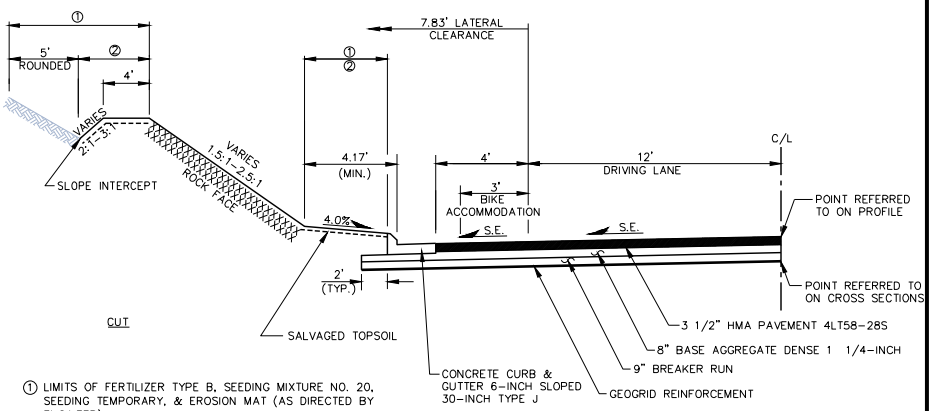


① LIMITS OF FERTILIZER TYPE B, SEEDING MIXTURE NO. 20, SEEDING TEMPORARY, & EROSION MAT (AS DIRECTED BY ENGINEER)

② LIMITS OF SALVAGED TOPSOIL (AS DIRECTED BY ENGINEER)

NOTE: STA. 57+00 – STA. 58+00, LT. ARTICULATED CONCRETE BLOCK TYPE C FLUME REQ'D (SEE CONSTRUCTION DETAILS FOR FURTHER INFORMATION)

TYPICAL FINISHED HALF SECTION
EMBANKMENT CUT/FILL
CTH N
STA. 57+50 – STA. 58+50, LT.

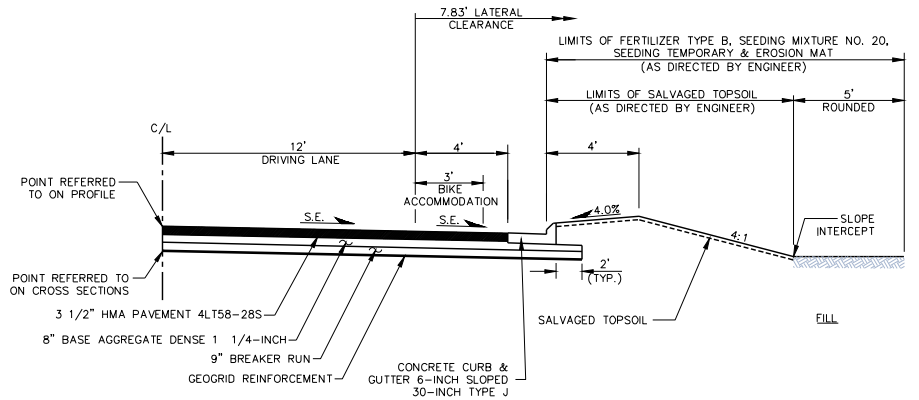


① LIMITS OF FERTILIZER TYPE B, SEEDING MIXTURE NO. 20, SEEDING TEMPORARY, & EROSION MAT (AS DIRECTED BY ENGINEER)

② LIMITS OF SALVAGED TOPSOIL (AS DIRECTED BY ENGINEER)

NOTE: STA. 57+00 – STA. 58+00, LT. ARTICULATED CONCRETE BLOCK TYPE C FLUME REQ'D (SEE CONSTRUCTION DETAILS FOR FURTHER INFORMATION)

TYPICAL FINISHED HALF SECTION
EMBANKMENT CUT/FILL
CTH N
STA. 58+50 – STA. 66+75, LT.



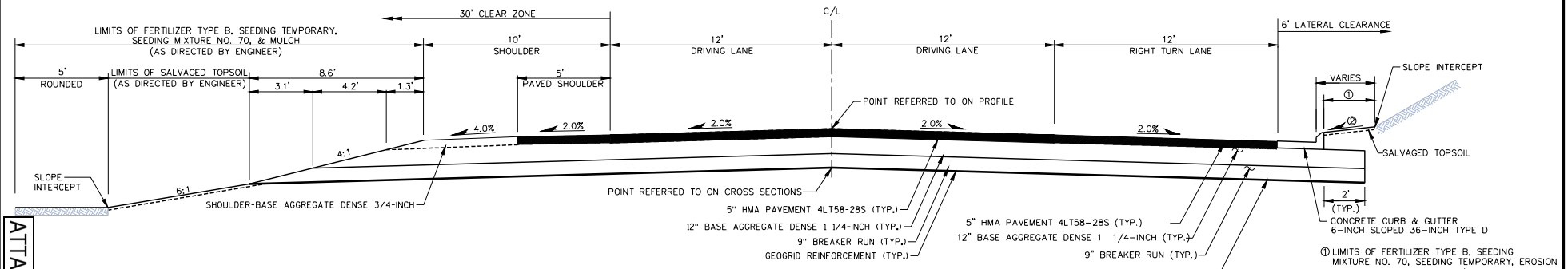
TYPICAL FINISHED HALF SECTION
CURB & GUTTER PLACEMENT
CTH N
STA. 86+00 – STA. 89+00, RT.

PROJECT NO: 5496-00-74	HWY: CTH N	COUNTY: CRAWFORD	TYPICAL FINISHED SECTIONS	SHEET	E

2

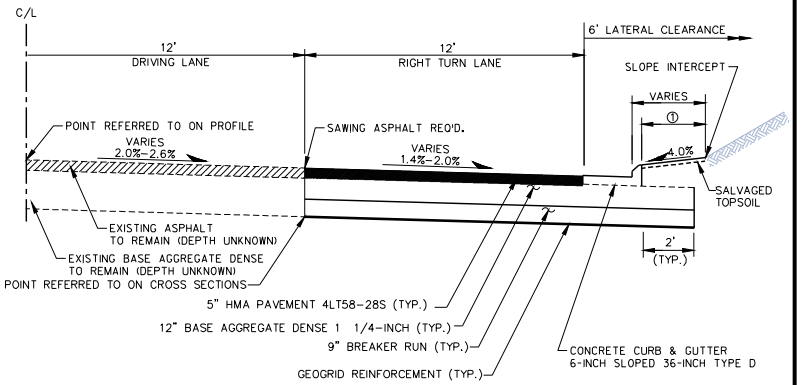
2

ATTACHMENT B



TYPICAL FINISHED SECTION

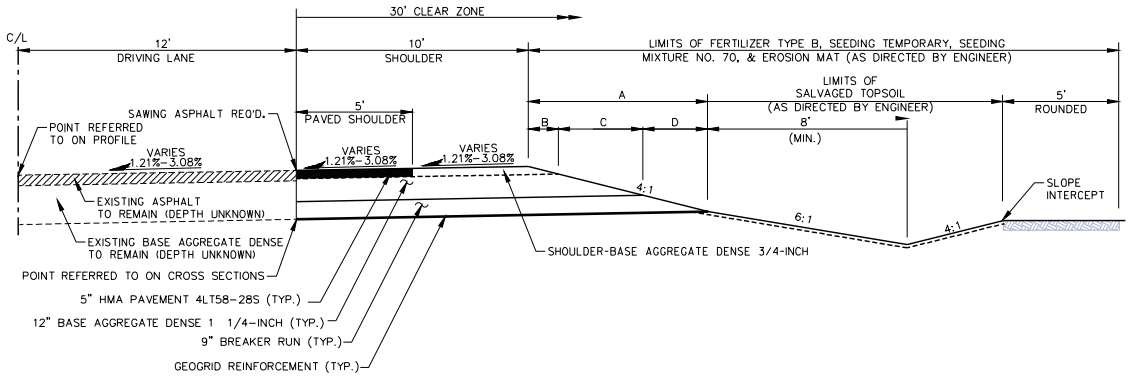
STH 35
STA. 303+90 – STA. 305+45



TYPICAL FINISHED HALF SECTION

STH 35
STA. 301+65 – STA. 303+90, RT.

① LIMITS OF FERTILIZER TYPE B, SEEDING MIXTURE NO. 70, SEEDING TEMPORARY, MULCH, & SALVAGED TOPSOIL (AS DIRECTED BY ENGINEER)

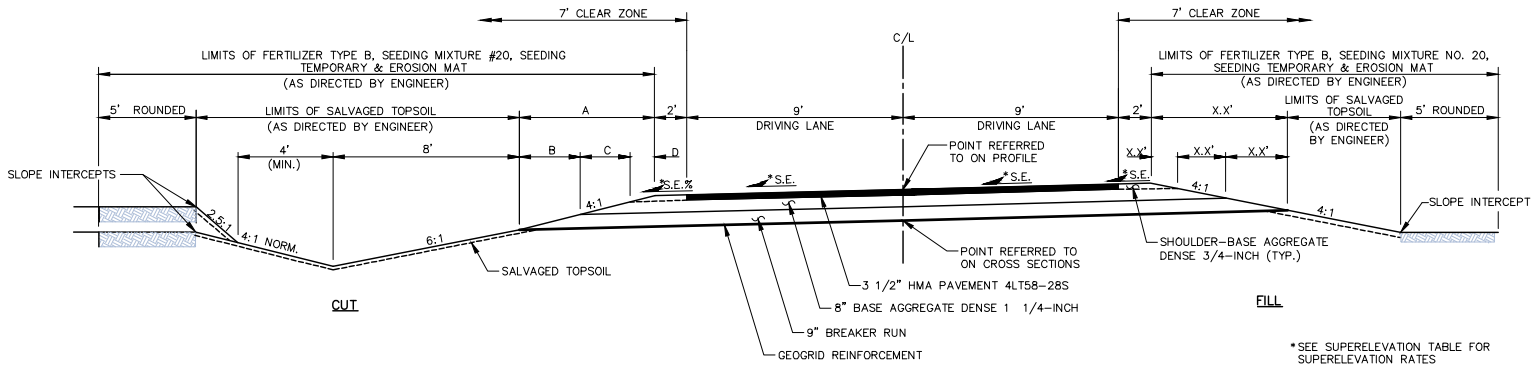


TYPICAL FINISHED HALF SECTION

STH 35
STA. 305+45 – STA. 307+31, RT.

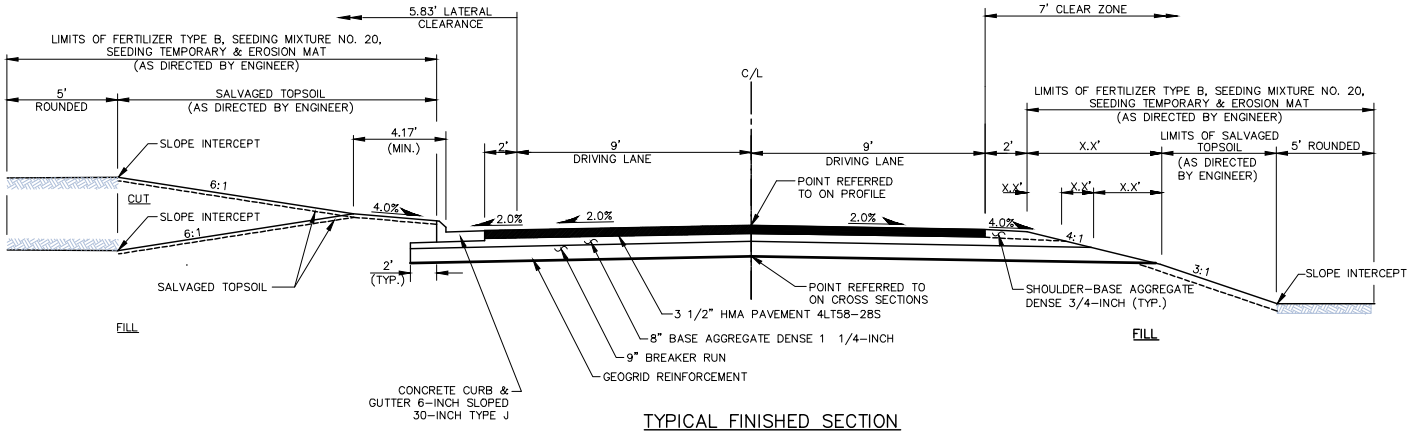
PROJECT NO: 5496-00-74	HWY: CTH N	COUNTY: CRAWFORD	TYPICAL FINISHED SECTIONS	SHEET	E

ATTACHMENT B



TYPICAL FINISHED SECTION

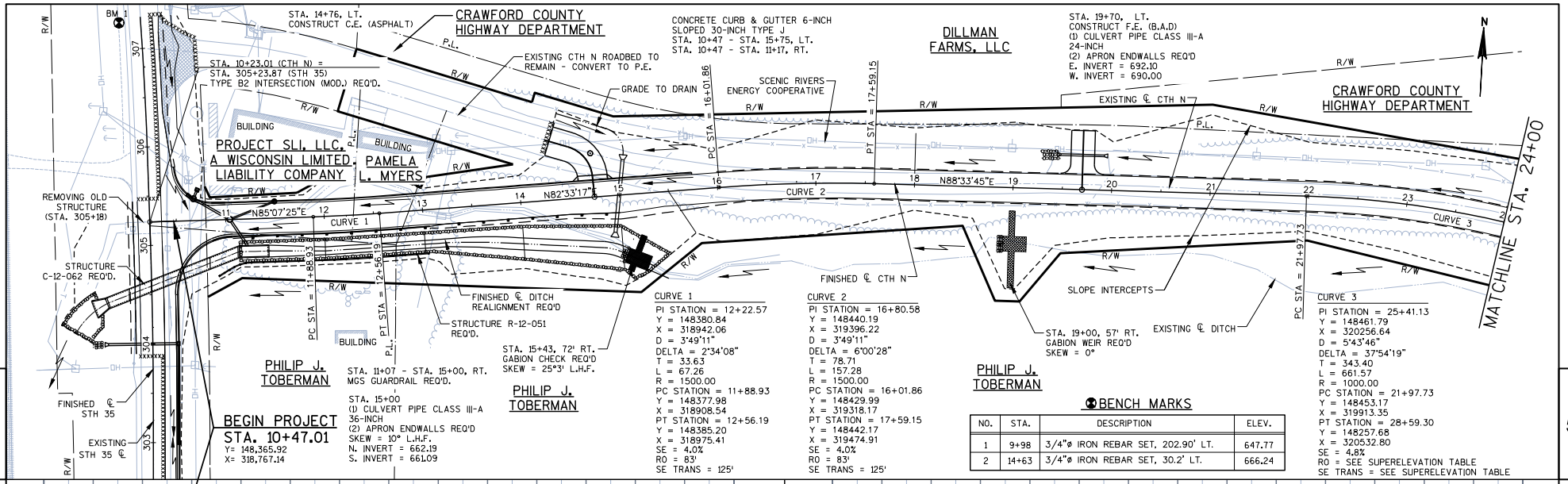
DEMANES LN
STA. 100+00 – STA. 105+39.14
SLAMA LN
STA. 200+17 – STA. 205+00



TYPICAL FINISHED SECTION

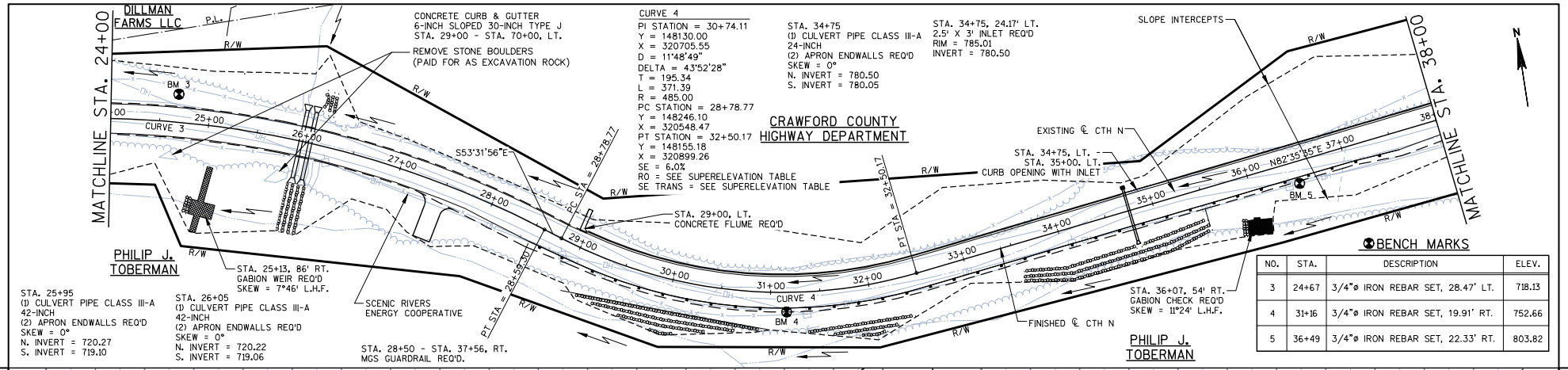
OLD CTH N

PROJECT NO: 5496-00-74	HWY: CTH N	COUNTY: CRAWFORD	TYPICAL FINISHED SECTIONS	SHEET	E



PROJECT NO: 5496-00-74	HWY: CTH N	COUNTY: CRAWFORD	PLAN & PROFILE: MAINLINE	SHEET E

FILE NAME : S:\PROJECTS\C54320 CRAWFORD CO. CTH N RECONSTRUCT\SHEETS\PLAN\PLAN & PROFILE SHEETS\P&P.DWG
LAYOUT : P&P1
PLOT DATE : 5/1/2018
PLOT TIME : 4:38:25 PM
PLOT BY : JULIA ZEHNER
PLOT SCALE : 6" = 1'-0"



5

ATTACHMENT C

LEGEND

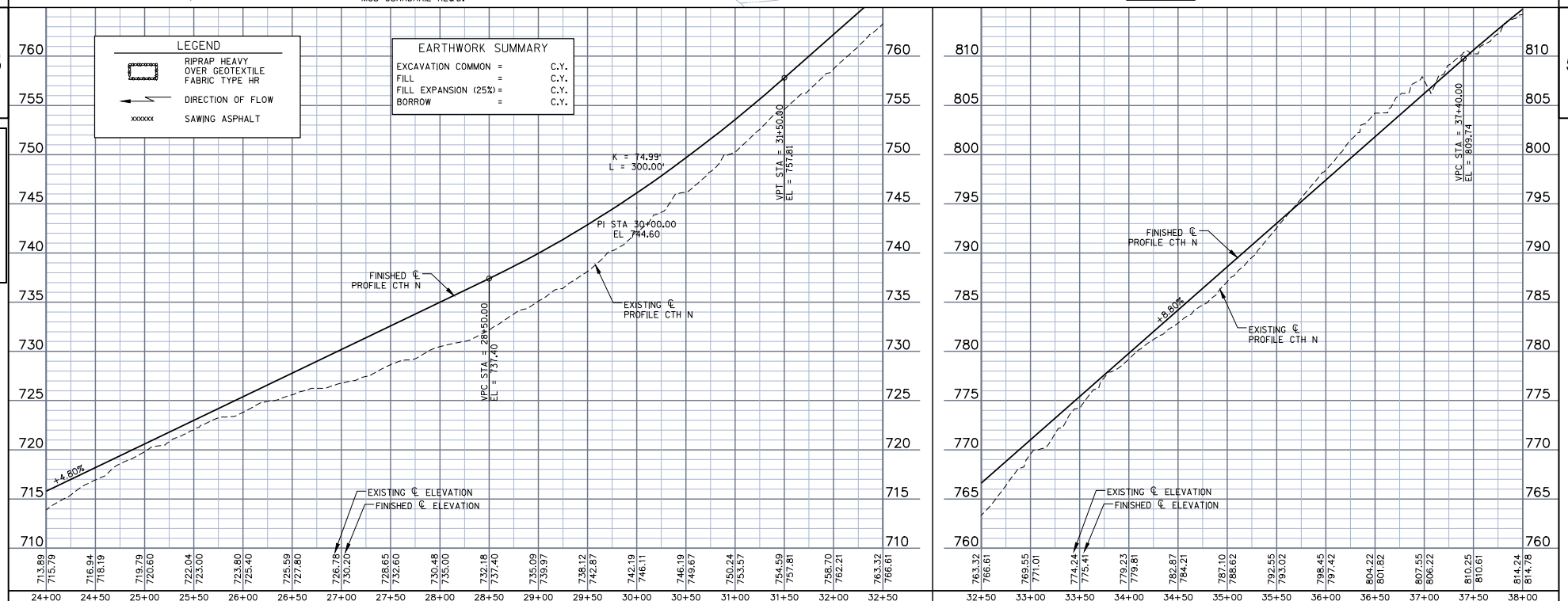
RIPRAP HEAVY OVER GEOTEXTILE FABRIC TYPE HR

DIRECTION OF FLOW

xxxxxx SAWING ASPHALT

EARTHWORK SUMMARY

EXCAVATION COMMON	=	C.Y.
FILL	=	C.Y.
FILL EXPANSION (25%)	=	C.Y.
BORROW	=	C.Y.

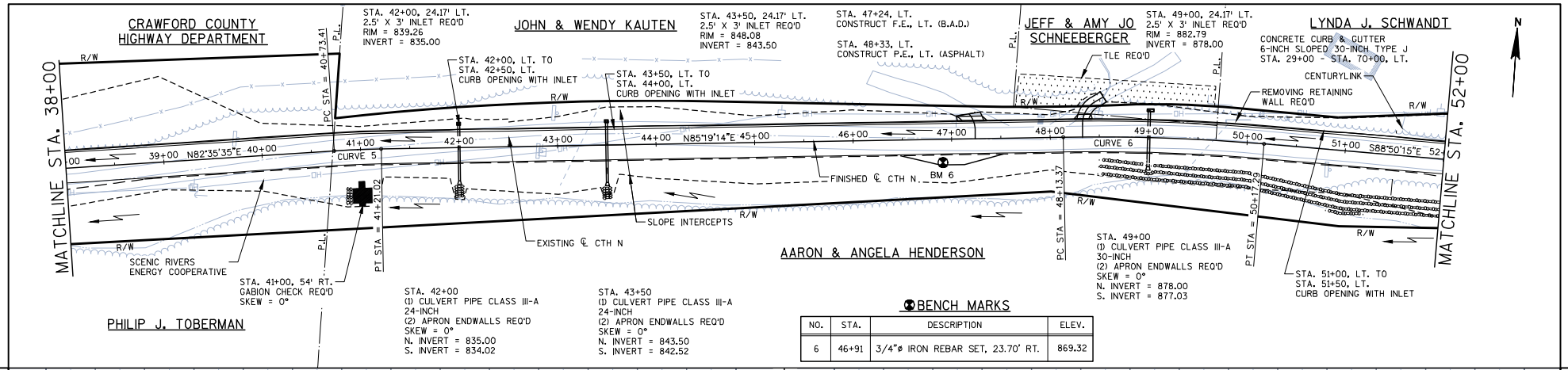


24+00	24+50	25+00	25+50	26+00	26+50	27+00	27+50	28+00	28+50	29+00	29+50	30+00	30+50	31+00	31+50	32+00	32+50
713.89	716.94	719.79	722.04	723.80	725.59	726.78	728.65	730.48	732.18	735.09	738.12	742.19	746.19	750.24	754.59	758.70	763.32
715.79	718.19	720.60	723.00	725.40	727.80	730.20	732.60	735.00	737.40	739.97	742.87	746.11	749.67	753.57	757.81	762.21	766.61

32+50	33+00	33+50	34+00	34+50	35+00	35+50	36+00	36+50	37+00	37+50	38+00
763.32	769.55	774.24	779.23	782.87	787.10	792.55	798.45	804.22	807.55	810.25	814.24
766.61	771.01	775.41	779.81	784.21	788.62	793.02	797.42	801.82	806.22	810.61	814.78

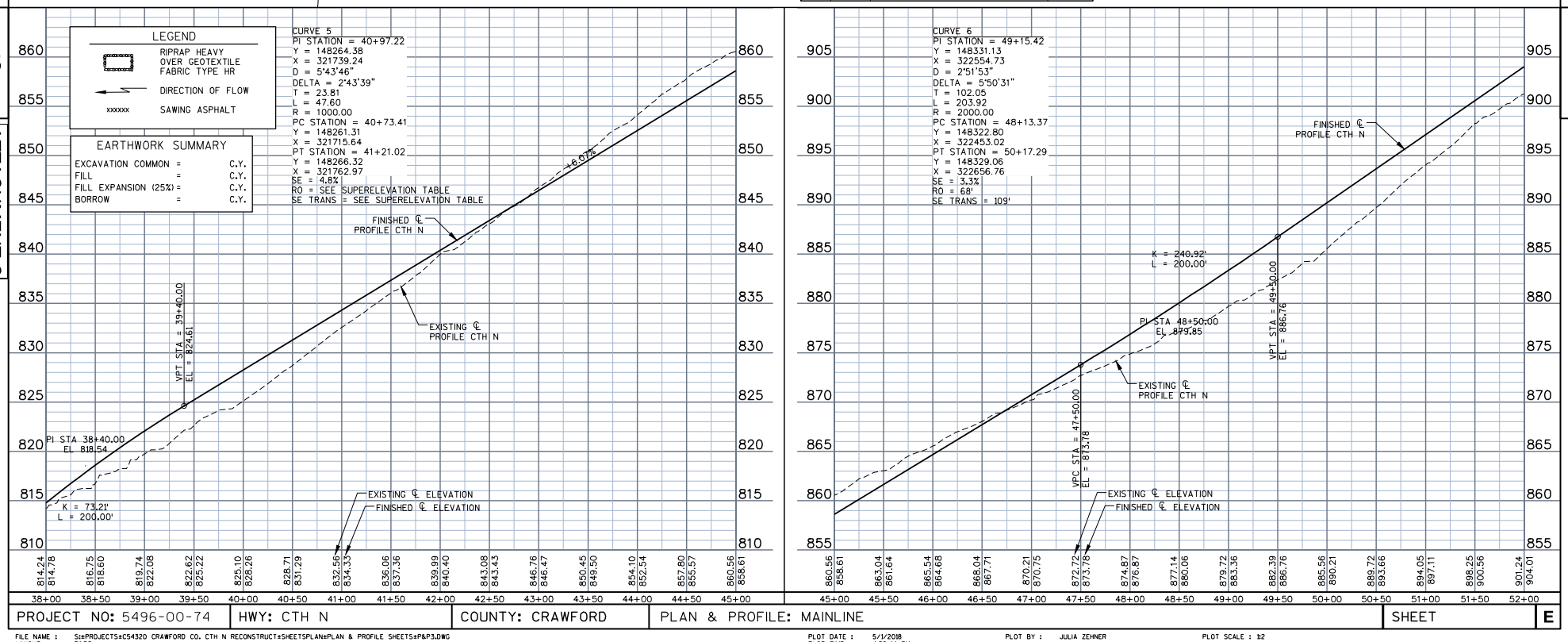
PROJECT NO: 5496-00-74	HWY: CTH N	COUNTY: CRAWFORD	PLAN & PROFILE: MAINLINE	SHEET	E

FILE NAME : S:\PROJECTS\C54320 CRAWFORD CO. CTH N RECONSTRUCT\SHEETS\PLAN&PLAN & PROFILE SHEETS\P&P2.DWG
LAYOUT : P&P2
PLOT DATE : 5/1/2018
PLOT TIME : 4:39:05 PM
PLOT BY : JULIA ZEHNER
PLOT SCALE : 6" = 1'-0"



BENCH MARKS

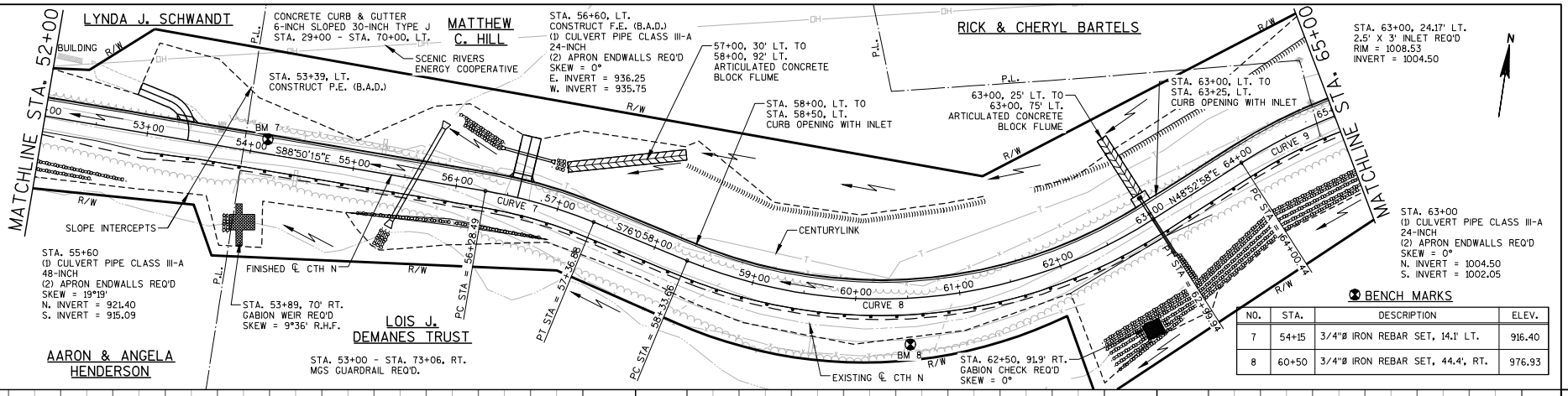
NO.	STA.	DESCRIPTION	ELEV.
6	46+91	3/4"ø IRON REBAR SET, 23.70' RT.	869.32



PROJECT NO: 5496-00-74	HWY: CTH N	COUNTY: CRAWFORD	PLAN & PROFILE: MAINLINE	SHEET	E

FILE NAME : S:\PROJECTS\C54320 CRAWFORD CO. CTH N RECONSTRUCT\SHEETS\PLAN\PLAN & PROFILE SHEETS\P&P3.DWG
LAYOUT : P&P3
PLOT DATE : 5/1/2018
PLOT TIME : 4:39:44 PM
PLOT BY : JULIA ZEHNER
PLOT SCALE : 1:2

ATTACHMENT C



5

ATTACHMENT C

LEGEND

RIPRAP HEAVY OVER GEOTEXTILE FABRIC TYPE HR

DIRECTION OF FLOW

xxxxxx SAWING ASPHALT

EARTHWORK SUMMARY

EXCAVATION COMMON	=	C.Y.
FILL	=	C.Y.
FILL EXPANSION (25%)	=	C.Y.
BORROW	=	C.Y.

CURVE 7
PI STATION = 56+82.91
Y = 148315.55
X = 323322.23
D = 11°48'49"
DELTA = 12°48'18"
T = 54.42
L = 108.39
R = 485.00
PC STATION = 56+28.49
Y = 148316.66
X = 323267.82
PT STATION = 57+36.88
Y = 148302.42
SE = 6.00%
RO = SEE SUPERELEVATION TABLE
SE TRANS = SEE SUPERELEVATION TABLE

K = 78.40'
L = 400.00'
PI STA 57+10.00
EL 939.20
+6.90%
FINISHED ℄ PROFILE CTH N
EXISTING ℄ PROFILE CTH N
VPC STA = 55+10.00
EL = 926.40
EXISTING ℄ ELEVATION
FINISHED ℄ ELEVATION

CURVE 8
PI STATION = 60+86.59
Y = 148218.01
X = 323714.42
D = 11°48'49"
DELTA = 55°05'05"
T = 252.93
L = 466.28
R = 485.00
PC STATION = 58+33.66
Y = 148279.06
X = 323468.97
PT STATION = 62+99.94
Y = 148384.33
X = 323904.97
SE = 6.00%
RO = SEE SUPERELEVATION TABLE
SE TRANS = SEE SUPERELEVATION TABLE

FINISHED ℄ PROFILE CTH N
EXISTING ℄ PROFILE CTH N
VPT STA = 59+10.00
EL = 963.21
EXISTING ℄ ELEVATION
FINISHED ℄ ELEVATION

CURVE 9
PI STATION = 64+73.62
Y = 148498.55
X = 324035.82
D = 11°48'49"
DELTA = 17°09'43"
T = 73.19
L = 145.27
R = 485.00
PC STATION = 64+00.44
Y = 148450.42
X = 323980.68
PT STATION = 65+45.71
Y = 148528.26
X = 324102.70
SE = 6.00%
RO = SEE SUPERELEVATION TABLE
SE TRANS = SEE SUPERELEVATION TABLE

-12.00%
FINISHED ℄ PROFILE CTH N
EXISTING ℄ PROFILE CTH N
EXISTING ℄ ELEVATION
FINISHED ℄ ELEVATION

PROJECT NO: 5496-00-74	HWY: CTH N	COUNTY: CRAWFORD	PLAN & PROFILE: MAINLINE	SHEET	E

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LAYOUT : P&P4
PLOT DATE : 5/31/2018
PLOT TIME : 4:37:12 PM
PLOT BY : STEPHANIE POTTER
PLOT SCALE : 1:2

ATTACHMENT C

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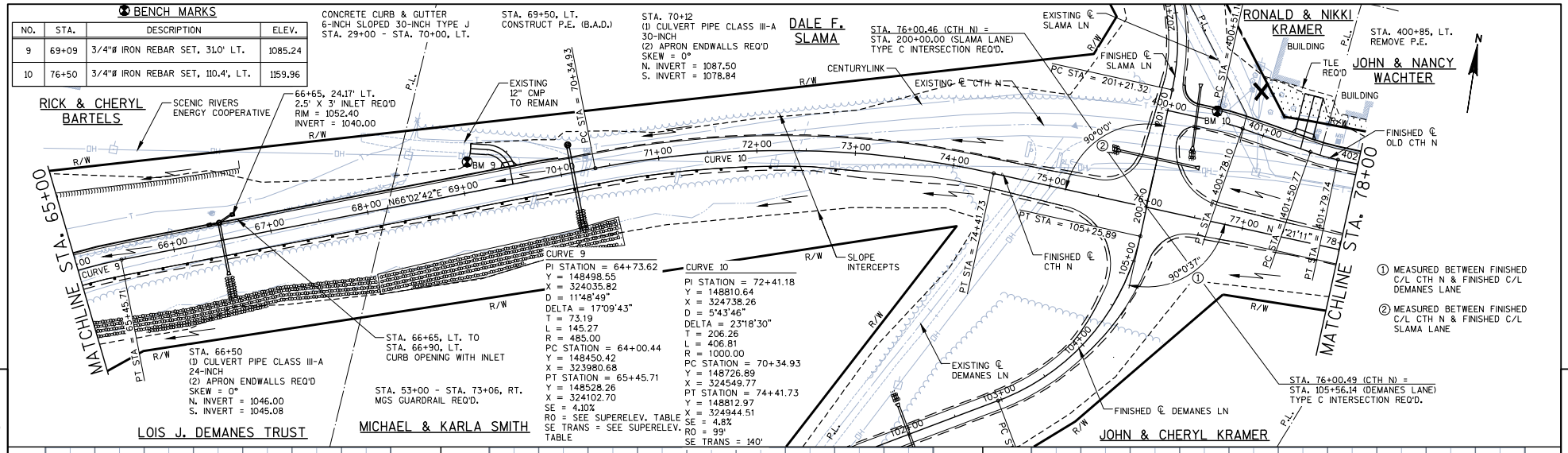
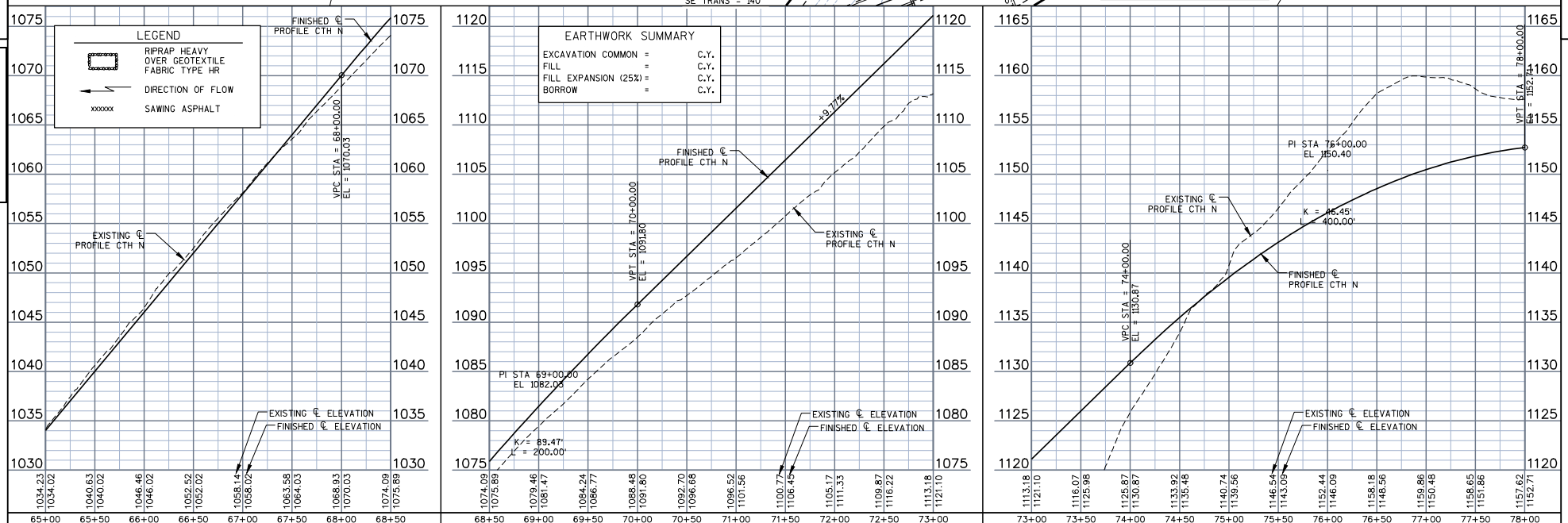
BENCH MARKS

NO.	STA.	DESCRIPTION	ELEV.
9	69+09	3/4"ø IRON REBAR SET, 31.0' LT.	1085.24
10	76+50	3/4"ø IRON REBAR SET, 110.4', LT.	1159.96



CURVE 9
PI STATION = 64+73.62
Y = 148498.55
X = 324035.82
D = 11°48'49"
DELTA = 17°09'43"
T = 73.19
L = 145.27
R = 485.00
PC STATION = 64+00.44
Y = 148450.42
X = 323980.68
PT STATION = 65+45.71
Y = 148528.26
X = 324102.70
SE = 4.10%
RO = SEE SUPERELEV. TABLE
SE TRANS = SEE SUPERELEV. TABLE

CURVE 10
PI STATION = 72+41.18
Y = 148810.64
X = 324738.26
D = 5°43'46"
DELTA = 23°18'30"
T = 206.26
L = 406.81
R = 1000.00
PC STATION = 70+34.93
Y = 148726.89
X = 324549.77
PT STATION = 74+41.73
Y = 148812.97
X = 324944.51
SE = 4.8%
RO = 99'
SE TRANS = 140'



PROJECT NO: 5496-00-74	HWY: CTH N	COUNTY: CRAWFORD	PLAN & PROFILE: MAINLINE	SHEET	E

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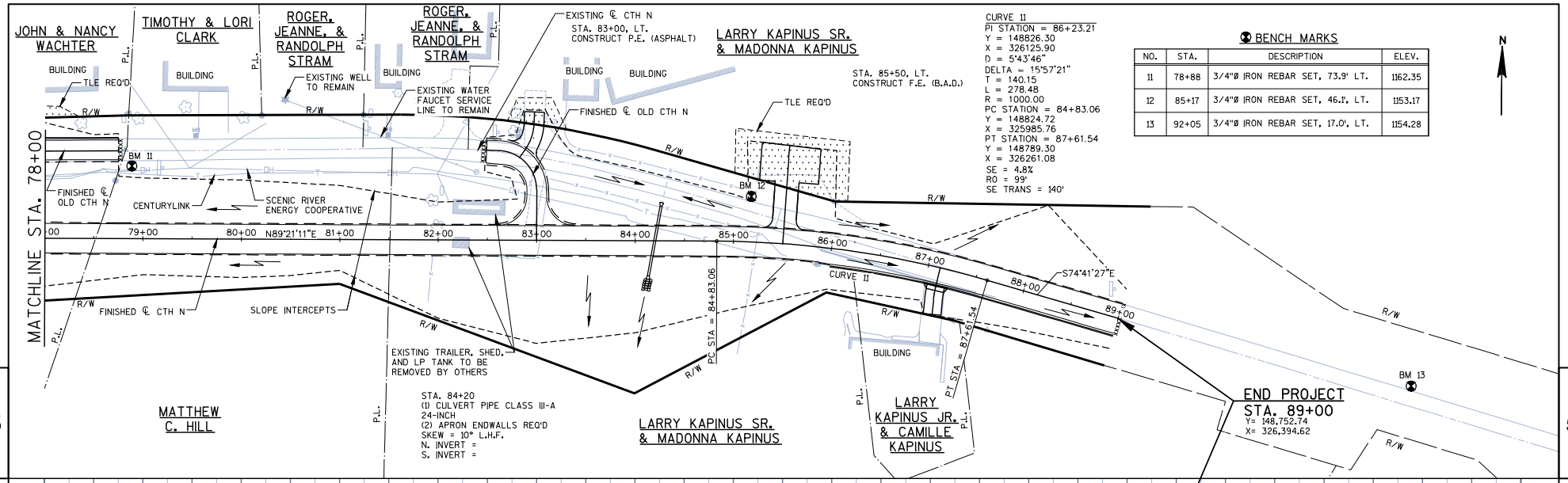
PLOT TIME : 2:18:50 PM
PLOT BY : STRINE, THERESA
PLOT SCALE : 1:2



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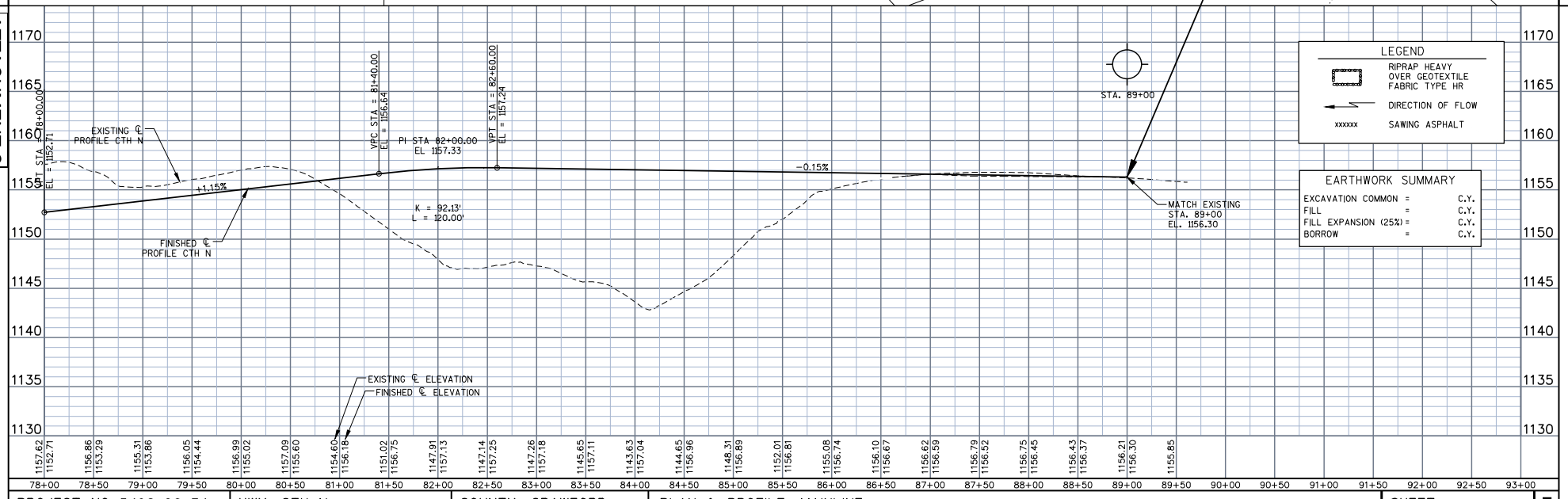
ATTACHMENT C



LEGEND

RIPRAP HEAVY OVER GEOTEXTILE FABRIC TYPE HR

DIRECTION OF FLOW

xxxxxx SAWING ASPHALT

EARTHWORK SUMMARY

EXCAVATION COMMON	=	C.Y.
FILL	=	C.Y.
FILL EXPANSION (25%)	=	C.Y.
BORROW	=	C.Y.

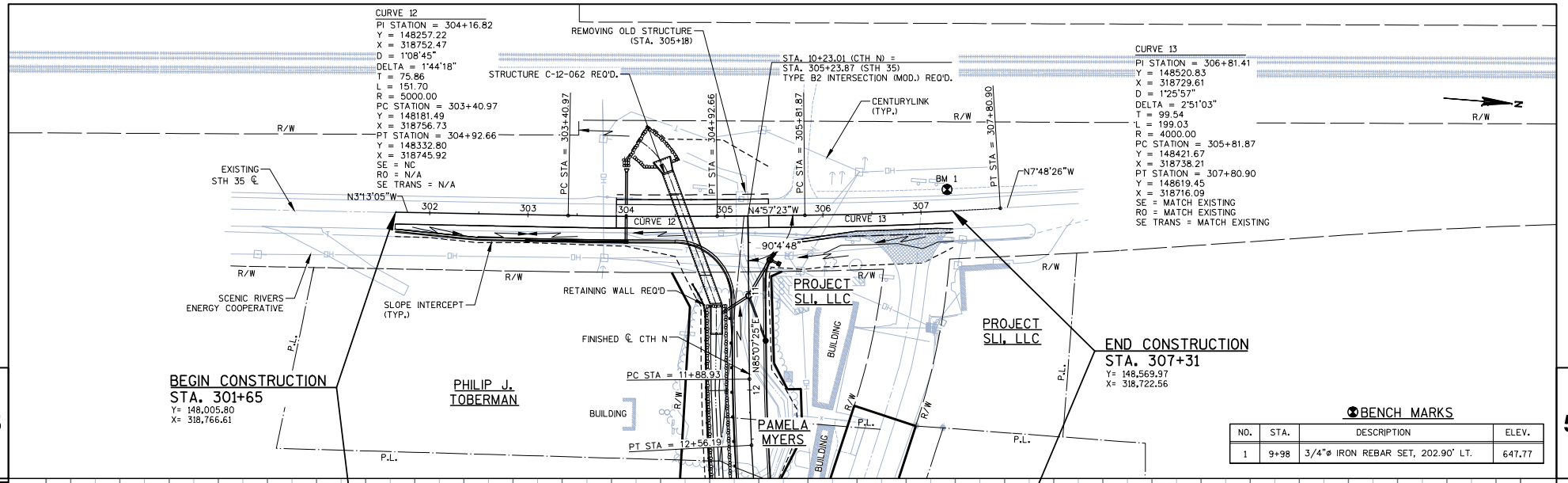
PROJECT NO: 5496-00-74	HWY: CTH N	COUNTY: CRAWFORD	PLAN & PROFILE: MAINLINE	SHEET	E

FILE NAME : S:\PROJECTS\C54320 CRAWFORD CO. CTH N RECONSTRUCT\SHEETS\PLAN\PLAN & PROFILE SHEETS\P&P6.DWG
LAYOUT : P&P6

PLOT DATE : 5/1/2018
PLOT TIME : 4:41:42 PM

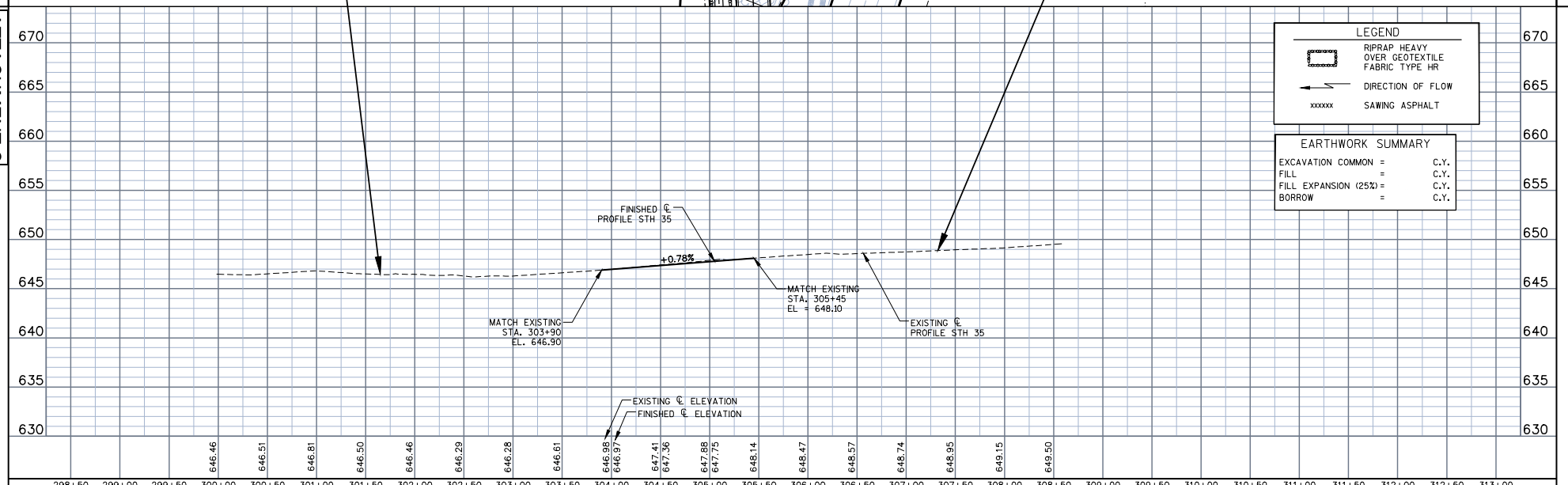
PLOT BY : JULIA ZEHNER

PLOT SCALE : 1:2



BENCH MARKS

NO.	STA.	DESCRIPTION	ELEV.
1	9+98	3/4"ø IRON REBAR SET, 202.90' LT.	647.77



LEGEND

- RIPRAP HEAVY OVER GEOTEXTILE FABRIC TYPE HR
- DIRECTION OF FLOW
- xxxxxx SAWING ASPHALT

EARTHWORK SUMMARY

EXCAVATION COMMON	=	C.Y.
FILL	=	C.Y.
FILL EXPANSION (25%)	=	C.Y.
BORROW	=	C.Y.

PROJECT NO: 5496-00-74	HWY: CTH N	COUNTY: CRAWFORD	PLAN & PROFILE: STH 35	SHEET	E

FILE NAME : S:\PROJECTS\C54320 CRAWFORD CO. CTH N RECONSTRUCT\SHEETS\PLAN\PLAN & PROFILE SHEETS\P&P STH 35.DWG
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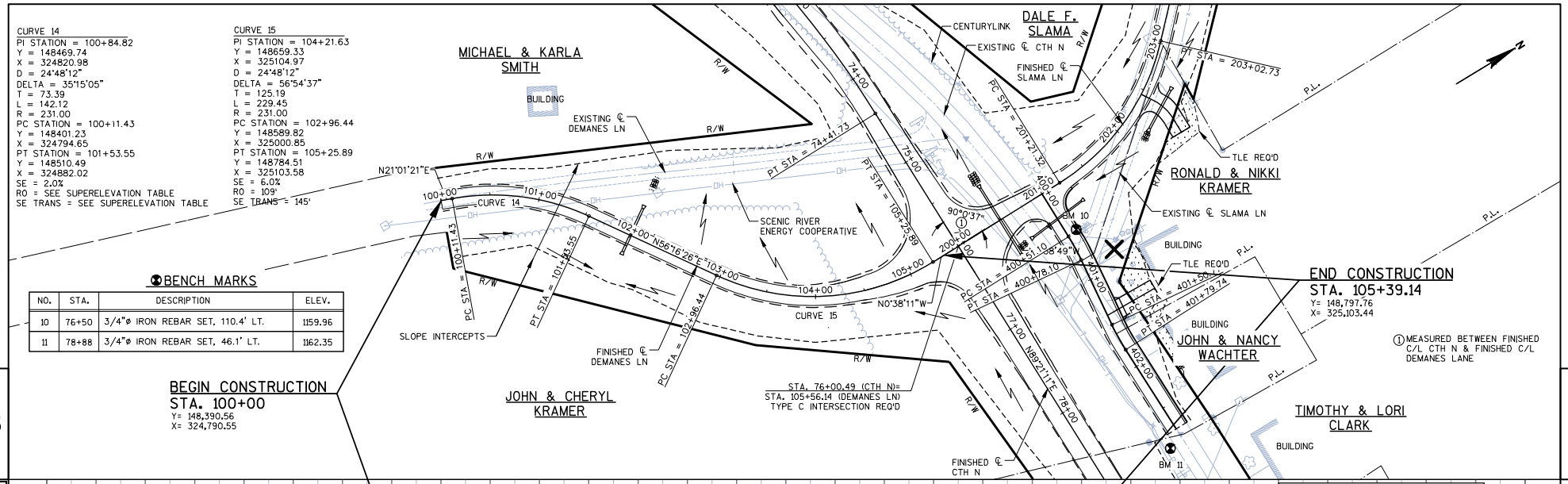
PLOT BY : JULIA ZEHNER
PLOT SCALE : 1:2

ATTACHMENT C



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ATTACHMENT C

PROJECT NO: 5496-00-74	HWY: CTH N	COUNTY: CRAWFORD	PLAN & PROFILE: DEMANES LANE	SHEET	E

FILE NAME : S:\PROJECTS\C54320 CRAWFORD CO. CTH N RECONSTRUCT\SHEETSPLAN\PLAN & PROFILE SHEETS\P&P DEMANES.DWG
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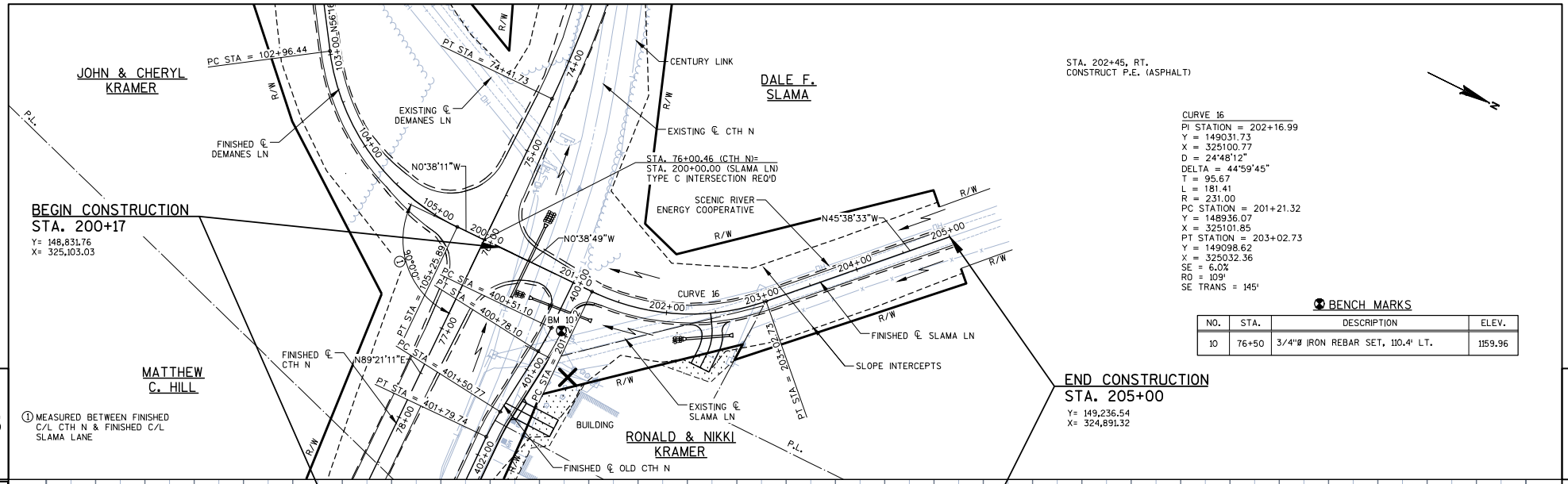
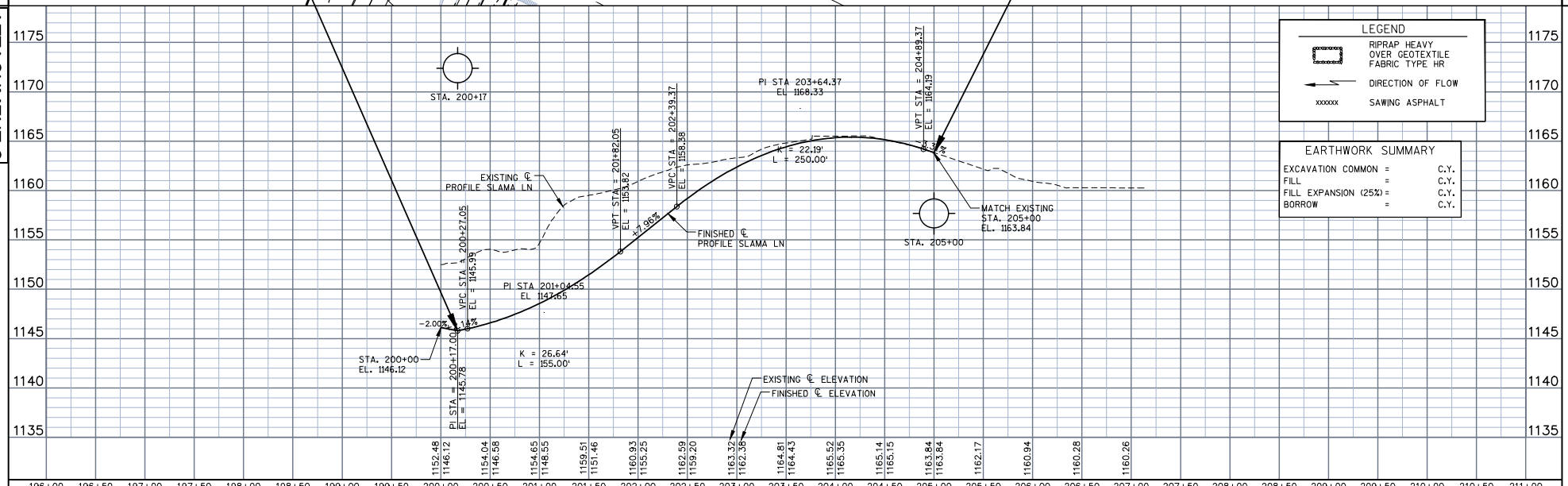
PLOT TIME : 4:42:22 PM
PLOT BY : JULIA ZEHNER
PLOT SCALE : 1:2



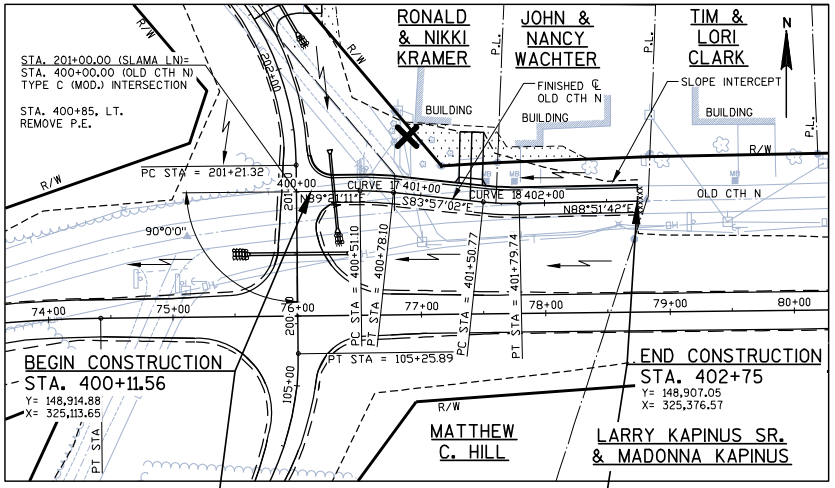


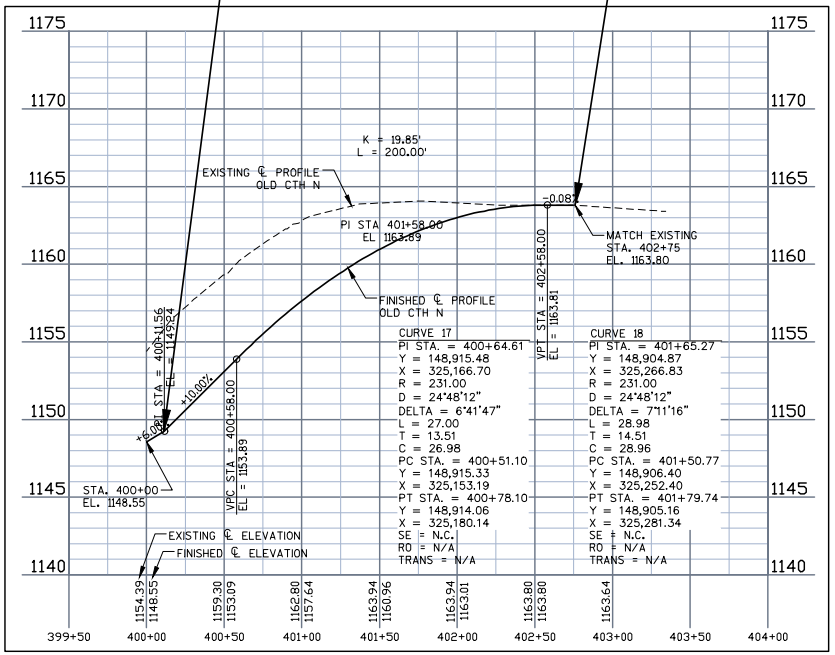
PROJECT NO: 5496-00-74	HWY: CTH N	COUNTY: CRAWFORD	PLAN & PROFILE: SLAMA LANE	SHEET	E

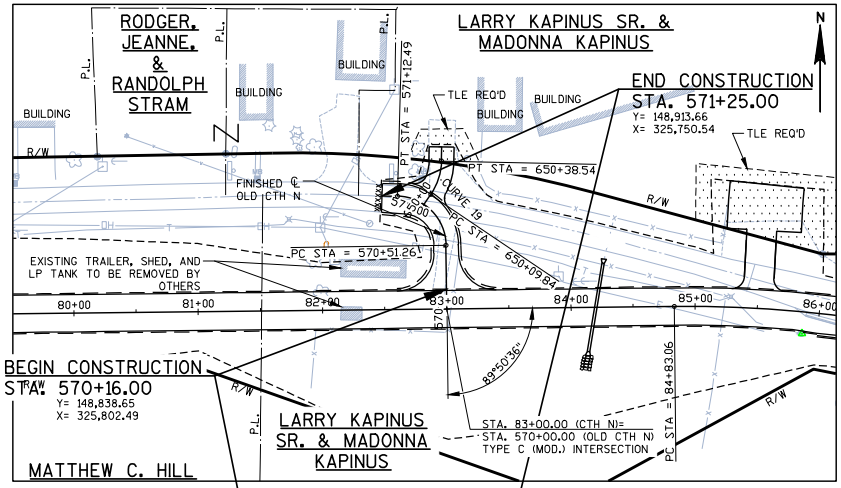
FILE NAME : S:\PROJECTS\C54320 CRAWFORD CO. CTH N RECONSTRUCT\SHEETS\PLAN\PLAN & PROFILE SHEETS\P&P SLAMA.DWG
LAYOUT : SLAMA
PLOT DATE : 5/1/2018
PLOT TIME : 4:43:02 PM
PLOT BY : JULIA ZEHNER
PLOT SCALE : 6" = 1'-0"

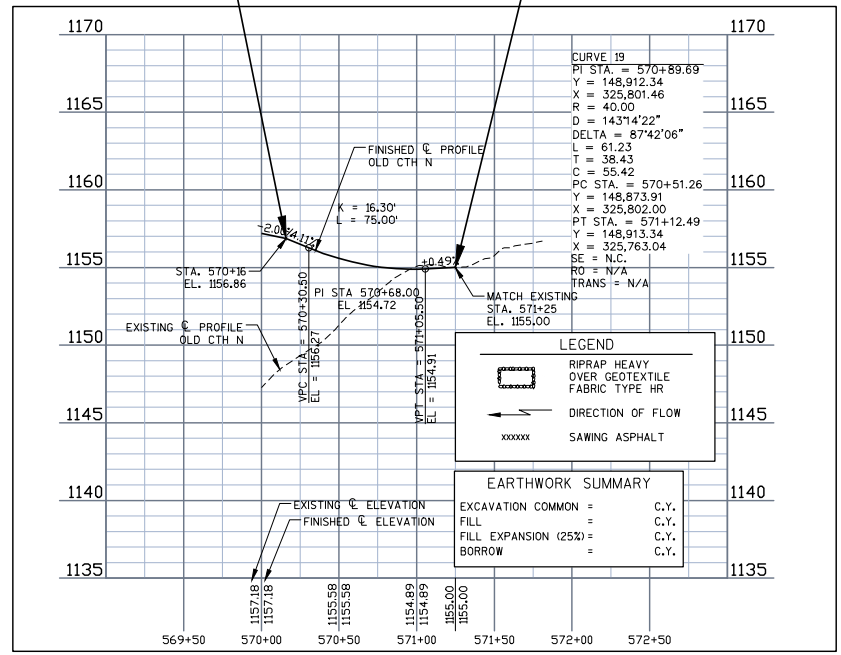
5 5

ATTACHMENT C









PROJECT NO: 5496-00-74	HWY: CTH N	COUNTY: CRAWFORD	PLAN & PROFILE: OLD CTH N	SHEET	E

FILE NAME : S:\PROJECTS\C54320 CRAWFORD CO. CTH N RECONSTRUCT\SHEETSPLAN\PLAN & PROFILE SHEETS\OLD CTH N PPS.DWG
LAYOUT : LAYOUT
PLOT DATE : 5/2/2018
PLOT TIME : 2:21:54 PM
PLOT BY : STRINE, THERESA
PLOT SCALE : 1 IN:2 FT_XREF

5 ATTACHMENT C

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VII. Mitigation & Commitments – List any environmental mitigation measures or commitments that will be incorporated into the project. Any items listed below must be incorporated into the project plans and contract documents. *Attach a copy of this page to the design study report (DSR) and the plans, specifications, and estimate (PS&E) submittal package.*

Environmental Factor	**Commitment (If none, include 'No special or supplemental commitments required.')**
General Economics	No special or supplemental commitments required
Business	Commitments Made Access to the restaurant and motel located in the northeast and southeast quadrants of the STH 35 / CTH N intersection will be maintained during construction. The WisDOT construction supervisor will ensure fulfillment.
Agriculture	Commitments Made Access to agricultural fields will be maintained during construction. The WisDOT construction supervisor will ensure fulfillment.
Community or Residential	Commitments Made Access to residential/farm properties will be maintained during construction on the project. The WisDOT construction supervisor will ensure fulfillment.
Indirect Effects	No special or supplemental commitments required
Cumulative Effects	No special or supplemental commitments required
Environmental Justice	No special or supplemental commitments required
Historic Resources	No special or supplemental commitments required
Archaeological/Burial Sites	No special or supplemental commitments required
Tribal Coordination/Consultation	No special or supplemental commitments required
Section 4(f) and 6(f) or Other Unique Areas	No special or supplemental commitments required
Aesthetics	No special or supplemental commitments required
Wetlands	No special or supplemental commitments required
Rivers, Streams and Floodplains	Commitments Made The large drainage swale located to along the south side of CTH N from STH 35 to Demanes Lane will be realigned in multiple locations. Permanent and temporary erosion control features, including the use of stone gabions, will be installed to prevent against erosion of the large drainage swale into the Mississippi River. Flood calculations and an evaluation of impacts to land owners for the drainage way south of CTH N at the beginning of the project will be completed. The Crawford County Zoning Authority will be sent drainage calculations. These environmental commitments will be included in the plans and/or special provisions. The WisDOT construction supervisor will ensure fulfillment.
Lakes or other Open Water	No special or supplemental commitments required
Groundwater, Wells and Springs	No special or supplemental commitments required

Upland Wildlife and Habitat	Commitments Made To prevent the spread of oak wilt disease, avoid cutting or pruning of oaks from April through September. Crawford County will clear oak tree species prior to April 1. To prevent the spread of Emerald Ash Borer (EAB) beetle, do not transport cut hardwood (non-coniferous) firewood, ash logs, ash mulch or bark fragments larger than one inch in diameter, or ash nursery stock. The WisDOT construction supervisor will ensure fulfillment.
Coastal Zones	No special or supplemental commitments required
Threatened and Endangered Species	The timber rattlesnake is known to occur in the project area or vicinity and could be impacted by this project. A very active den is located directly behind the Spring Lake Inn. During the summer season the timber rattlesnake can travel up to a mile from their den. Date restrictions and silt fence turns will be incorporated into the plans and specifications. There are no known NLEB roost sites or hibernaculum within 2 miles of the project area. Streamlined consultation with the FWS was performed in accordance with the Final 4(d) rule. No response was received in 30 days. No further coordination is required. Standard special provisions for the NLEB will be included in the final plans and specifications. The project is located in the southern point of the high potential zone for the rusty patched bumble bee and contains suitable habitat including the drainage ditch and woodland areas. The plans and special provisions will require a native seeding mixture (ie. seeding mixture No. 70) to be used on all vegetated side slopes west of Station 48+00. FWS concurrence of a may effect, not likely to adversely affect determination is currently pending. WisDOT construction supervisor will ensure fulfillment.
Air Quality	No special or supplemental commitments required
Construction Stage Sound Quality	Check all that apply: ☒ WisDOT Standard Specification 107.8(6) and 108.7.1 will apply. ☐ Special construction stage noise abatement measures will be required. Describe:
Traffic Noise	No special or supplemental commitments required
Hazardous Substances or Contamination	No special or supplemental commitments required
Storm Water	Stormwater WPDES permit coverage will be obtained through coordination with WisDOT and WisDNR and the cooperative agreement. The WisDOT construction supervisor will ensure fulfillment.
Erosion Control	Commitments Made Erosion control devices will be specified on the construction plans. All disturbed bank areas should be adequately protected and restored as soon as feasible. If erosion mat is used along the stream banks, DNR recommends a biodegradable and non-netted mat be used (ie. Class I Type A Urban, Class I Type B Urban, or Class II Type C). In areas of hill cut greater than 30 feet vertically, terrace cut slopes at 30 foot vertical intervals and apply appropriate erosion control stabilization methods. The WisDOT construction supervisor will ensure fulfillment.
Other	

WisDOT TRAFFIC FORECAST REPORT

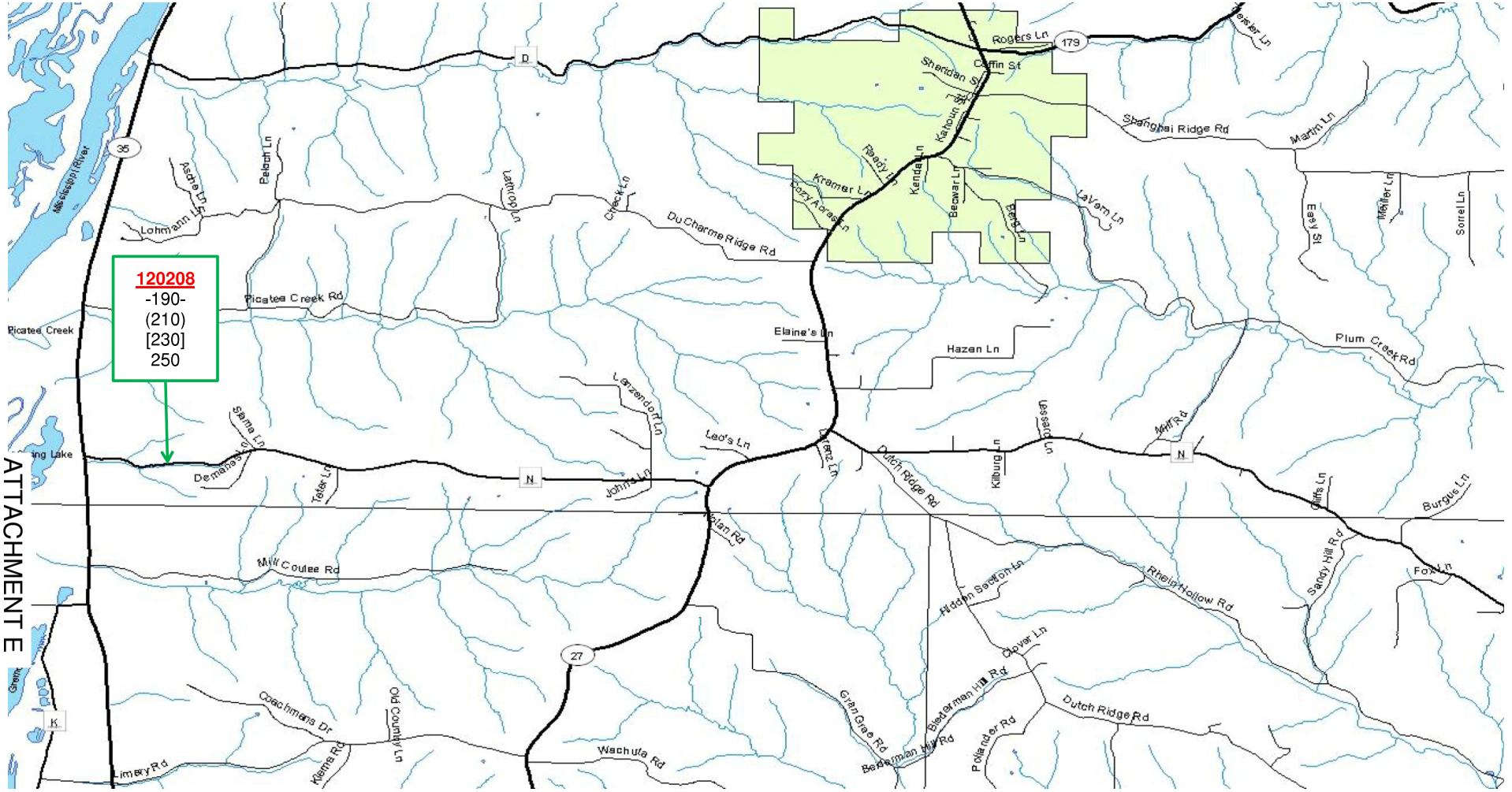
PROJECT ID(S): 5496-00-04
ROUTE(S): CTH N

REGION/COUNTY(IES): SW/Crawford
LOCATION: STH 35 to Teter Lane
COMPLETED: October 8, 2013

Traffic Forecasting Section; Bureau of Planning and Economic Development; Division of Transportation Investment Management

Developed by: Vicki S. Haskell
Phone: (608) 266-2571
FAX #: (608) 267-0294
E-Mail: vicki.haskell@dot.wi.gov

ATTACHMENT E



XXXXXX = Site IDs			
Design Values (%)			
Sites →	120208		
Routes →	CTH N		
Volume(s):	250		
K250	17.1		
K100	23.0		
K30	32.3		
P	56.6		
D(Dsgn. Hr.)	60/40		
T(DHV)	11.0		
T(PHV)	5.9		

Traffic Counts:	Forecasted Volumes:
-000- 2010 AADT	(000) 2016 AADT
	[000] 2026 AADT
	000 2036 AADT

Truck Class Percents			
Class	120208		
2D	7.2		
3AX	1.4		
2S1+2S2	2.3		
3-S2	2.2		
DBL-BTM	0.0		
TOTAL	13.1%		

NOTES ON THE FORECAST:

1. This projection assumes that no major new traffic generators will be developed in the area served by the roadway or intersection over the course of the planning period.

2. Truck classification percentages were taken from a table representative of similar facilities and locations throughout the state of Wisconsin.

3. The historical traffic count trends will continue increasing at a decreasing rate. Box-Cox regression is used to project past count data.

MORE NOTES ON THE FORECAST:

4. CTH N is a Factor Group IV (Rural-Other) highway indicating low to moderate fluctuation in traffic from a seasonal perspective. It is functionally classified as a Rural Major Collector (7) for count purposes.

Roadside Hazard Analysis

Project I.D. 5496-00-04

Entered by: Stephanie Potter, E.I.T.
Checked by: Ellery Schaffer, P.E.

Speed (MPH) = 40
AADT = 265 (2039)
Alignment = CTH N (STH 35 - STH 27)

Hazard ID	Station or Stations	Offset (ft)	L/R	Total length of hazard FT	Description	Action	Discussion
1	11+29-11+35	18	L	6	Well House Building	None Required	Existing CTH N right-of-way from Sta. 10+35 – Sta. 15+80, Lt. will be vacated and converted into a shared use entrance to access a restaurant, motel, and residence.
2	11+30 – 11+39	14	L	9	LP Tank	None Required	Existing CTH N right-of-way from Sta. 10+35 – Sta. 15+80, Lt. will be vacated and converted into a shared use entrance to access a restaurant, motel, and residence.
3	11+28 – 11+44	8	L	16	Stone Landscape Edging	None Required	Existing CTH N right-of-way from Sta. 10+35 – Sta. 15+80, Lt. will be vacated and converted into a shared use entrance to access a restaurant, motel, and residence.

ATTACHMENT F

Hazard ID	Station or Stations	Offset (ft)	L/R	Total length of hazard FT	Description	Action	Discussion
4	11+44 – 11+54	8	L	10	Waste Disposal Containers	None Required	Existing CTH N right-of-way from Sta. 10+35 – Sta. 15+80, Lt. will be vacated and converted into a shared use entrance to access a restaurant, motel, and residence.
5	13+00	9	R	< 1	Metal Pole with Satellite Dish	None Required	Existing CTH N right-of-way from Sta. 10+35 – Sta. 15+80, Lt. will be vacated and converted into a shared use entrance to access a restaurant, motel, and residence.
6	11+50	9	R	< 1	Guy Wire (Yellow Marker – Faded)	None Required	Existing CTH N right-of-way from Sta. 10+35 – Sta. 15+80, Lt. will be vacated and converted into a shared use entrance to access a restaurant, motel, and residence.
7	12+00 – 13+00	11	L	100	Backslope (1.5:1)	None Required	Existing CTH N right-of-way from Sta. 10+35 – Sta. 15+80, Lt. will be vacated and converted into a shared use entrance to access a restaurant, motel, and residence.

ATTACHMENT F

ATTACHMENT F

Hazard ID	Station or Stations	Offset (ft)	L/R	Total length of hazard FT	Description	Action	Discussion
8	13+20 – 22+82	6-11	L & R	962	Fence	Remove Hazard	The fence will be relocated by landowner prior to construction.
9	13+89 – 14+36	20-21	L	47	Fence	Remove Hazard	The fence will be relocated by landowner prior to construction.
10	14+00	11	R	1	Timber Post (6”X6”)	None Required	Existing CTH N right-of-way from Sta. 10+35 – Sta. 15+80, Lt. will be vacated and converted into a shared use entrance to access a restaurant, motel, and residence.
11	16+00	10	R	1	Landscaping Stone	Remove Hazard	The contractor will remove as part of this project.

Hazard ID	Station or Stations	Offset (ft)	L/R	Total length of hazard FT	Description	Action	Discussion
12	16+75	10	R	1	Timber Post (6”X6”)	Remove Hazard	The existing wood post is outside of the clear zone.
13	19+00	11	R	1	Landscaping Stone	Remove Hazard	The contractor will remove as part of this project.
14	20+00 – 24+50	7	L	450	Backslope (2:1)	Make Traversable	Flatten slopes.
15	23+94 – 31+36	3-13	R	742	Fence	Remove Hazard	Fence to be removed by landowner prior to construction.

ATTACHMENT F

ATTACHMENT F

Hazard ID	Station or Stations	Offset (ft)	L/R	Total length of hazard FT	Description	Action	Discussion
16	24+75	25	R	1	Stone Boulder	Remove Hazard	The contractor will remove as part of this project.
17	24+57 – 31+40 / 31+85 – 33+26 / 35+92 – 36+91	4 – 21	L	683 / 141 / 99	Fence	Remove Hazard	The fence will be relocated by landowner prior to construction.
18	25+75	25	R	1	Stone Boulder	None Required	The contractor will remove as part of this project.
19	26+00	10	L	4	48” CMCP	Remove Hazard (Replace Pipe)	Culvert pipe replaced with longer pipe extending beyond the clear zone.

ATTACHMENT F

Hazard ID	Station or Stations	Offset (ft)	L/R	Total length of hazard FT	Description	Action	Discussion
20	26+00	8	R	4	48” CMCP	Remove Hazard (Replace Pipe)	Culvert pipe replaced with longer pipe extending beyond the clear zone.
21	28+50	6	R	1	Power Pole	Relocate Hazard	Scenic Rivers Energy Cooperative will relocate power pole relocated outside of the clear zone.
22	31+00	5	R	1	Power Pole	Relocate Hazard	Scenic Rivers Energy Cooperative will relocate power pole relocated outside of the clear zone.
23	31+00 – 45+50	4	L	1450	Steep Backslopes (Vertical Face)	Flatten Slopes	Relocate steep slope (rock cut) outside of clear zone. Curb and gutter added for drainage.

ATTACHMENT F

Hazard ID	Station or Stations	Offset (ft)	L/R	Total length of hazard FT	Description	Action	Discussion
24	32+50	2	R	1	Power Pole	Relocate Hazard	Scenic Rivers Energy Cooperative will relocate power pole relocated outside of the clear zone.
25	35+00	2	R	1	Power Pole	Relocate Hazard	Scenic Rivers Energy Cooperative will relocate power pole relocated outside of the clear zone.
26	38+50	2	R	1	Power Pole	Relocate Hazard	Scenic Rivers Energy Cooperative will relocate power pole relocated outside of the clear zone.
27	44+50	5	R	1	Power Pole	Relocate Hazard	Scenic Rivers Energy Cooperative will relocate power pole relocated outside of the clear zone.

ATTACHMENT F

Hazard ID	Station or Stations	Offset (ft)	L/R	Total length of hazard FT	Description	Action	Discussion
28	47+00	5	R	1	Power Pole	Relocate Hazard	Scenic Rivers Energy Cooperative will relocate power pole relocated outside of the clear zone.
29	46+00 – 48+75	5	L	275	Steep Backslopes (Vertical Face)	Flatten Slopes	Relocate steep slope (rock cut) outside of clear zone. Curb and gutter added for drainage.
30	48+80	2	L	1	Landscape Stone around Mailbox	Remove Hazard	The contractor will remove as part of this project.
31	49+50 – 53+50	5	L	400	Steep Backslopes (Vertical Face)	Flatten Slopes	Relocate steep slope (rock cut) outside of clear zone. Curb and gutter added for drainage.

ATTACHMENT F

Hazard ID	Station or Stations	Offset (ft)	L/R	Total length of hazard FT	Description	Action	Discussion
32	49+75 – 50+00	10	L	25	Concrete Retaining Wall	Remove Hazard	The contractor will remove as part of this project.
33	53+63 – 53+69	3	L	6	Fence	Remove Hazard	Fence to be removed by owner prior to construction.
34	53+57	8	L	< 1	Private Sign (Packer Backer Blvd)	Remove Hazard	Private street sign to be removed by landowner prior to construction.
35	53+91 – 58+03 / 58+51 – 62+09, Rt.	9 - 21	R	412 / 358	Fence	Remove Hazard	Fence to be removed by owner prior to construction.

ATTACHMENT F

Hazard ID	Station or Stations	Offset (ft)	L/R	Total length of hazard FT	Description	Action	Discussion
36	55+00 – 73+00	8	R	1800	Steep Foreslopes (1.5:1)	Shield Hazard	Place MGS Guardrail 3 with MGS Guardrail Terminal EAT
37	61+00 – 62+00	9	R	100	Tree Line	Remove Hazard	The contractor will clear trees as part of this project.
38	62+00 – 66+00	2	L	400	Steep Backslopes (Vertical Face) (1.5:1)	Flatten Slopes	Relocate steep slope (rock cut) outside of clear zone. Curb and gutter added for drainage.
39	63+73 – 68+48	8 - 21	L	475	Fence	Remove Hazard	Fence to be removed by landowner prior to construction.

ATTACHMENT F

Hazard ID	Station or Stations	Offset (ft)	L/R	Total length of hazard FT	Description	Action	Discussion
40	69+50 – 69+60	1	L	10	Steep Backslopes (Vertical Face)	Flatten Slopes	Relocate steep slope (rock cut) outside of clear zone. Curb and gutter added for drainage
41	69+75 – 71+00	8	L	125	Backslope (3:1)	Flatten Slopes	Slopes flattened within the clear zone.
42	70+27	2	L	1	Landscaping Timbers	Remove Hazard	Landscaping timbers to be removed by landowner prior to construction.
43	71+00	8	R	1	Power Pole	Relocate Hazard	Scenic Rivers Energy Cooperative will relocate power pole relocated outside of the clear zone.

ATTACHMENT F

Hazard ID	Station or Stations	Offset (ft)	L/R	Total length of hazard FT	Description	Action	Discussion
44	77+00 – 77+75	4	R	75	Foreslope (3:1)	Flatten Slopes	Slopes flattened within the clear zone.
45	78+25	7	R	1	Pedestal	Relocate Hazard	CenturyLink will relocate pedestal outside of the clear zone.
46	79+00	8	R	1	Power Pole	Relocate Hazard	Scenic Rivers Energy Cooperative will relocate power pole relocated outside of the clear zone.
47	81+27 – 81+32	19 - 22	L	9	LP Tank	Relocate Hazard	LP tank will be relocated by owner prior to construction.

ATTACHMENT F

Hazard ID	Station or Stations	Offset (ft)	L/R	Total length of hazard FT	Description	Action	Discussion
48	81+40 – 81+60	1	R	20	Foreslope (3:1)	Flatten Slopes	Slopes flattened within the clear zone.
49	81+50	9	R	1	Pedestal	Relocate Hazard	CenturyLink will relocate pedestal outside of the clear zone.
50	81+75	8	R	< 1	Guy Wire (Yellow Marker)	Relocate Hazard	Scenic Rivers Energy Cooperative will relocate power pole relocated outside of the clear zone.
51	82+38	11	R	-	Service Line/Water Faucet	None Required	Existing CTH N right-of-way from Sta. 76+00 to Sta. 83+14, Lt. will be vacated and converted into a town road. Service line/water faucet is located within right-of-way to be vacated to Town of Eastman and will be allowed to remain.

ATTACHMENT F

Hazard ID	Station or Stations	Offset (ft)	L/R	Total length of hazard FT	Description	Action	Discussion
52	83+13 – 85+23	9	L & R	210	Fence	Remove Hazard	Fence to be removed by landowner prior to construction.
53	83+28 – 85+20	4 - 21	L	192	Fence	None Required	Fence to be removed by landowner prior to construction.
54	83+75 – 84+75	4	R	100	Foreslope (2:1)	Flatten Slopes	Slopes flattened within the clear zone.
55	85+00	9	R	-	Pedestal	Relocate Hazard	CenturyLink will relocate pedestal outside of the clear zone.

Hazard ID	Station or Stations	Offset (ft)	L/R	Total length of hazard FT	Description	Action	Discussion
56	202+71 – 205+00	11 – 21	R	229	Fence	Remove Hazard	Fence to be removed by landowner prior to construction.

ATTACHMENT F